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Х А Б А Р Ш Ы С Ы

ВЕСТНИК

НАЦИОНАЛЬНОЙ АКАДЕМИИ НАУК
РЕСПУБЛИКИ КАЗАХСТАН

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NAS RK is pleased to announce that Bulletin of NAS RK scientific journal has been accepted for indexing in the Emerging Sources Citation Index, a new edition of Web of Science. Content in this index is under consideration by Clarivate Analytics to be accepted in the Science Citation Index Expanded, the Social Sciences Citation Index, and the Arts & Humanities Citation Index. The quality and depth of content Web of Science offers to researchers, authors, publishers, and institutions sets it apart from other research databases. The inclusion of Bulletin of NAS RK in the Emerging Sources Citation Index demonstrates our dedication to providing the most relevant and influential multidiscipline content to our community.

Қазақстан Республикасы Ұлттық ғылым академиясы "ҚР ҰҒА Хабаршысы" ғылыми журналының Web of Science-тің жаңаланған нұсқасы Emerging Sources Citation Index-те индекстелуге қабылданғанын хабарлайды. Бұл индекстелу барысында Clarivate Analytics компаниясы журналды одан әрі the Science Citation Index Expanded, the Social Sciences Citation Index және the Arts & Humanities Citation Index-ке қабылдау мәселесін қарастыруда. Web of Science зерттеушілер, авторлар, баспашылар мен мекемелерге контент тереңдігі мен сапасын ұсынады. ҚР ҰҒА Хабаршысының Emerging Sources Citation Index-ке енуі біздің қоғамдастық үшін ең өзекті және беделді мультидисциплинарлы контентке адалдығымызды білдіреді.

НАН РК сообщает, что научный журнал «Вестник НАН РК» был принят для индексирования в Emerging Sources Citation Index, обновленной версии Web of Science. Содержание в этом индексировании находится в стадии рассмотрения компанией Clarivate Analytics для дальнейшего принятия журнала в the Science Citation Index Expanded, the Social Sciences Citation Index и the Arts & Humanities Citation Index. Web of Science предлагает качество и глубину контента для исследователей, авторов, издателей и учреждений. Включение Вестника НАН РК в Emerging Sources Citation Index демонстрирует нашу приверженность к наиболее актуальному и влиятельному мультидисциплинарному контенту для нашего сообщества.

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ALGORITHMIC AND SOFTWARE SUPPORT FOR THE FORMATION OF PARAMETER STANDARDS FOR THE CYBER ATTACKS DETECTION SYSTEMS

Abstract. The vast majority of intrusion detection systems are becoming an integral part of the protection of any network security, they are used to monitor suspicious activity in the system and to detect the attacking actions of unauthorized side. Activation of cyber attacks initiates the creation of special technical solutions that can remain effective when new or modified types of cyber threats appear with unidentified or indistinctly defined properties. Most of these systems are aimed at identifying suspicious activity or interfering to the network in order to take adequate measures to prevent cyber attacks. Actual intrusion detection systems are those that are focused on identifying anomalous states but they have several disadvantages. More effective are expert approaches based on the use of knowledge and experience of specialists of the relevant subject area. Creation of technical solutions and special tools (for example, software for attack detection systems, which allow to detect previously unknown cyber attacks by monitoring the current state of indistinct parameters in a weakly formalized environment), based on expert approaches, is a promising area of research. Based on the well-known cyber attack detection system, which is based on an anomaly detection methodology (generated by cyber attacks) and a variety of relevant methods and models of the proposed software, which, due to the basic algorithm and a set of developed procedures (coordinate grid configuration; initialization of values based on a set of databases data and modules; graphical formation of parameters; search for common points according to the basic rules and graphical interpretation of the result) allow to automate the parameter standards formation process for modern intrusion detection systems and to reflect the results of the detection of anomalous state in a predetermined time interval.

Keywords: attacks; cyber attacks; anomalies; intrusion detection systems; attack detection systems; cyber attack detection systems; detection of anomalies in information systems.

1. Algorithmic and software support for cyber attack detection systems. According to the proposed structural solution of CPS which is based on CSFM, which is based on CMAS and the methods of ESFM and DEFM we construct and conduct an experimental research of algorithmic and software support for the formation of parameters standards for anomalies detection systems. [1, 2]), Such software operates on the basis of the basic algorithm System_level_Click algorithm (figure 1.1), combining a set of the following predefined processes (procedures):

* Coordinate_axes (construction of a coordinate grid);

* Convert_List (initialization of values based on CDB and EDB and IVFM. According to the structure of CPS, there are determined coordinates of standart and current LF in mi-measured parametric subtool figure 1.1) [3, 4];

* Graph_Build (graphical formation of parameters, for example, = = and = = and their reflections on the Canvas object according to step 3 [1];

* Crossing (IntersectionPoint and GetPoint procedures implementation and the reflection of the current state of the system in accordance with the basic rules in the detection environment)

* Rect_Area (two-dimensional support areas are created in accordance with the specified rules that come from the PDB which are formed on the basis of parametric sub-tools and are used to identify cyber attacks of various dimensions) [20, 21];

* Line_point_Area reflects the common points of the design lines of the standard and current LF, for example, for parameters = = and = in a 2-dimensional parametric sub-environment.

Let consider the principle of operation of the main algorithm System_level_Click (figure 1.3), which integrates the specified procedures in order to create a complete list of graphical components necessary for the effective detection of an anomalous state in information systems [20].

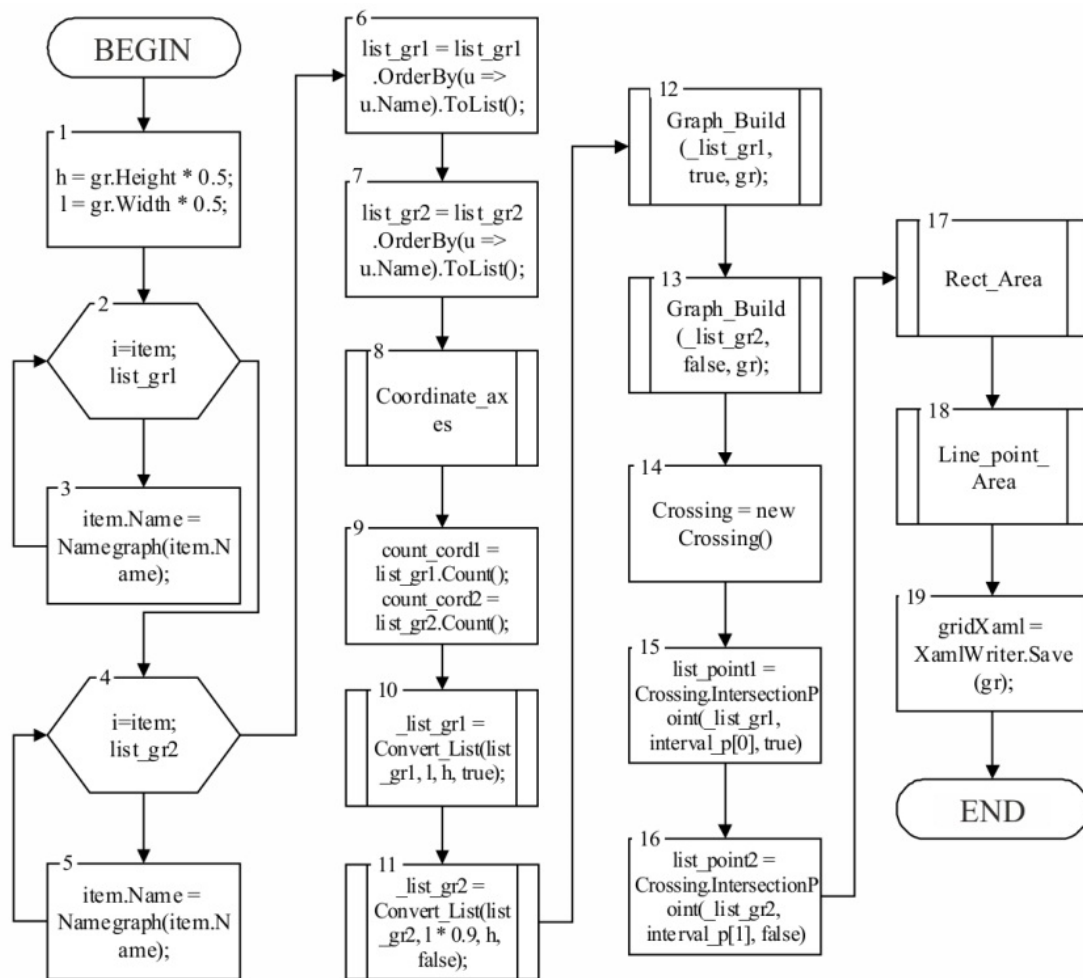


Figure 1.1 – Basic algorithm System_level_Click

At the beginning of the computational process (figure 1.3, vertex 1) there are initialized the necessary console characteristics.

Further (figure 1.3, vertex 2-3 and 4-5), respectively, we obtain in the cycles the initial data from the EDB [31], for example, for the NSC and NPSA parameters. Next (figure 1.2, vertex 6-7) there are formed sets of order of parameter matching. Next (figure 1.3, vertex 8) there is implemented a predefined process (class Coordinate_axes), according to which the procedure Main_coordinate_axes is executed (figure 1.4), performing sequential processing of three graduation programs [10, 14]:

* Grid_coordinates (responsible for the creation of a scalable coordinate grid);

* Graduation_axes (responsible for marking axes and graduation intervals in the scalable area);

* Drawing_axes (responsible for the creation of axes to display the required parameters, for example, == and == in 2-dimensional parametric environment (Further, according to the structure of CPS there is determined the amount of data (count_cord1 and count_cord2) in EDB for each of the parameters, for example, == and =

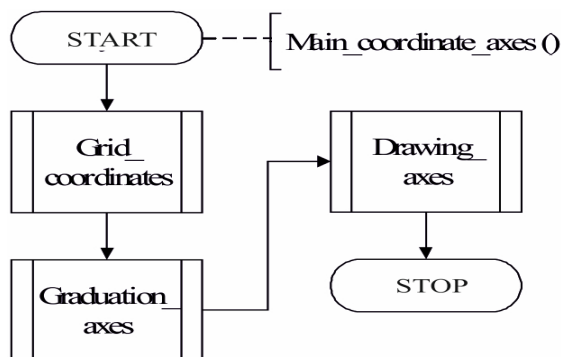


Figure 1.2 – Algorithm Main_coordinate_axes

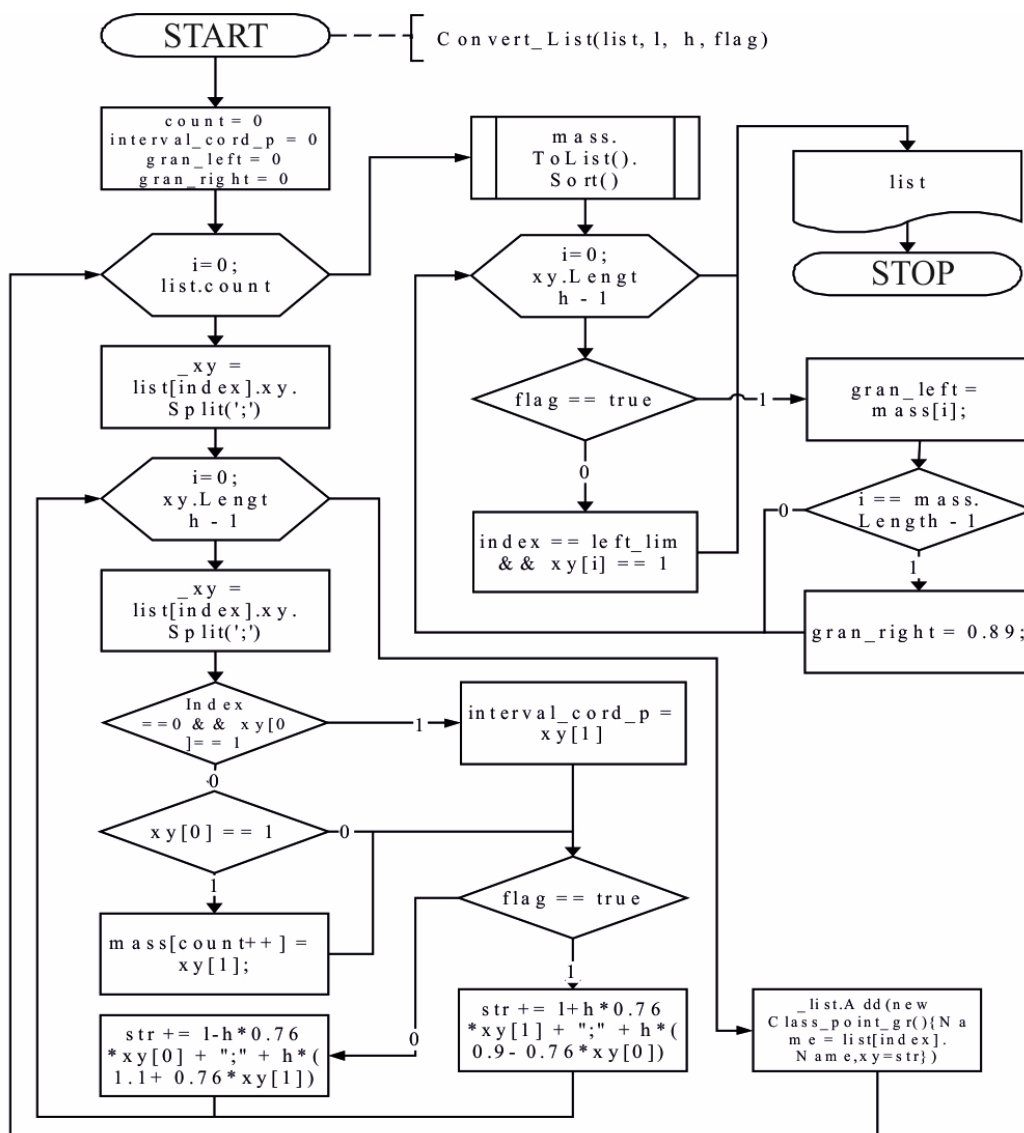


Figure 1.3 – Algorithm of Convert_List implementation

At the next stage (vertices 10 and 11) there is called the procedure Convert_List which allows to receive data from the tables with specified parameters according to, for example, NSC and NPSA, which are converted into the necessary form in order to create graphical images of the specified parameters, for example, = = and = = in a 2-dimensional parametric environment.

The process of converting data consists of two stages. The first, according to the step 4, determines the interval to which the vertex of the graphical image of the current LF belongs in mi-dimensional parametric environment.

This is necessary for the search for common points of graphical images of the standard and current LF, since these points must lie within the same limits with the vertex of any of the parameters.

The second one converts standard and current LF, which are in the EDB and IVFM, into values corresponding to the Canvas coordinate system. This procedure returns a list of convertible LF values and boundaries, which can contain common points of the graphical image of the current state, for example, for the parameters.

The obtained data are necessary for the construction of projections and common points of graphical images according to the specified parameters of NSC and NPSA.

Further (figure 1.4, vertices 12-13) there is called the Graph_Build procedure (figure 1.5, 1.6), on the basis of the EDB and IVFM, it allows to create graphical images of the standard and current LF.

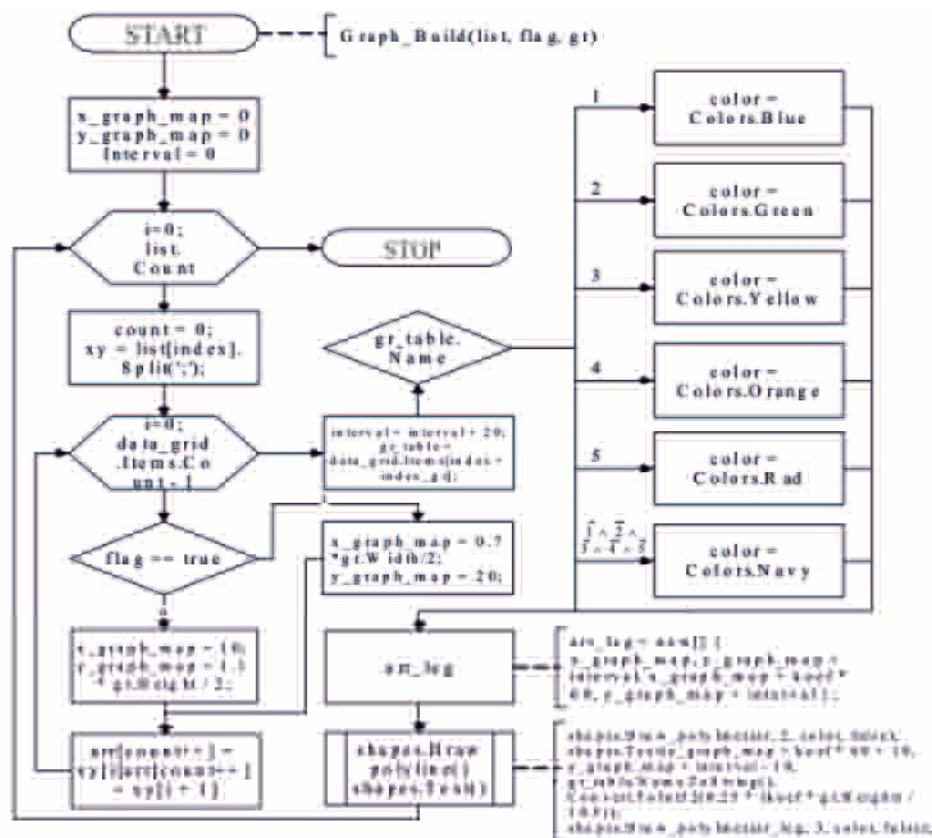


Figure 1.4 – Algorithm of Graph_Build implementation

After the process of data converting from EDB, they are transferred to the Graph_Build program, which, receives the list of converted data as an index to get the color and to change the Canvas graphical object for the basic values creation. Using the Main_figures there is created the object of the shapes class in the Graph_Build and then using the figures Draw_polyline is called and the data from the list is written to the array. Variations of colors and types of lines are also determined. Performing in the cycle of the specified sequence of actions is associated with the construction of graphical images and their legends (for example, "P", "OM", "M", "S", "B" and "V" for the parameters = = and = = (see figure 1.6) in a two-dimensional parametric environment.

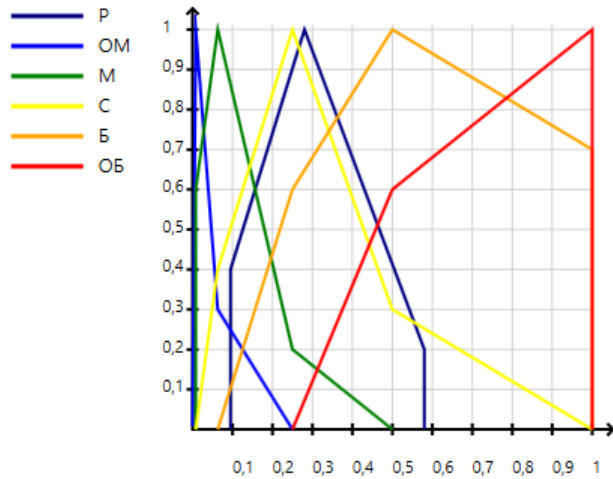


Figure 1.5 – The result of the procedure Graph_Build for the NSC parameter

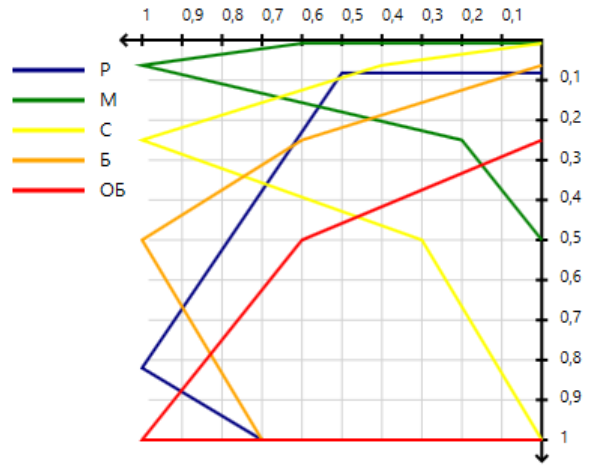


Figure 1.6 – The result of the procedure Graph_Build for the NPSA parameter

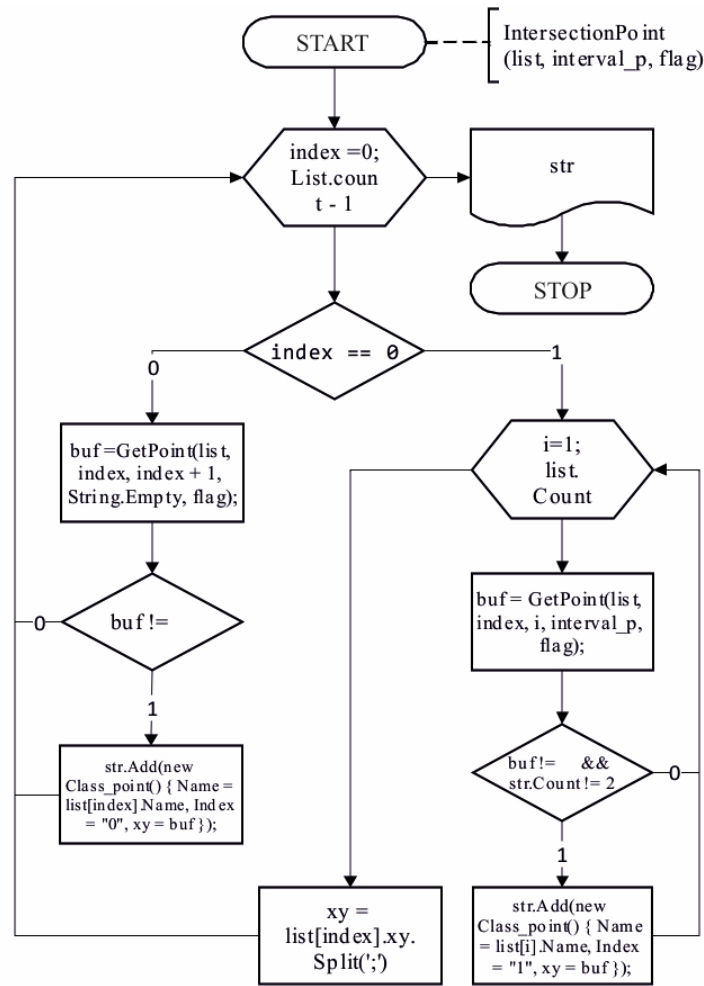


Figure 1.7 – Algorithm of IntersectionPoint procedure implementation

At the next stage (figure 1.1, vertex 14) there is created an object of the *Crossing* class and the Intersection Point procedure is called and is formed a list of coordinates of common points necessary to reflect the current state of the system.

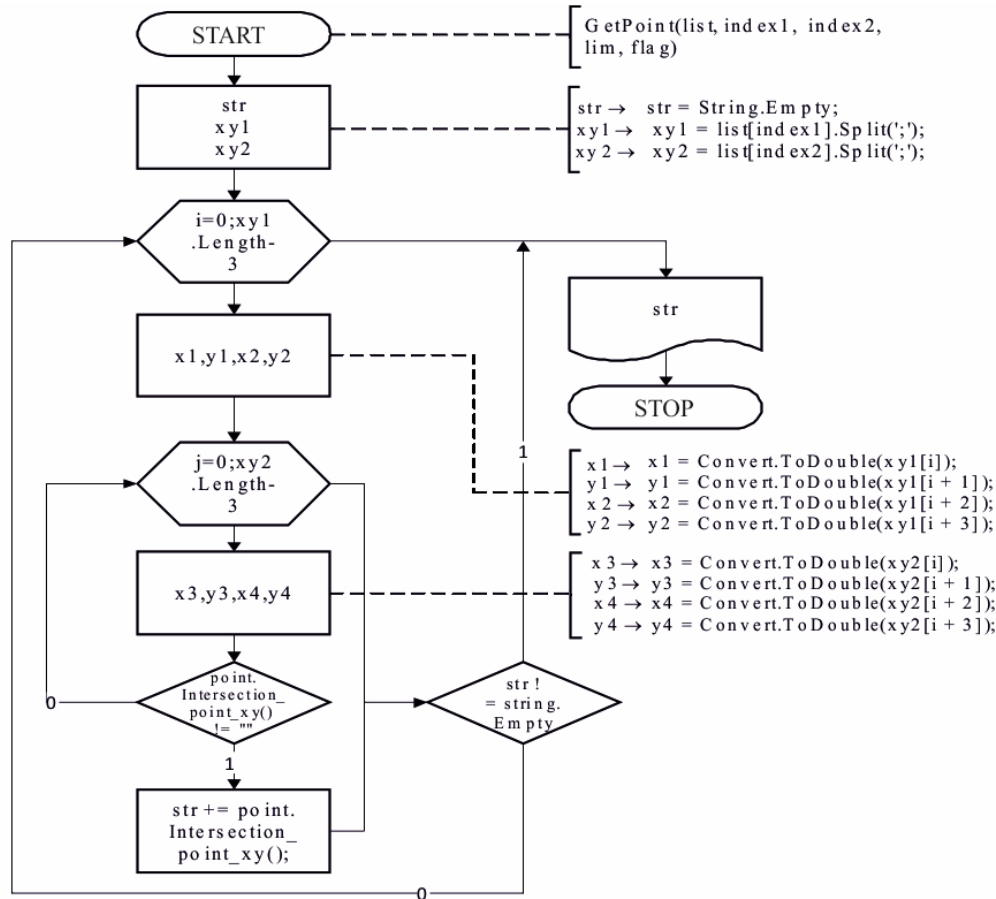


Figure 1.8 –Algorithm of get point procedure implementation

Obtained list and identifiers of standard LF with the help of Convert_List (figure 1.1, vertices 10-11) there are determined the parameters of identification of standard areas with the help of Draw_main_rect. [8, 9].

It should be noted that the *Crossing* class consists of two procedures:

- IntersectionPoint (figure 1.9);
- GetPoint (figure 1.10).

The first *Intersection Point* procedure allows to obtain common points of graphical images (separately for each of the parameters), as well as with adjacent standard LF (see step 5 and 6). At the next stage (figure 1.3, vertex 14) there is created an object of the *Crossing* class and the *Intersection Point* procedure is called and is formed a list of coordinates of common points necessary to reflect the current state of the system. Obtained the list and identifiers of standard LF with the help of Convert_List (figure 1.1, vertices 10-11) there are determined the parameters of identification of support areas with the help of Draw_main_rect. It should be noted that the *Crossing* class consists of two procedures:

- IntersectionPoint (figure 1.7);
- GetPoint (figure 1.8).

The first *Intersection Point* procedure allows to obtain common points of graphical images (separately for each of the parameters), as well as with adjacent standard LF.

The second GetPoint procedure is responsible for obtaining the coordinates of the above-mentioned points, that is, for example, a pair of values that characterize the component of the first graphical image and a pair of values of the second one. Further, all possible values for the selected component of the first graphical image are calculated relative to all possible components of the second one. The calculation is performed using Intersection_point, which defines the common points of the component for the given coordinates and returns to Get Point.

Next (figure 1.1, vertices 15-16) there is implemented the intersection_point class (in accordance with the functions of MARN and MDIT - see the CPS structure consisting of two Intersection_point procedures (figure 1.9) and Intersection_point_xy (figure 1.11).

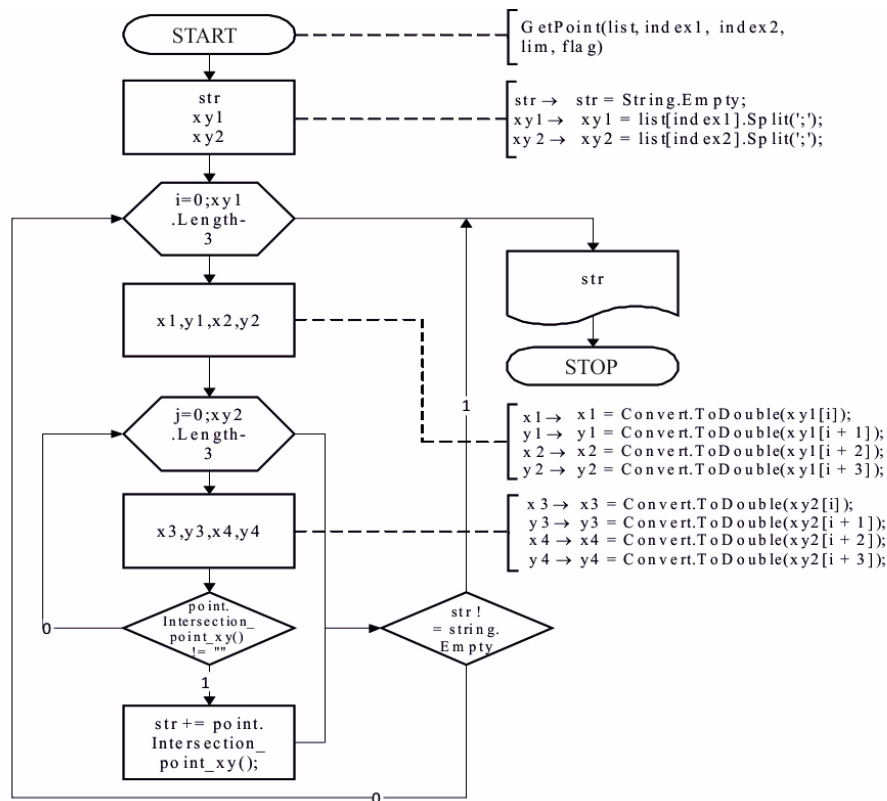


Figure 1.9 – Algorithm of Intersection_point procedure implementation

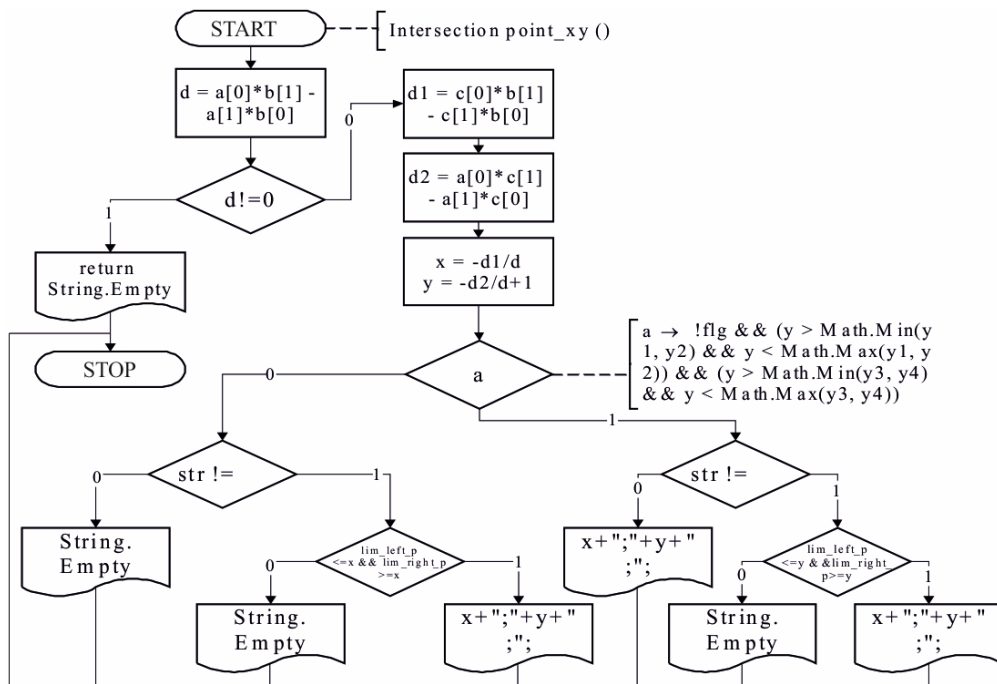


Figure 1.10 – Algorithm of Intersection_point_xy procedure implementation

In turn, the first one is a constructor that receives data from GetPoint (figure 1.9) and determines the coefficients that are transmitted to the second –Intersection_point_xy, where common points are calculated and returned to GetPoint [4, 6].

At the next stage (figure 1.1, vertex 17) there is called the Rect_Area procedure (in accordance with the functions of PDB and MRA, see the CPS structure (figure 1.12), which is responsible for constructing basic two-dimensional areas and current state areas, and sequentially activates Draw_main_rect (figure 1.13) and Draw_Rect. The procedure Draw_main_rect is responsible for the construction of two-dimensional standard areas, taking into account the rules on the basis of which the level of the anomalous state of the system will be determined.

Depending on the obtained data on visualization, for example, parameters = = = and on the basis of common points of graphical images of standard LF and projections of linear components constructed using the class Draw_main_object, we obtain the necessary standard areas. They are generated according to the above defined rules, therefore, the graphical image generates colored areas that reflect the level of the anomalous state of the system in the detection environment.

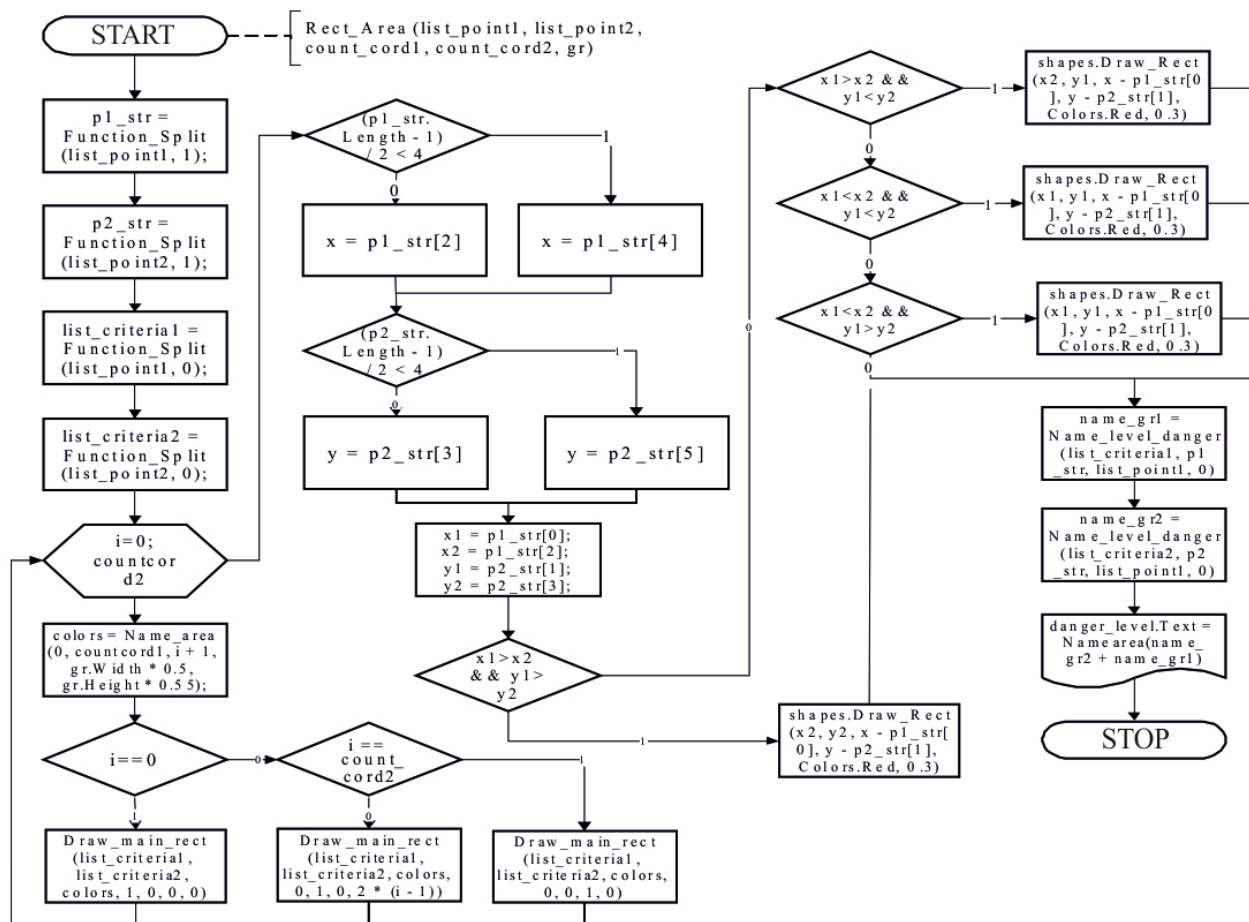


Figure 1.11 – Algorithm of Rect_Area procedure implementation

Next (figure 1.1, vertex 18) there is called the Line_point_Area subprogram (in accordance with the MB - see the structure of SPK 1 (figure 1.14) and on the Canvas graphical object using the Draw_main_object class, calling its procedures: Draw_main_point (figure 1.15); Draw_main_line (figure 1.16) - there are created projections of linear components and common points, both on the initial graphical images and on the final image of the current state.

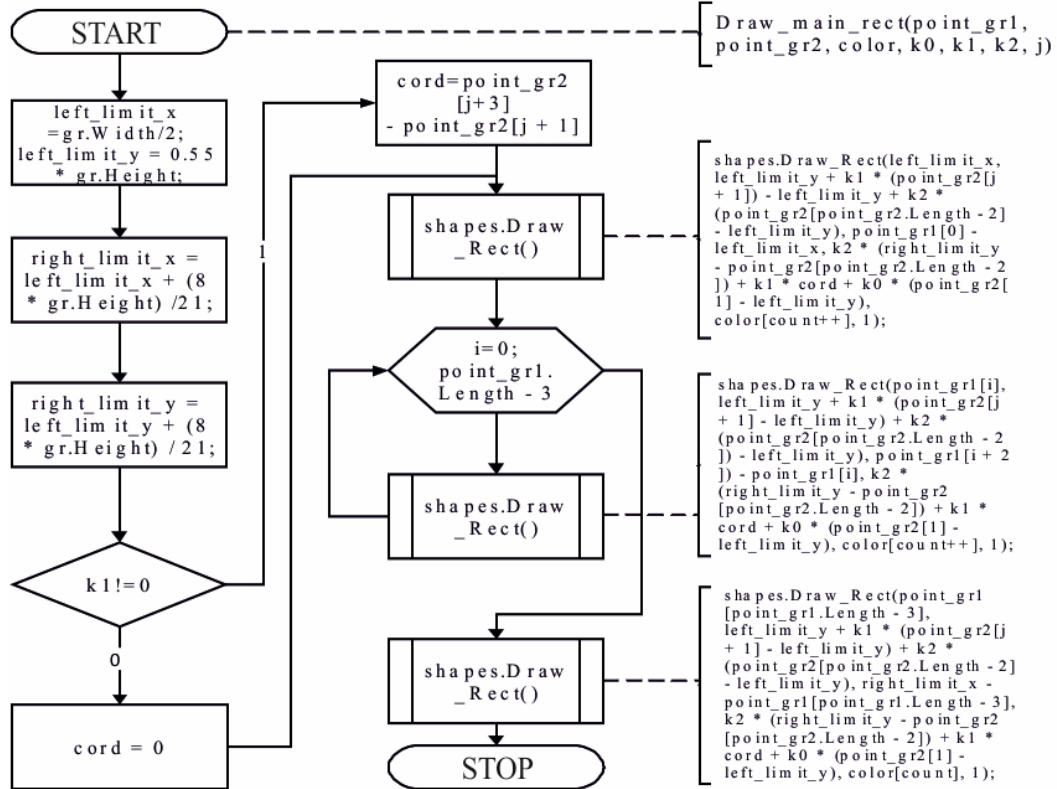


Figure 1.12 – Algorithm of draw_main_rect procedure implementation

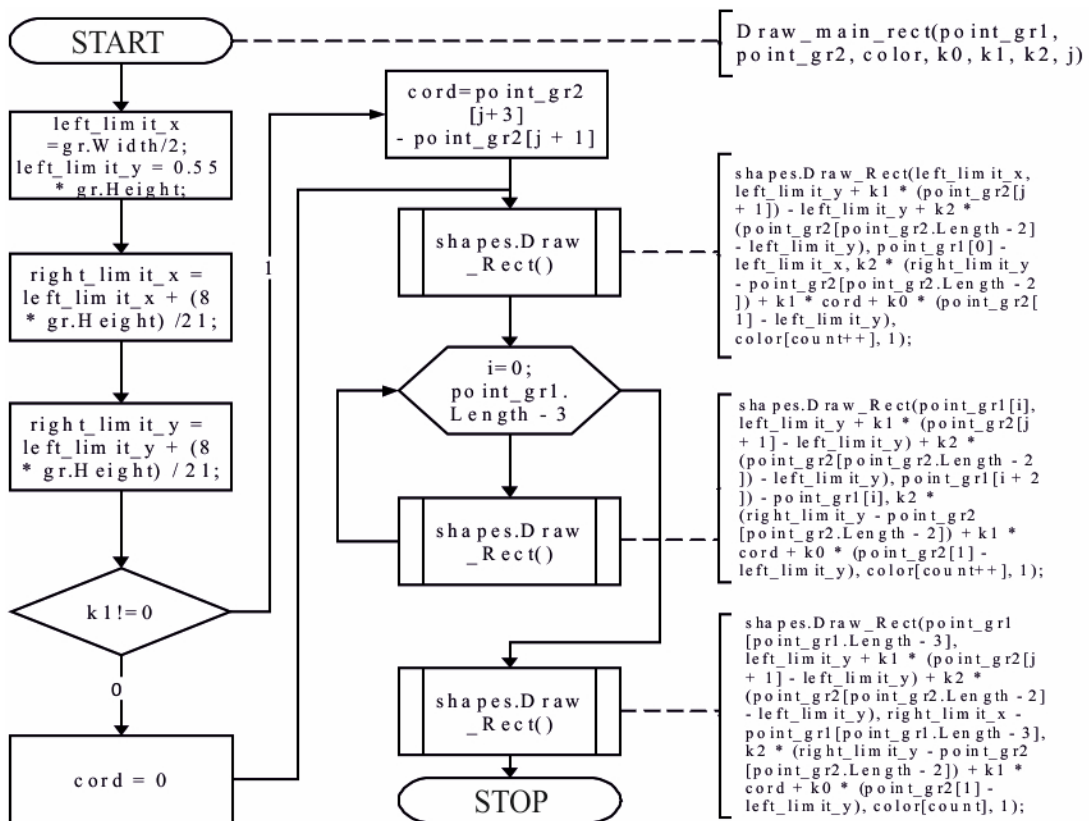


Figure 1.13 – Algorithm of line_point_area procedure implementation

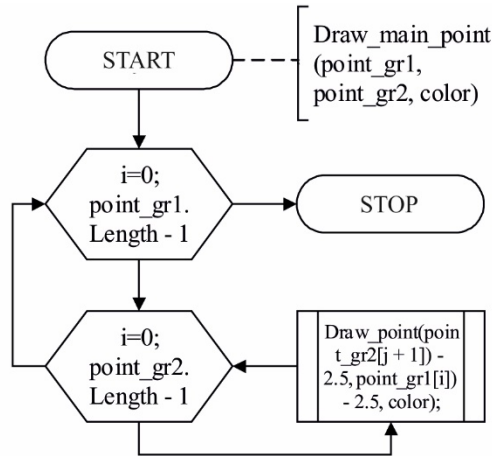


Figure 1.14 – Algorithm of Draw_main_point procedure implementation

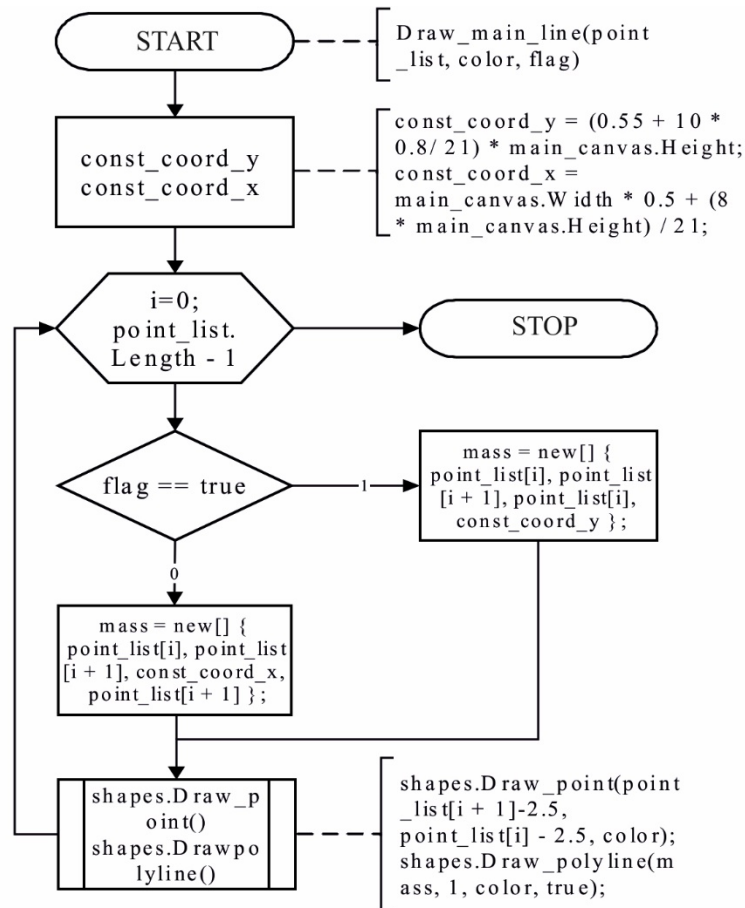


Figure 1.15 – Algorithm of Draw_main_line procedure implementation

Also, during the construction of graphical elements in the System_level_Click algorithm (figure 1.3) there are used additional components, for example, the Main_figures class includes procedures: Draw_polyline (figure 1.19); Draw_point; Draw_Rect (figure 1.20), which respectively form linear components with various input characteristics of points on the graphical object Canvas. After all the data has been received, System_level_Click creates the current state area (according to the MB functionality — see the SEC structure), which allows to visually assess the anomalous position in the system to make the necessary decision.

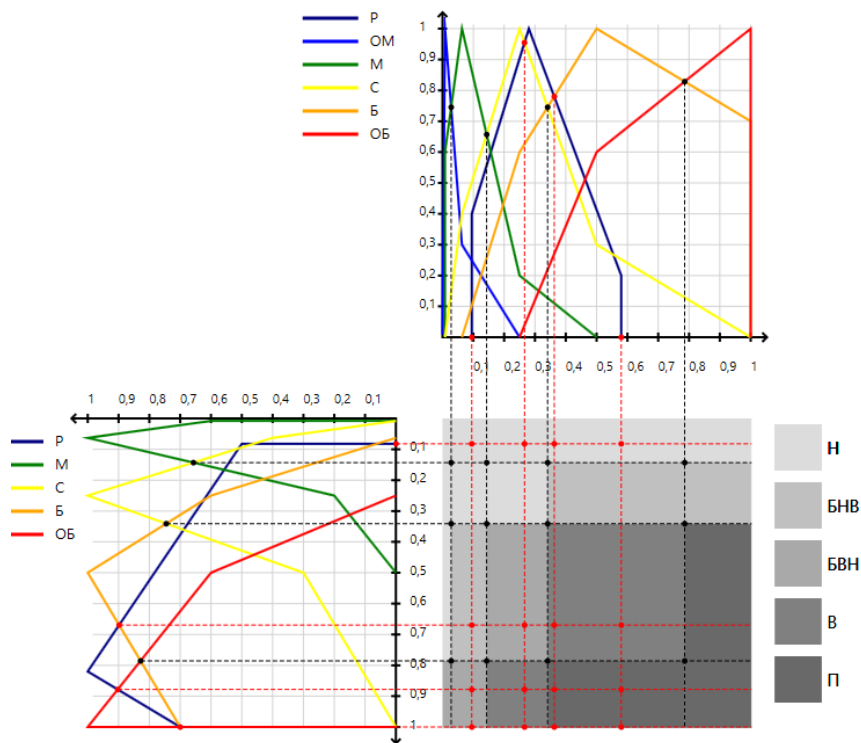


Figure 1.16 – An example of support areas creation in accordance with Draw_main_rect

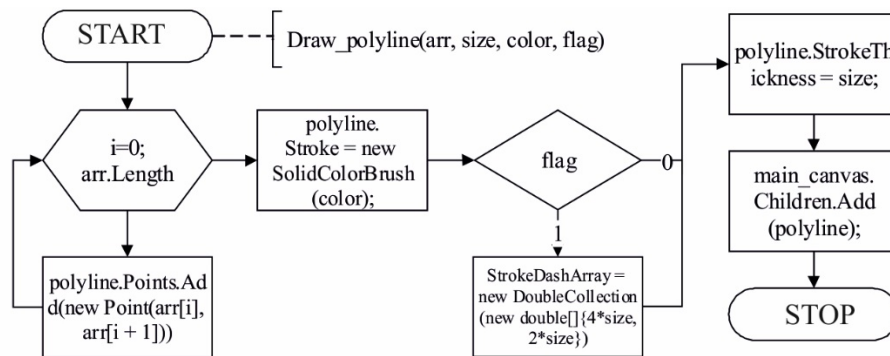


Figure 1.17 – Algorithm of Draw_polyline procedure implementation

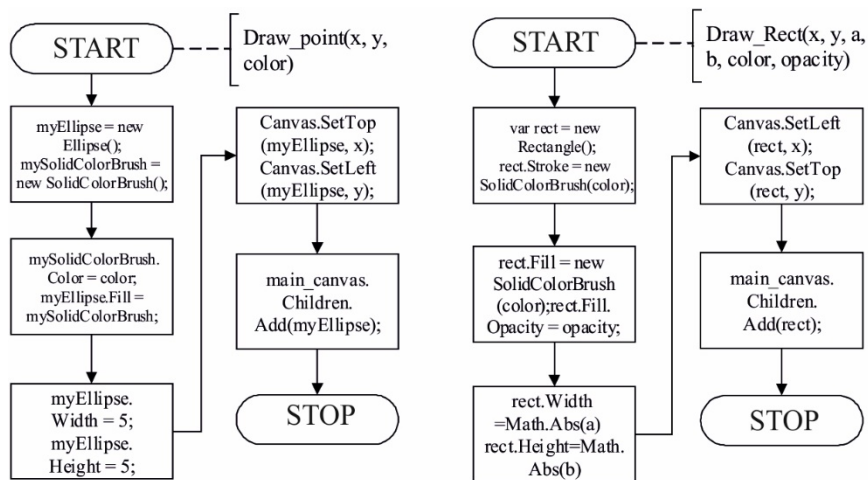


Figure 1.18 – Algorithm of draw_point and Draw_Rect procedures implementation

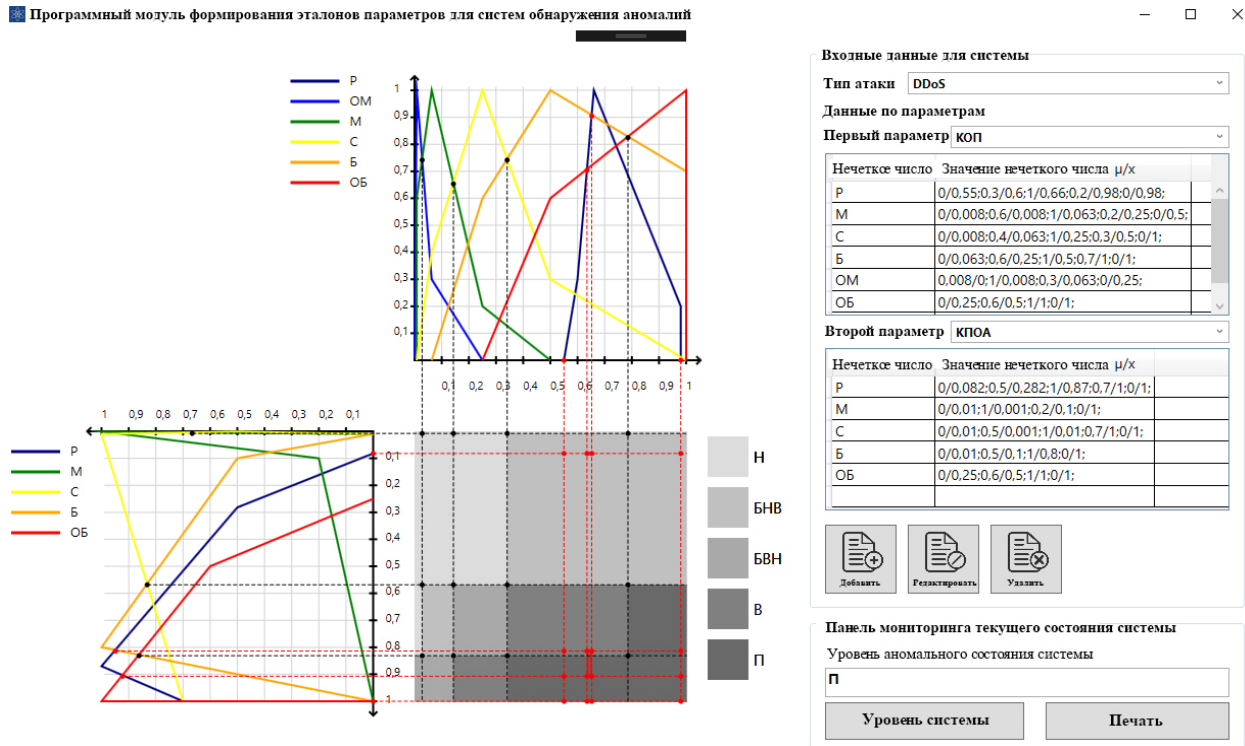


Figure 1.19 – An example of work on the formation of parameter standards (determination of the first current state of the system)

In fact, the procedure generates the current block, for example, in the form of a red rectangular area, which interprets the anomaly in a 2-dimensional parametric NSC-NPSA environment generated by the corresponding attacking SP-environment at the moment of time. An example of work on the formation of parameter standards with various experimental data is shown on figures 1.20 and 1.21.

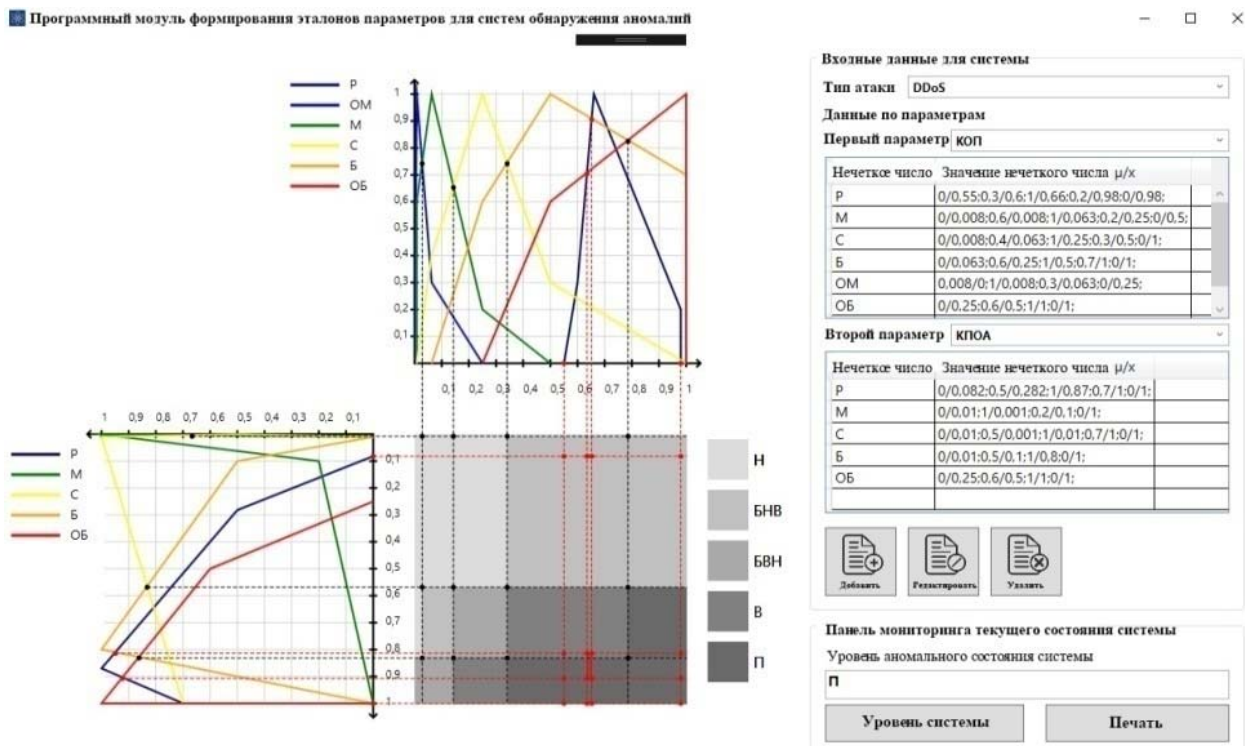
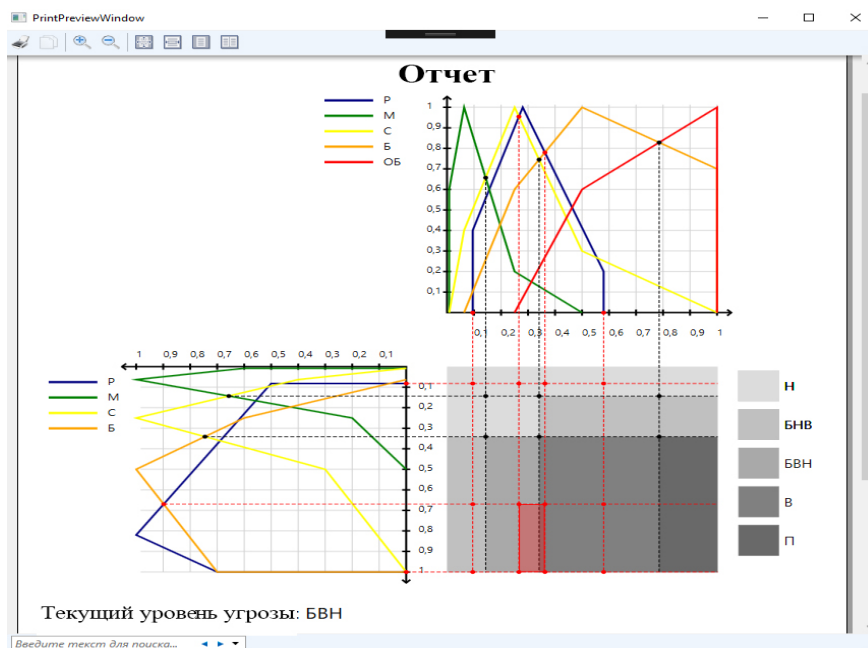


Figure 1.20 – Example of work on the formation of parameter standards (determination of the second current state of the system)

At the final stage (figure 1.2, vertex 19) there are used the *printpreviewwindow* and *Print* classes which are responsible for the creation of the report file and its preview. That is, the user, if necessary, at the time can initialize the print mode, which will create a preview file in the buffer memory (figure 1.22), which can be printed (figure 1.23) or saved in pdf format (figure 1.24).

Experimental research and practical use of the proposed basis of the developed algorithmic support. Printing is initiated as a "system level", as a result of which the canvas graphical object is converted into the XAML file, the rest of the text, the report title and the rule (according to the functionality, see the structure of the SPC) generated using the standard FixedDocument class, which allows convenient to place the text in the report.

The report file is transferred to the buffer memory, after which it can be viewed, changed print settings, and the like.



1.21 The preview mode of the report

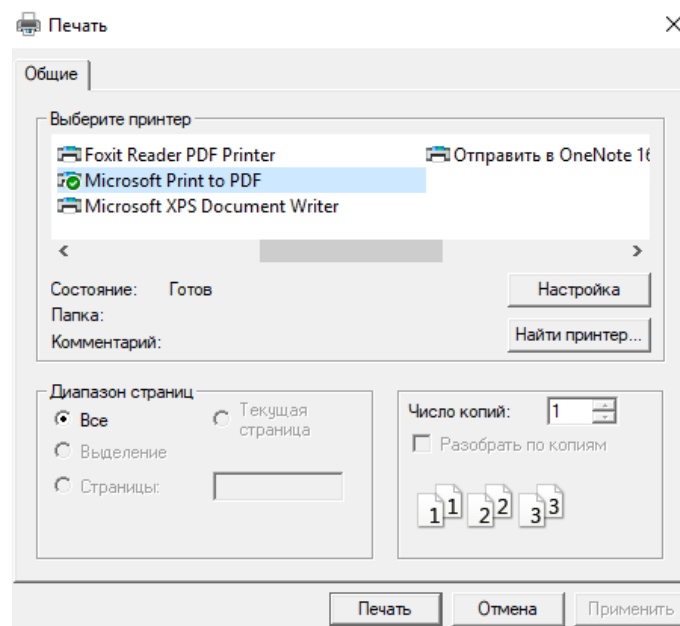


Figure 1.22 – Document Print Selection Window

The report also displays the equal anomalous state of the system (including at the moment of time).

Also, in the developed software there is used the Child Window module, which is responsible for the creation and editing of T_{ijs}^e i P_{ij}^{rf} . It is represented by a separate program window with a basic interface for performing the tasks created above. The data in the EDF can be modified and revised using the functionality of this module.

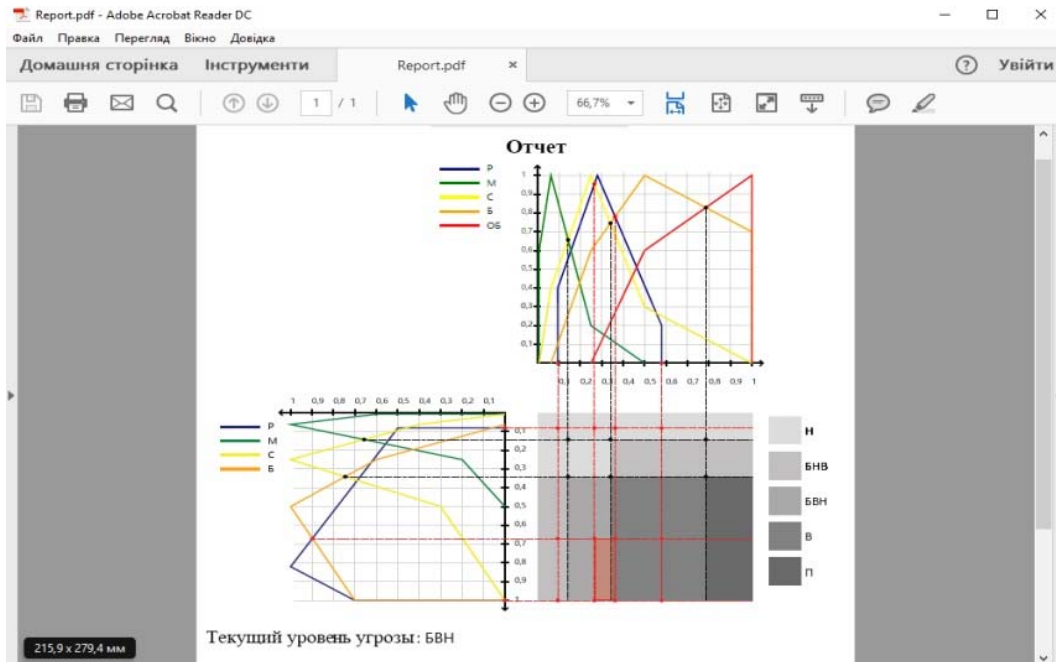


Figure 1.23 – Example of printing a report in pdf format

A similar procedure is implemented when the following buttons are activated:

- add;
- edit;
- delete.

Add a record (figure 1.24).

With the help of the "Add Graph" window functionality, you can add data such as:

- the name of the graphical image of the standard and current LF (selected using the ComboBox and the list of names)
- the amount and initialization of coordinate values (using “+” adds/extracts a new pair of coordinates is implemented).

Figure 1.24 – Add Reference Values Record Window

The editing process is similar to the adding process, since the basis of the work of these procedures is similar. Therefore, after using the “Edit” button in the main window, a corresponding window appears where, using the “Edit Graph Data” functionality, you can modify it.

When you select the required line record to extract there is used the "delete" button, and the result is the extraction of data and its automatic update.

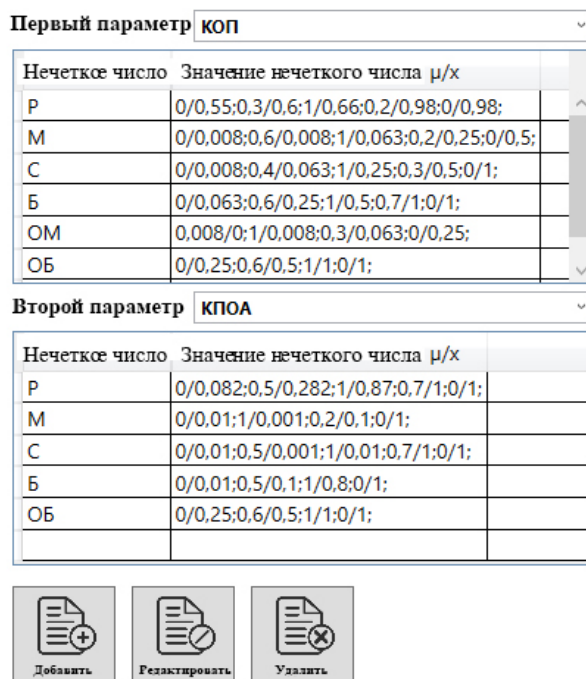
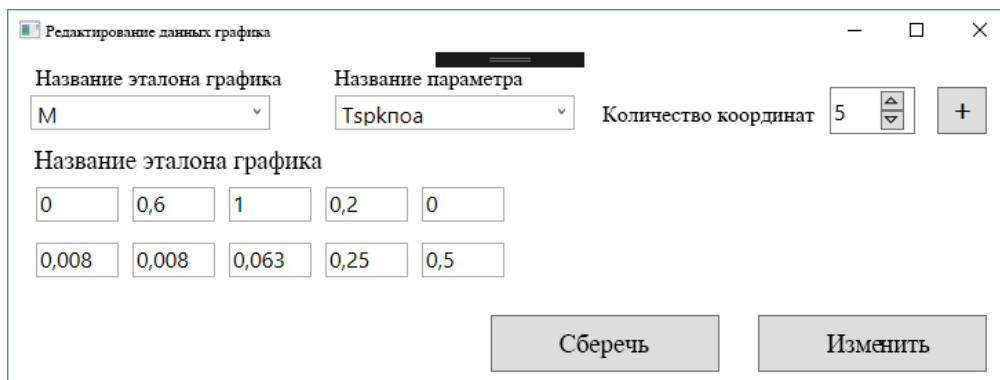


Figure 1.25 – Marking the line of the necessary record and its removal

Conclusions and statement of research objectives. Experimental research and practical use of the proposed software confirmed the formed theoretical positions, which became the basis of the developed algorithmic software. Therefore, the proposed software due to the basic algorithm and a set of developed procedures (construction of a coordinate grid; initialization of values based on a set of databases and modules; graphical formation of parameters; searching for common points according to basic rules and graphical interpretation of the result) [33, 34], automates the process of generating parameter standards for modern attack detection systems and reflects the results of the detection of an anomalous state in a given period of time. Also, the corresponding software can be used autonomously or, as an extender of the functionality of modern IDS.

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КИБЕРШАБУЫЛДАРДЫ ТАБУ ЖҮЙЕЛЕРІ ҮШІН ПАРАМЕТРЛЕР ЭТАЛОНДАРЫН ҚАЛЫПТАСТЫРУДЫҢ АЛГОРИТМДІК ЖӘНЕ БАҒДАРЛАМАЛЫҚ ҚАМТАМАСЫЗ ЕТУ

Аннотация. Жұмыста шабуылды анықтау жүйелері үшін алдыңғы зерттеулерге шолу және талдау жүргізілді және кибер шабуылдарды табу жүйелері үшін параметрлер эталондарын қалыптастырудың алгоритмдік және бағдарламалық қамтамасыз ету үшін жүйеде күдікті белсенділікті мониторингілеу және тараптың шабуылдау әрекеттерін анықтау үшін пайдаланылады. Кибершабуылдарды анықталмаған немесе анық емес қасиеттері бар кибер қауіпсіздердің жаңа немесе модификацияланған түрлері пайда болған кезде тиімді болып қала алатын арнайы техникалық шешімдерді жасауға бастамашылық етеді. Мұндай жүйелердің көпшілігі кибер шабуылдардың алдын алу бойынша тиісті шаралар қабылдау үшін күдікті белсенділікті немесе желіге араласуды анықтауға бағытталған. Шабуылды анықтаудың өзекті жүйелері болып табылады, олар аномалды жағдайларды сәйкестендіруге бағытталған, бірақ олар бірқатар кемшіліктерге ие. Бұл тұрғыда тиісті пән саласындағы мамандардың білімі мен тәжірибесін пайдалануға негізделген сараптамалық тәсілдер неғұрлым тиімді болып табылады. Сараптамалық тәсілдерге негізделген техникалық шешімдерді құру және арнайы құралдарды құру (мысалы, нашар қалыптасқан ортадағы анық Анықталған параметрлердің ағымдағы күйін бақылау арқылы бұрын белгісіз кибершабуылдарды анықтауға мүмкіндік беретін шабуылдарды анықтау жүйелері үшін бағдарламалық қамтамасыз ету) зерттеулердің перспективалық бағыты болып табылады. Кибершабуылдарды анықтаудың белгілі жүйесі негізінде, ол ауытқуыды (кибершабуылдардан туған) және тиісті әдістер мен модельдердің көптігін анықтау әдістемесіне негізделген ұсынылған бағдарламалық қамтамасыз ету, ол базалық алгоритм және бірқатар әзірленген рәсімдер (координат торының конструктивті; деректер базасы мен модульдер жиынтығы негізінде шамаларды инициализациялау; графикалық қалыптастыру; негізгі ережелерге сәйкес жалпы нүктелерді іздестіру және нәтижені графикалық интерпретациялау) шабуылдарды анықтаудың қазіргі заманғы жүйелері үшін өлшемдердің эталондарын қалыптастыру процесін автоматтандыруға және берілген уақыт аралығында аномалды күйдің детекторлау нәтижелерін көрсетуге мүмкіндік береді.

Түйін сөздер: кибершабуылдар; аномалиялар; басып кіруді анықтау жүйелері; шабуылдарды анықтау жүйелері; кибершабуылдарды анықтау жүйелері; ақпараттық жүйелерде аномалияларды табу.

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АЛГОРИТМИЧЕСКОЕ И ПРОГРАММНОЕ ОБЕСПЕЧЕНИЕ ФОРМИРОВАНИЯ ЭТАЛОНОВ ПАРАМЕТРОВ ДЛЯ СИСТЕМ ОБНАРУЖЕНИЯ КИБЕРАТАК

Аннотация. В работе проведен обзор и анализ предшествующих исследований для систем обнаружения вторжений, алгоритмическое и программное обеспечение формирования эталонов параметров для систем обнаружения кибератак

Системы обнаружения вторжений становятся неотъемлемой частью защиты любой сетевой безопасности, они используются для мониторинга подозрительной активности в системе и обнаружения атакующих действий неавторизованной стороны. Активизация кибератак инициирует создание специальных технических решений, способных оставаться эффективными при появлении новых или модифицированных видов киберугроз с неустановленными или нечетко определенными свойствами. Большинство таких систем направлена на выявление подозрительной активности или вмешательства в сеть для принятия адекватных мер по предотвращению кибератак. Актуальными системами обнаружения вторжений являются те, которые

ориентированы на идентификацию аномальных состояний но они имеют ряд недостатков. Более эффективны в этом отношении являются экспертные подходы, основанные на использовании знаний и опыта специалистов соответствующей предметной области. Построение технических решений и создание специальных средств (например, программного обеспечения для систем обнаружения атак, позволяющих детектировать ранее неизвестные кибератаки путем контроля текущего состояния нечетко определенных параметров в слабоформализованной среде) основанных на экспертных подходах, является перспективным направлением исследований. На основе известной системы обнаружения кибератак, которая базируется на методологии выявления аномалий (порожденных кибератаками) и множества соответствующих методов и моделей предложенное программное обеспечение, которое, за счет базового алгоритма и ряда разработанных процедур (координатной сетки; инициализации величин на основе набора баз данных и модулей; графического формирования параметров; поиска общих точек согласно базовых правил и графической интерпретации результата) позволяет провести процесс формирования эталонов параметров для современных систем обнаружения атак и отражать результаты детектирования аномального состояния в заданный промежуток времени.

Ключевые слова атаки; кибератаки; аномалии; системы обнаружения вторжений; системы обнаружения атак; системы обнаружения кибератак; обнаружение аномалий в информационных системах.

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REFERENCES

[1] A. Korchenko, V. Shcherbina, N. Vishnevskaya, "Methodology between systems for detecting anomalies generated by cyberattacks", *zhist nformats*, Vol. 18, no. 1, Pp. 30-38, 2016.

[2] A. Korchenko, W. Akhmetov, V. Shcherbina, P. Vikulov, "Structural-analytical model methodology systems villeneuve", the Status and improving the security of information technology systems (SITS'2017): 9-and SEUK. sciences'-prakt. Conf., Koblevo, Mykolaiv region, 2017, p. 42-44.

[3] A. Korchenko, "Tuple model of formation of a set of basic components for the identification of giberatak", *Legal, regulatory and metrological support of the information security system in Ukraine*, V. 2 (28), Page. 29-36, 2014.

[4] A. Korchenko, "the Method of formation of linguistic standards for villeneuve", *information*, vol. 16, no. 1, Pp. 5-12, 2014.

[5] V. Akhmetov, A. Korchenko, S. Akhmetova, N. Zhumangaliyeva, "Improved method for the formation of linguistic standards for of intrusion detection systems", *Journal al of the oreticaland applied information technology*, vol. 87, No. 87. 2, pp. 221-232, 2016.

[6] I. Traykovski, A. Korchenko, P. Vikulov, I. Rafg, "Model standards of linguistic variables for detecting email spoofing-attacks", *information Security*. Vol. 24, No. 2, Pp. 99-109, 2018.

[7] A. Korchenko, N. Gumargaliyeva, P. Vikulov, " Construction of linguistic standards for viewlegislation attacks," *Topical problems in the provision of cyber security and information protection: III Intern. sciences'-.prakt. Conf.*, Kiev, 2017, Pp. 93-97.

[8] A. Korchenko, " Formation of linguistic standards on snow continuous for villeneuve", the Status and improving the security of information technology systems (SITS'2015): 7-and SEUK. sciences'-.prakt. Conf., the village of Koblevo Nikolaev obl., 2015, P. 43-46.

[9] M. Karpinski, A. Korchenko, P. Vikulov, R. Kochan, "The Etalon Models of LinguisticVariables forsniffing-AttackDetection", in *Intelligent Data Acquisition and Advanced computing systems: Technology and Applications (IDAACS)*, 2017 IEEE 9th International Conferenceon, 2017, pp. 258-264.

[10] A. Korchenko, "the Method of possibilitiesyou on lingvisticheskaja for viewingaccelerating" *information Security*, vol. 20, no. 1, Pp. 21-28, 2014.

[11] N. Karpinski, A. Korchenko, S. Kazmirchuk, "Possibilitypomero in continuemodal for viewingaccelerating", the Status and improving the security of information technology systems (SITS'2016): 8-and SEUK. sciences'-.prakt. Conf., the village of Koblevo Nikolaev obl., 2016, P. 39-42.

[12] A. Korchenko, "Method -uravnovesheinaya numbers for obnaruzhiteli", *information*, vol. 16, No. 4, Pp. 292-304, 2014.

[13] N. Karpinski, A. Korchenko, P. Vikulov, N. Gumargaliyeva, "Nominalistically values for syavleniyami", *Sovremennikami and kommunikations technologic transport, industry and education (TEMPUS: CITISET): X Intern. science.-prakt. Conf.*, Dnipro, 2016, Pp. 51-52.

[14] A. Korchenko, "Method of identification of identification terms for detection systems of rejection", *information Security*, Vol. 20, №3, Pp. 217-223, 2014.

- [15] A. Korchenko, "the Method of definitions of identifying terms for viewingaccelerating" Relevant issues of ensuring of cyber security and protection of information: scientific.-prakt. Conf., Kyiv, 2015, Pp. 64-67.
- [16] N. Karpinsky, A. Korchenko, S. Akhmetov, "Method of formation of base detection rules for detection systems", information Protection, Vol. 17, №4, Pp. 312-324, 2015.
- [17] N. Karpinski, A. Korchenko, Akhmetov, N. Gumargaliyeva, "the Method of construction of conditional detection expressions for baruunkharaa" Relevant issues of ensuring of cyber security and information protection: II Intern. sciences'.-prakt. Conf., Kyiv, 2016, Pp. 65-69.
- [18] A. Korchenko, Z. Alimseitova, N. Zhumangaliyeva, "A system for identifying anomaly state informational systems", in Inżynier XXI Wieku: VII Międzynarodowa Konferencja student woraz doktorantow, 08.12.2017: monografia, 1st ed., Vol.2., Bielsko – Biała (Poland): AkademiaTechniczno- Humanistyczna w Bielsku-Białej, 2017, pp. 39-48.
- [19] M. AlHadidi, Y. Ibrahim, V. Lakhno, A. Korchenko, A. Tereshchuk, A. Pereverzev, "Intelligent systems form on itorin gandre cognition of cyberattacks on information and communication systems of transport", International Reviewon Computers and software (IRECOS), vol. 11, No. 2, pp. 1167-1177, 2016.
- [20] A. Korchenko, "System formation of fuzzy standards of network parameter ", Vol. 15, No. 3, Pp. 240-246, 2013.
- [21] A. Korchenko, "System farmerbeneficiaries to identify suspicious activity ", Integrated intelligent robotic systems (RD-2014) : VII Intern. sciences'.-prakt. Conf., Kiev, 2014, P. 354-355.
- [22] "Basic features of classification systems obnaruzhiteli", Sovremennikami-telekommunikations technologie]. science.-tech. Conf., Kazakhstan, GUT, 2015, Pp. 24-26.
- [23] S. Kazmirchuk, A. Korchenko, T. Parashchuk, "analysis of intrusion detection systems", information protection, vol. 20, №4, Pp. 259-276, 2018.
- [24] I. Traykovski, A. Korchenko, T. Parashchuk, Is. Pedchenko, "Analysis of open intrusion detection systems", information Security. Vol. 24, No. 3, Pp. 201-216, 2018.
- [25] I. Traykovski, A. Korchenko, "System view ingaccelerating" information Security, vol. 23, no. 3, Pp. 176-180, 2017.
- [26] A. Korchenko, S. Kazmirchuk, V. Shcherbina, P. Vikulov, " Expander functionality for obnaruzhiteli" Relevant issues of ensuring of cyber security and information protection: IV international. sciences'.-prakt. Conf., Kiev, 2018, P. 78-80.
- [27] A. Korchenko, A. Zaritsky, T. Parashchuk, V. Bychkov, "Software for the formation of standards of parameters for cyberattack detection systems", information Protection. Vol. 20, No. 3, Pp. 133-148, 2018.
- [28] Akhmetov BS, Gnatyuk S., Zhmurko T., Kinzeryavy V., YubuzovaKh.(2018) Experimental research of the simulation model for deterministic secure communication protocol in quantum channel with noise // Reports oft henational academy of sciences of the republic of kazakhstan, ISSN 2224-5227, Volume 5, Number 321 (2018), 5 – 11. DOI:<https://doi.org/10.32014/2018.2518-1483.1> (InEng)
- [29] Software module for formation of parameter standards for anomaly detection systems. Computer program / T. Parashchuk, A. Korchenko – K. – Certificate of registration of copyright in the work №74016 from 02.10.2017.
- [30] A. O. Korchenko, There Is.V. Ivanchenko, V. V. Pogorelov " "evaluation of the effectiveness of the expert system of intrusion detection based on fuzzy logic", Scientific notes of TNU named after V. I. Vernadsky. Series: technical Sciences, vol. 30 (69), №1, Pp. 66-72, 2019.
- [31] Bugubayeva RO., Tapenova GS., (2019) Regulatory aspects of public administration system of higher education in the republic of kazakhstan//Bulletin of national academy of sciences of the Republic of Kazakhstan. ISSN 2224-5294 Volume 1, Number 323 (2019), PP.151-160. <https://doi.org/10.32014/2019.2224-5294.24> ISSN 2224-5294 (Online),
- [32] Seitmuratov A., Zharmenova B., Bekmuratova A.K., Tulegenova E., G. Ussenova.(2018) Numerical analysis of the solution of some oscillation problems by the decomposition method// Bulletin of national academy of sciences of the Republic of Kazakhstan. Volume 1, Number 323 (2019), P.28-37. <https://doi.org/10.32014/2019.2518-1726.4> ISSN 1991-346X (Online), ISSN 1991-3494 (Print).
- [33] Suiekpayev Y., Sapargaliyev Y., Bekenova G., Kravchenko M., Dolgoplova A., Seltmann R. (2018) Organization of computer laboratory work calculation and visualization of small forced oscillations// Bulletin of national academy of sciences of the Republic of Kazakhstan. Volume 3, Number 430 (2018), P.145-154. <https://doi.org/10.32014/2019.2518-170X.1> ISSN 2224-5278 (Online)
- [34] Sarsenov A.M., Bishimbayev V.K., Kapsalyamov B.A., Lepessov K.K., Gapparova K.M. (2018) /Interphase distribution of boric acid between aqueous solutions and modified cellulose// Bulletin of national academy of sciences of the Republic of Kazakhstan. Volume 6, Number 376 (2018), P.34-38. <https://doi.org/10.32014/2018.2518-1467.24> ISSN 1991-3494(Online)

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DEVELOPMENT OF TURKESTAN FROM THE GREAT SILK ROAD

Abstract. This article analyzes the value of the of Arystanbab and Hodja Akhmet Yassawi knowledge, the world-renowned works of today, including the development of civilizations such as Turkestan, Otyrar along the Great Silk Road. They are narrated from the standpoint of historical truth and artistic judgment, from the archaic legends and stories to the story of Yassawi. At civilizations current, he proposed to pay special attention to the Great Silk Road in the article of the First President of the Nation N.A. Nazarbayev “Seven facets of Great Steppe”. Also, by the Decree of him, the establishment of Turkestan as the regional center and the resumption of the old city on the basis of medieval architectural design today can be seen as a wonder of Turkic civilization. Turkestan is also a religious center that hosts all Muslims. In the article Akhmet Yassawi’s “Divan-i-Hikmet” is literary, historical, philosophical and educational.

Keywords: Turkestan Civilization, Great Silk Road, Great Steppe, Heritage, Yassawi, Myths, Arystan-Bab, Islamic Culture.

Introduction. An important part of the major historical and cultural zones depicting urban life on Great Silk Road is located in the south of Kazakhstan. Yangikent, Syganak, Suktent, Sauran, Otyrar, Sairam, Shavgar, Yasin are the centers of culture and civilization, literary and historical significance especially in the valley and the Syr Darya River. They are the ancient cities not only of Kazakhstan, but also in Central Asia. Particularly, Turkestan became an important trade center – “Kaleidoscope of civilization”. Shavgar, also called Turkestan, is the capital city between the Otyrar and Sauran cities in the 7-11th centuries, and the city of Turkestan is the capital during the 12th century. The frequent stopping of the caravans along Great Silk Road to the city of Yassy, has intensified and rapid development of the city not only in the field of prosperity, but also in the architecture and culture of it. The city became famous all over the world.

Materials and methods. The Great Silk Road was also important for business development. Its significance exceeds the spread of religious ideas. Through Great Silk Road various missionaries spread their religion to other countries. At the same time Turkestan became a religious center along Great Silk Road. Dossai Kenzhetay and Zikriya Zhandarbek in book “Hodja Ahmet Yassawi” stated that “Islam, which has become a spiritual foundation of the tradition, has given etiquette, science, enlightenment, and most importantly ideology to medieval peoples [1, 44]. The religion of Islam says that, the essence of life on the earth comes by the only Creator. The Koran is a sacred text. The words “prophet”, “Sharia,” and “Islam” are respected in the field”, explains the connection between the prosperity of Islamic culture and the modern science. Also, public lives in the Muslim world are based on Qur'an, and every Muslim is obliged to perform the daily prayers and fast for thirty days. They also have a ban on eating pork and drinking alcohols, painting live animals, monsters, aesthetic pictures and oriental patterns of mosques. In addition, the intellectuals, such as poets, zhyraus, scholars and artists, actively participated in spreading Islam. Among them the title of Kozha Ahmed Yassawi was named as the main representative of religion. Ahmet Yassawi is the family of Sheikh Ibrahim, the son of Haziret Ali, and the daughter of Sheikh

Ibrahim, Aisha (nicknamed as “Karashash” for their beauty). Karashash and Akhmet Yassawi, a religious manifestation, sends a message from the successor of the Prophet Muhammad (peace be upon him) to Arystanbab. Arystanbab died when he was a teacher for 16 years and Ahmet Yassawi was 23 years old. The death of Arystanbab in the wisdom of Hodja Ahmed Yassawi is as follows:

*“Babam Aitty: Onyng balam, qasynda turyng,
Janazamdy oqyp kom, Jan tasilim Qylaiyn.
Medet bolsa Mustafa, Karıř biigine shıgayın.
Arslan babamnyn sozin - tabarik.
Jilap ayttım: dopqa, jas kodekpin bilmeymin.
Korip otırmız qazarmin, koterip salalaalmaspin.
Xaq Mustafa sündetin, balapanmin, bilmeymin.
Babam Aytı: Ei balam, perishteler jıyladı.
Jebreyil imam bolyp, ozgeler ogan uıyidy.
Makail men Israfil koterip korge koiady” [2, 424].*

Results and discussians. According to the legend, heard in Otyrar region, Arystanbab was exterminated to the white camel and led be followed. The white camel stopped around there, where Arystanbab’s tomb is now. In one of the poems as “Alpamys Batyr” in the Kazakh heroic epics, Baiboru was not able to have the child until he reached the age of 60 and asked for help from God and took two visions in his dream on the third day of the night. It is believed that, Alpamys and Karlygash were born. In the poems it is told as the following:

.. Oldik-taldyq degende,
Äziretke keldi.
Äziretting tobessin
Kundik jerden koredi.
Jaqındasıp kelgensin,
Alıp shıqqan dāwletin
Eki jerge boledi.
Altın-kumis, gawharyn –
Ony da bolip uiedi.
Qojalaryn shaqyryp,
Teng jarymyn beredi.
Kozining jasy kol bolyp,
Otyrğan orny sel bolyp,
Jeti kun udai tunedi.
Bay-Baibishe ekewi
Eshbir nyshan bılmedi.
Qojalardan bata alyp,
Japan kezgen atanıp,
Joğary qarap orledi ...
Otrarda Arıstan bap,
Sayramda bar sansyz bap, -
Bärine bir tünedi... [3, 7]

Known archeologist, doctor of historical sciences Mukhtar Kozha said: “Arystanbab and his follower Hodja Ahmet Yassawi were the leader of the Turkic leaders among shayirs (poets). Arystanbab is one of the people who represented Islam in the Turkic world. Through the new religion, the Turks gained the Arabic language and the alphabet, contributing to the development of advanced Muslim culture at that time” [4, 40].

The book of Ahmed Yassawi and the Turkic People’s Islam, by French researcher Irene Melikov, states: “KhadjaAkhmet’s father, Ibrahim Sairam, was famous sheikhs. Ahmet lost his parents at early his sevens. Then his sister took her to the city of Yassy. There he meets the teacher Arystanbab firstly”. According to Abubakir Divaev, Arystanbab was Hodja Akhmed’s teacher of chemistry. English scientist J.Trimingham, by studying the knowledge of Yassawi’s Sufism, concludes: “Ahmet Yassawi is the

ancestor of all Turkic Sufis [6]. Yassawi's tradition was purely Turkic. He was educated in the hands of Turkic Arystanbab, and then went to Bukhara" [7, 48]. Ahmet Yassawi, who went to Bukhara at the age of 27, was educated there from well-known scholar Hamada and then returned to Yassy and continued his work of Arystanbab.

Today, it is common to say, "Spend night at Arystan-Bab mosque, pray in Akhmet Yassawi's mosque". But one of the things that they say is not known, but one does not know. We hear various legends about Ahmet Yasawi and Arystan-Bab. Remember them, "Allah's prophet Muhammad (Peace Be Upon Him) died at the age of 63. The 300-year-old Arystanbab responds to the appeal of the people in the world, saying, "Who will take my deposit and do my job?" He knew 30 different religions, but he was the only person who obeyed Islam. Mohammed (pbuh), who received the consent of Arystan-Bab, handed over to Arystan-Bab, who entrusted the favor of Allah. After 500 years, an 11-year-old boy called Arystan-Bab, who was in the field, said, "Father, give me my trust. "That boy was Akhmed Yassawi" [8]. The main idea of this legend is the continuation of the work of Ahmed Muhammad (peace be upon him) and Arystanbab is the one that connects them. Well, in the next legend it is explained as next:

Arystan-Bab was a follower of Muhammed Prophet (peace be upon him). One day the Mohammed was eating his own persimmon. One of persimmons fell over the container and the Prophet heard the inner voice saying, "This is a Muslim's who will live 400 years after you". Then the Prophet asked his followers to give it to this Muslim. Nobody gets silent. When the Prophet restored the question, Arystan-Bab said, "If you ask God for 400 years, I will hand it over to the owner" [8]. A seven-year-old boy who met Arystan-Bab four hundred years later said, "An elder, give me my savings". That boy was Hodja Ahmed Yassawi. Arystan-Bab, who became his spiritual mentor, gives it as a symbol of Islam. As Mohammad (pbuh) said, Akhmad Yassawi immediately put it into his mouth. Then Arystan-Bab said, "Son, you do not say "taste it" I saved it for you for 400 years". Akhmet Yassawi said, "Don't you give me only bones of dried persimmon?" [9].

Then Arystan-Bab took the talented child to his studentship. Yassawi wrote it as the given:

Jeti jasta Arystanbabqa qyldym sälem,
Osy halde myng zikirin qyldym tämem...
Qurma berip, basymdy sipap, nazar qyldı
Mektep baryp, qainap tolyp, tasydym, mine, [10, 12]

Some legends say that this sahaba was Salman Farsi, lived long after, and nick name das Arystanbab. All the books about Arystan-Bab are given here. However, people, who are aware of Islamic history, are well aware of the behavior of Salman Farsi, the famous sahaba. His search for true religion and reaching the Arabian Peninsula, finding the Prophet (peace be upon him) and then serving in the Islamic way of life, along with the Muslim army during the lifetime of Umar ibn al-Khattab, came to the capital of Persia Medina, history. At the beginning of the grave of Salman Farsi today in the soil of modern Iraq there is a mausoleum and a mosque named after him. Historian Mukhtar Khodzha connects the reason for the confusion of these people with their contribution to Sufism [4, 39]. Otherwise, the period of Salman Farsi and Arystan-Bab lives have difference of four centuries. If this trust remains, then it would be clear in the hadith of the Prophet.

There are three cemeteries in Central Asia called Arystan-Bab Mausoleum. One of them is in the end of the Syr Darya, the second near Otyrar, the third is in the Syrdarya region, in the Bazar-Korgon district of Kyrgyzstan. In all three of them, it is said as "Arystanbab is buried here".

The emergence of several Arystanbabs is a normally. People always put the name of a person who respects them. It is likely that the name Arystan-Bab, which spread Islam in Central Asia and has been a spiritual teacher of Yassawi, is often referred to at that time. V.A.Gordlevsky in his book wrote: "The spiritual land" of Akhmet Yassawi and Arystanbab's grave are in Otyrar" [11,365]. That is, Arystanbab, who was the source of Sufism, is in the Turkestan region. In Kyrgyzstan, Arystanbab was known as a warrior fighting against the Kalmyk people living on the local people's backpack.

In 1898 the name of Arystanbab was first published in scientific literature, named in the article titled "Rarities of Otyrar city" by I.P.Poslavski. In 1903, it is also was mentioned in the research by A. Cherkasov, who studied Otyrar. His records show that the mausoleum of Arystanbab consisted of two rooms, where his pupils were located, as well as in front of the tram. This building belongs to construction of the 14th century. It has construction of the corridor, wooden carvings today.

Arystanbab is buried here, in the manuscripts of the museum, the following chapters are clarified:

Qabiri Barab elinde,
Qalanyn qubyla jagında.
Milleti Alla jolynda,
Babtar babı Arıstanbab [12, 327].

The ancient Farab (Otyrar) city is called Barab here. The Arystanbab Mausoleum is located in the west, 2.5 km far from Otyrar.

There is another legend connected with the burial of Arystanbab among local people. According to the legend, all Muslims living along Syrdarya River participated in funeral of Arystan-Bab. And there was an argument among the crowd about the place his body, should they put it in his birthplace or other sacred places. Everyone was right in expressing their opinion, and when the dispute was over, the elders and judges from every country came to the conclusion as this:

It was necessary to make three coffin of equal weight and to assume that the people gathered on the funeral should not know in what coffin they were buried. When they were ready, people from everywhere made their choice. After morning praying they embarked the body on their camels and go for. The people living in the upper reaches of the Syr Darya brought their chosen coffin into the Bazar-Korgon district of the Kyrgyz Republic, and the second coffin was buried in the middle stream of the Syr Darya. The third group buried in the Syr Darya River down the present Kyzylorda region. It is true that at present there is a great deal of debate among the country due to the burial place of Arystan-Bab. However, it is clear that the body of Arystan-Bab is here. The answer lies in the stories of Ahmed Yassawi, and in conservation of the Arystan-Bab mausoleum in 2004 may be the remains of a four-tiered cemetery at a depth of 35 cm. The characteristic feature of the wall was the ceramic wall pattern [13].

18th century two domed buildings were built instead of the ancient shrine destroyed by the earthquake. It had two corridors to support. Arystan-Bab Mausoleum is made of bricks burned by the local population at the beginning of the 20th century. All of them were attracted by the people who went on a journey.

As mentioned above, the building on the Arystan-Bab tomb was first described in 1898 by I.T. Poslavski in the article. Since ancient times Otyrar has not been left out of the researchers' pen. One of the scholars called this place a mosque, one called it a shrine, another one was a mosque-shrine. This building is a complex including mosque, corridor, meşjid, documentary, minaret towers.

And we do not know what happened at the beginning. Archeologist Mukhtar Kozha said this: "It is difficult to say exactly what kind of construction was the most original building that has changed over the centuries and has undergone various repairs. The oldest part of this complex should be a cemetery. Now his floor is much higher than that of other rooms. The horizontally elevated walls adhere to a dome on the same height, in the architectural style. Dome range is wide and high. The door to the mosque is oriented to sunbath, namely the mosque. The first sign on the tomb is to be erected in the 12th century. This is the time when Otyrar's prosperity grew. The current cemetery and the dome room in front of it are similar to the mausoleums of the 14th century. In this connection, one of the most commonly used legends is popular. On the night when the walls of the mausoleum of Akhmet Yassawi were laid, the green flies were pulled down by the horns. When the walls of the building are rebuilt, and their dome's walls begin to diminish, this event is taken again, and all of it were destroyed. This makes Amir a lot of thinking. A visionary man reveals his vision, saying that the first teacher of Khodja Akhmet was a shrine over the Arystan-Bab graveyard. According to elders' legend, the mausoleum firstly should be constructed for Arystan-Bab, because he was the teacher of Yassawi. Amir Timur completed the construction in Turkestan. As a witness to the construction work carried out by Amir Temir, two wooden hinges on the part of the mosque can be mentioned. The pillars that have been cut off from the hollow are expanded by an eight-sided, middle-arm. Their head is decorated with neck and asphalt. According to the Moscow scientist V. Voronina, who has studied the works and wrote a special article, similar shaped stands are not in any other memorial in Kazakhstan or in Central Asia. Cuffed hands from an unknown chess player were made at the end of the 14th or early 15th centuries. According to K. Akishev, Y.Ageeva, the ornament on these surfaces corresponds to the traditional Kazakh theme. M.Sembin showed that the patterns of the dagger were duplicated in the ornamental ceramics of the central mosque in central Kazakhstan. At present they are in the archeological museum in Almaty. Inside the mosque there are copies of them. Arystan-Bab building is

undergoing major changes in the early 20th century. People living in Otyrar region have accumulated funds for the reconstruction of the ruined building. The main entrance to the former building was to Mecca, and the main facade of the building was to Turkestan and to Aziret Sultan. Towers on both sides of the tower are laid in the corner of the corridor-gate, which is the result of the intention of the Turkestan cemetery. There is a marble booth on the corridor and the Arabic face is 1327. This is the final time of construction work, 1909 year.

Research has shown that Arystanbab is not one of the Sahabah, nor even a sheikh, but one of the well-known scholars spreading Islam to the Turkic peoples and being a teacher of Ahmet Yassawi. And his shrine in Turkestan is a miniature reminder of the fact that in the Middle Ages, Islam was a vast expanse in the middle Ages and was once a center of science and education in this prosperous country. In the eyes of the soul who came to visit the tomb of Arystan-Bab, it is clear that the history of the 10th century rounds. The Arystanbab name is often referred to in the “Divan-I Hikmet” by Ahmet Yassawi. Arystan Bab’s teaching activity is evident in the poems. In the first wording, he mentioned the first meeting with his teacher, “at my seven years I gave my greetings to Arystan Bab”, while some aspects of education include “Arystanbabam narrated the religion of Islam” (the second hikmet), “a thousand words of kindness and goodwill” (the ninetieth hikmet) we will recognize.

“Arystan-Bab says: “Listen to Arystan-Bab’s words carefully,” are the nicely recited. His first part was similar to the teacher’s answer to the question of what the disciples should be. It was proclaimed to run away from all the evil and mischief that is to be made for world and career, and to turn the claimant to the right path. In the wisdom it is explicitly disclosed that “those who avoid mischief” and “those who practice faith ”would be praised and thankful.

Hodja Akhmed Yassawi proved to be an example of Turkic writing and figurative poetry and the ability to create artistic compositions. His literary works have brought a new impetus to the literary tradition of the ancient Turkic soil, bringing it to a new level in the history of the Turkic world. As a link between the folklore and the literature, he used the rumors of historical legends, prophets, and epitaphs written in the Oriental literature, written in the Quran. His followers and Sufism preachers showed the Turkic world to the whole world. Hodja Akhmed Yassawi has identified the channel of the Turkic people’s national movement in the new Islamic civilization. He has worked hard on social and public consciousness, combining a new religious ideology with godly shamanism and robustness.

In Yasawi’s “Divine Wisdom”, which originated from the rich literary tradition in Turkic soil, the artistic and structural features of our original poetry were first developed. During his spiritual search, the poet, who spoke with prominent Arab and Persian poetry, also mastered the vocabulary of these nations. Yasawi’s stories, which are based on the content of the mind, and who have abandoned their pride, have played an important role in insuring the Turkic poetry from exploitation.

Yassawi poetry was the basis of many processes in the literature of the Turkic peoples. The stories of Yassawi, which play a cognitive, educational and ideological role, are of great importance both for their own time and for the later era. There is a clear influence of Yasawi’s works from the artistic-structural concept of the poetry of the Kazakh poetry and poetry of the Turkic world, which has gained credibility and spiritual values. The text of the work “Divan-i Hikmet” has passed more than eight centuries in our era. The oldest manuscript known to science is considered to be the 17th century, which is the number of copies by his students who have been copied and changed many times after 500 years of writing. Such destiny is typical for all Yasawi manuscripts. Numerous manuscripts and print versions of the hikmets are also preserved in Kazakhstan, as in every part of the world. Due to the foregoing reasons, they have considerable differences in the number, content, and language features of each other.

The researcher A.Abdrasilkyzy, collects the texts of wisdom, found in the personal library of Atakhan Azlarakhoglu living in Sairam village, South Kazakhstan region. A former Turkish scientist Metin Akar, published them in 2004 in Ankara. The Uzbek researcher N. Hassan has published a collection of 73 manuscripts, previously unknown to Yassawi, by making textual analyzes of a number of manuscripts preserved at the Institute of Oriental Studies in Uzbek Scientific archives. It is necessary to co-work with Uzbek scientists, who have accumulated extensive experience in the study of medieval texts while studying the texts of Yasawi’s works. Also, in the hands of individuals living now in the Turkestan region, there are many versions of hikmets copied by authors who sang in the tradition of the wisdom founded by Yassawi [15].

The stories of Yassawi are written in Turkic language. The poet's root comes from the Arab tribe, the family of Prophet Mohammed, but there is no conflicts in the fact that the thirteen grandfathers of Yassawi, lived the Turkic middle-aged, grew up in the Turkic land, speaking Turkic language. It is well-known that emotionally-charged feelings are only transmitted in a language that is conscious of childhood. Therefore, it is necessary to admit that the wisdom in the Turkic language is a natural phenomenon and acknowledge the nature of the mystery. It is true that Yassawi, who felt himself as a Turkic mother, who was a Turkic people and who called the Turkestan region as his "native land", wrote in his native language.

In the "Book of wisdom", which is considered to be the highest of the Yassawi heritage, four geniuses of the basic "Shariah", "Tariqat", "Maghrefat", and "Hakikat" are praised. "Sharia" is the basis of Islamic laws and customs, which is a symbol of the Islamic way of life and a good example of teaching it. It is a great example of a manifestation of a difficult moral education, which makes it possible for Muslims to be taught by human beings.

"Tariqat" is the propagation of the purpose of Sufism. That is to teach the generations to cultivate the genealogy, honesty, justice, purity, integrity and harmony through psalms. She brings the student to kindness, charity, and hospitality. The source of these branches of education speaks to the people inadequate.

"Maghrifate" is to know and read the religion, that is to say, praise and worship Allah. If you love the poet, the pagan, the orphan and the widow, and if you do good to them, then God will be pleased with you, and will do what is right and achieve your goal. Thus, the teacher delivers the readers the most basic findings of moral education through poetry, and conveys to the reader and listener that God's path is the candor of humanity.

"Haqiqat" is the ability to worship God, that is to say, to worship Allah, the Creator of the whole world, to worship Him and to believe in the power of God is the duty of every Muslim, to teach the generations to faith, "Iman Nuri", "Haqiqat Dariasy", the goals of a person to be pure. In this work, the scientist of Turkestan studies mainly four issues. The first is to recognize Allah, the second to worship Allah, the third - to ignore the world's injustices, to protect those who are victims of injustice and to bring them to justice, and the fourth - to abandon the false world to prevent the dark spots of this world. Here are four complicated and complex issues, which are constantly reviewed and smashed in their stories. There are four lines in two places, and it is convenient for the general readers to memorize them. The number of fictitious figures is four thousand and four hundred. It is possible to give it the proofs of wisdom.

Qul Qoja Ahmet, arbir sozing dertke darmen,
Talipterge baian qylsam, qalmas arma.
Tort myng tort zhuz «Hikmet» aittym haqtan parmen,
Parmen bolsa olgenimshe soylesem men. [16, 111]

That's how it used to be in life stories. Now he is not sure how much he has written. The age at which he came to Turkestan, the age at which he was a scientist, how old he lived, how old he was, and how old he was when he was in "Qyluet".

"Diwan-i-Hikmet" tell us that Arystanbab's teaching is a way to promote the spirituality of the person by praising the content and the Sufism. In the 97th year of Yasawi's work:

Tälibpin dep aitady, «wallah, billäh» nainsaf,
Nekesizge qaraidy kozderinde joq ynsap,
Kisi malyn jep jurer, sodan dili emes saf,
Arystan babam sozderin esitingiz täbäräk.

Tälibpin dep aitady, köngilinde joq zärdey nur,
Shyn tälibti surasang ishi, tsysy gawhar dür,
Xaqqa aian sylrly, jemisteri taza nur,
Aristan babam sozderin esitingiz täbärik.

Aqır zaman ümbetteri naqyshtaidy uilerin,
Näpsi zawqına berilip buzar, är dem, kuylerin.

Kerbezenip, sändenip, parpazdaydı boilaryn,
Aristan babam sözderin esitingiz täbärik, [16, 111] -

saying that Arystan-Bab learned the way of recognition of the truth, whether the power of the country was in your hand, take care of the country, be careful of the power of the Kazan rule, stay on the road and not be able to approach the way of God. Abay's poems can be seen in this scene.

Only Heartfelt heart, goes to the Truth, but not anything ... The way of smart of heart says that if you love Love for Tengri, you can attain the goal of pure love, pure love at all times. Abai says:

Alla degen soz zhengil,
Allağa awyz qol emes.
Yntaly jurek, shyn kongil,
Ozgesi Haqqa jol emes.
Denening barsha qwaty
Onerge salar bar kushin.
Jurekting aqyl swaty,
Mahabbat qylsa Tängir ushin [17, 257].

With these words, Yassawi and Abai say that God's pleasure can only be achieved with heartfelt heart and sincerity. Therefore, the Muslim should first of all attach himself to the heart, not to the human language. Nobody can take the faith that is in the heart. No burden of life can destroy the heartwarming heart. Only then we will our family, our society, and our country".

In the doctrine of Hodja Akhmed Yassawi, the service of the Allah begins with serving the people. But the condition for serving the people and the nation is the so-called character of the soil and its prohibition. The soil is a characteristic and dedication to its people implies perfection. Hodja Ahmed Yassawi says that in order to achieve perfection he must have a man open (strong love) and be in pain. "The unhappy man is not a human being; The unhappy man is the animal, listen to it". The "unfathomable person" on this path is an unresponsive, indifferent, anxious person in the face of nationality, society, and homeland, without human feelings. The "unlucky man" is a soul that is ignorant of the goddess, that is, a God who has been deprived of God's gift of man, who does not value his human dignity, does not seek to be reasonable, and does not care about the world, man, nature, and all that is in the Creator's. The fateful person has a special place in the teaching of Hodja Ahmed Yassawi. He says in his wisdom: "Knowledge is a lamp, and your soul is lighter, and your tears are fat". The dreadful, harsh man is burning in a flaming fire, looking at the faults of the society and seeing the faint-heartedness of the society and tears, efforts and emotions. True grief is accompanied by this illness. It is a source of energy that leads to perfection. In the doctrine of Hodja Ahmed Yassawi, the purpose of the human being is to worship idol worship, which he says "For you, for the sake of pious worship". This is the supreme aspect of obedience to the truth. Hodja Akhmed Yassawi, who sees God's love with the love of God, sees it as a matter of honor, without discriminating against any human being created by God. The wisdom behind saying, "The disbeliever is a sinner, our Lord is a deceiver", The wise man's wisdom, regardless of religion and religion, is to show him respect and humility as a Prophetic Sunnah (system, law, principle). Because Akhmed Yassawi's doctrine is religion that is infinitely clear (love) that does not fit into the context of Mecca. In the world of Ahmed Yassawi, people are described as "a man of a kind, a human being", a "perfect man" and a "human being".

In Ahmed Yassawi's doctrine, "tranquility" and "reaching the truth" are realized through moral perfection and character. The path to God leads the community to the service of the human being - through direct morality. As a result, the type of "perfect human" is formed, allowing for spiritual purity, self-control. By inviting the nomadic Turkic community to faith, Hodja Akhmed Yassawi's teaching has made a major change in the culture of the Turkic peoples. Taking into account the fact that the traditional Turkic world is fundamental to religion, it is not difficult to understand the reasons for Sufism's cognition as the most important feature of the Turkic Muslim identity. In the context of religion phenomenology, the nature of this phenomenon can be seen from the fact that the old episodes of the spread of religions cannot be totally eliminated, and the new ones find their place on the basis of these values, insights, concepts. Often, the ancient religions, together with mystical institutions, continue to exist in the form of "people's religiosity". The phenomenon of this phenomenon can be seen in the Sufi-moral doctrine of Hodja Ahmed

Yassawi. The symbolism of the Prophet Muhammad (Peace and Blessings be upon him) through his “Kurma” symbolizes the fact that the phenomenon of Arystan Bab is a “cause” of this phenomenon, his life is similar to the Prophet’s life, that is to say, is an important methodological, phenomenon and novelty of spreading Islam to nomadic Turks in his teachings [18].

The founder of the religious and mystical school, which contradicts the traditions and customs of the local people, Khoja Akhmed Yassawi and his works, led the Turkic tradition of Sufism. He denied the notion that “Islam can be recognized only by Arabic” and uttered the Sufi literature’s principles in the ancient Turkic literary language - Chagatai. It was written in poetic language closely related to the local people in order to fully understand the Arabic text of the Holy Book, to reveal the Sharia’s secrets and the principles of religion to the general community in its own language.

Hodja Akhmed Yassawi developed a model of Turkic writing and figurative poetry, proving that the Turkic languages have the potential to create artistic compositions. His literary works have brought a new impetus to the literary tradition on the ancient Turkic soil, bringing it to a new level in the history of the Turkic world. Thus, the predominantly didactic nature of Turkic literature has been filled with propagandistic thoughts. He used the rumors of historical myths, prophets, and epitaphs of the Sacred Stories, which were pre-written in the Creative Literature, which were preceded by the Quran, as a link between the convergence of the folklore and the written literature.

Hodja Ahmed Yassawi, a Sufi philosophical treatise that was born by the Turkic people and Muslim medieval scholars for the spread of Islam, made a significant legacy for the future generations. His work “Divan-i Hikmet” is designed to describe complex issues, such as humanity, morality, justice, and reputation [8].

The next work of Yassawi is called “The Book of Worship and Prayer”. In his pagan poem, he has thoroughly examined four great articles of the Sufism. They explained the issues of Sharia, Tariqat, Maqriyat, Haqiqat, and told that they would be further divided into ten or ten maqams. Here are some of the foremost scholars who said that if one walks over it, he can be a mule, shaikh, mujah, kopan, ishan, a teacher. Anyone who does not pass these precepts will not be able to rise to Sufism, dignity, gentleness, laziness, pioussness, piety, and the right to wear a slipper / jacket. And now he has to underline another need to go forty more points to rise to the definite level. At this point, only the people of the Sufis will have their “soul”. This is the main purpose of the Sufism. Only through the disclosure of these stingy eyes can a human being be caught by God.

And “Minazhatname” is a two-volume poem (hikmets), written in two parts, with two words.

In the first, God commands the Almighty to pray, and in the other, the general readers are commanded to know God through the study of the wisdom. While it is very short, the version is written in a language that is readily accessible to readers. At that time, the Turkic peoples had different interpretations of the Turkic-speaking peoples, and the inscription was written in Arab graphics. Through reading this work, the general readers hinder themselves from evil and try to prevent their passion. The main objective of the looters is to suppress their evil deeds.

The next work is Mirat-ulKulub. In this essay he studied the issues of Shariah, Maghrefat, Tariqat, and Truth (Haqiqat) in the basis of “Yassahi”. This name depends on the meaning of the work. Anyone who reads this work will see their mistakes and begin to self-discipline. That is why it is called “the mirror of the mood”.

Conclusion. As we mentioned in previous researches the development of cultural heritage of Great Silk Road from the literary, cultural, historical and economic point of view in Turkestan region. The leader of Kazakhstan N.A. Nazarbayev in his article “Seven facets of Great Steppe”, points to the Great Silk Road business and emphasizes its value in global development. Since Great Silk Road is not just measured today, the location of the Turkestan city along the Great Silk Road, which was the beginning of civilizations in the Turkestan region, and the historical monuments in Sauran, Turkestan, Sidaq, Karaspan, Zhuantobe, Kultobe and Burzhar were not only the world trade places, but also centres of books, handicrafts, literature. The contribution of this sacrel lands to the development of culture is historically analyzed [19, 170]. As far as we know, Kozha Akhmed Yassawi’s work has become a tradition in the Turkic-Muslim world, and it has become a tradition to writeas Yassawi. The book “Divan-i Hikmet” made a special contribution to the development of religion in Turkestan, along with the Great Silk Road. In Asia Minor, Bektash Veli, Yunus Emre, and Suleiman Baqirgani, were seen by Hodja Ahmet Yassawi. From the 12th century, Hodja Akhmed Yassawi, who has had a significant influence on the world outlook of

Turkic people, was reflected in the works of Kazakh poets from AsanKaigy to Abai and to the present day. The building of the Mausoleum of Khoja Akhmet Yassawi in Turkestan, the royal architecture of Turkestan, and the Arystan-Bab mausoleum in Otyrar, have become not only a miracle of architecture, but also a place of worship as the center of science and education, where all the Muslims meet. The world's most attractive architecture is the magnificent architecture of the universe, and the research findings of Turkestan's history and civilization, the center of spirituality, the second Mecca in terms of religious values, attract world attention. That is why we can say that Turkestan civilizations along the Great Silk Road cannot be exhausted.

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ҰЛЫ ЖІБЕК ЖОЛЫ БОЙЫМЕН ТҮРКІСТАН ӨРКЕНИЕТІНІҢ ДАМУЫ

Аннотация. Мақалада Арыстанбаб пен Қожа Ахмет Ясауи, қазіргі заманның әлемге танымал ғалымдары, оның ішінде Түркістан, Отырар сияқты Ұлы Жібек жолы бойындағы өркениеттердің дамуы туралы білімдерінің маңызы талданады. Бұл пайымдаулар тарихи шындық пен көркем сипаттама тұрғысынан, архаикалық аңыздар мен әңгімелерден Ясауи тарихы қарастырылады. Еліміздің Тұңғыш Президенті Н. Ә. Назарбаевтың "Ұлы Даланың жеті қыры" атты мақаласында Ұлы Жібек жолының маңызы қарастырылады. Сондай-ақ, оның жарлығы бойынша Түркістан қаласы облыс орталығы мәртебесіне ие болды және ортағасырлық сәулет жобасы негізінде ескі қаланы қайта жаңғырту туралы шешім қабылданды, бүгінгі таңда А. Ясауи кесенесінің арқасында оны түркі өркениетінің кереметі ретінде қарастыруға болады. Түркістан барлық мұсылмандарды қабылдайтын діни орталық болып табылады. Ахмет Ясауи "диван-и-Хикмет" мақаласындағы материалдар әдеби, тарихи, философиялық және білім беру көзі болып табылады.

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РАЗВИТИЕ ЦИВИЛИЗАЦИИ ТУРКЕСТАНА НА ВЕЛИКОМ ШЕЛКОВОМ ПУТИ

Аннотация. В статье анализируется значение знаний Арыстанбаба и Ходжи Ахмета Ясауи, всемирно известных ученых, в том числе для развития таких цивилизаций, как Туркестан, Отырар вдоль Великого Шелкового пути. Эти суждения рассматриваются с точки зрения исторической правды и художественного описания, от архаических легенд и рассказов до истории Ясауи. В статье Первого Президента страны Н. А. Назарбаева "Семь граней Великой Степи" рассматривается значение Великого Шелкового пути. Также, по его указу город Туркестан получил статус областного центра и принял решение о возобновлении старого города на основе средневекового архитектурного проекта. На сегодняшний день благодаря мавзолею А.Ясауи его можно рассматривать как чудо тюркской цивилизации. Туркестан также является религиозным центром, который принимает всех мусульман. Материалы в статье Ахмеда Ясауи "диван-и-Хикмет" являются литературным, историческим, философским и образовательным источником.

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REFERENCES

- [1] Kenzhetayev D., Zhandarbek Z. Hodja Akhmed Yassawi. Almaty: TOO Zolotaia kniga, 2017. - p. 288.
- [2] Hodja Ahmet Yassawi. Hikmet jinaq. Almaty: Zhaly, 1998. p. 656
- [3] Alpamys Batyr. Batyrlar jyry kitabynda jarialangan nusqa. Astana: Foliant, 2012. - p.160
- [4] Mukhtar Kozha. Yassawi kesenesining jagdaiy alangdatarlyq // Aqiqat, 2014. № 5. - p. 39-41.
- [5] Melikov I. I. Ahmed Yassawi and Turkic Narodnoy mysticism // "Soviet Turcology". 1988. №5;
- [6] Materiali A.A. Divaeva / Central Scientific Library National Academy of Science, Republic of Kazakhstan. Trust Fund, 1168, №1, p. 1-55.
- [7] Trimingem Dzh.S. Sufiyskiye ordeny v islame. M., 1989.
- [8] <https://oninfo.kz/arystan-bab-turaly-a-yz/>
- [9] <http://azretsultan.kz/yasaui-men-bajlanysty-a-yz-gimeler/>
- [10] Yassawi Ahmed Kozha. Divan-i Hikmet (Danalyq kitaby) / Prepared for the collection, translated into Kazakh: M.Jarmukhameduly, S. Dautyuly, M.Shafagii / Hodja Ahmet Yassawi. - Almaty: Research and publishing center "Murattas", 1993. - 170 p.
- [11] Gordlevskiy V. A. Khodzha Akhmed Yasevi // Izbrannyye sochineniya. M.: Izdatel'stvo vostochnoy literatury, 1962. - T. III. - S. 361-368. - 588 s. - 1 450 ekz.
- [12] Otyrar. Encyclopedia. - Almaty: Interview, 2005. 449 p.
- [13] <https://egemen.kz/article/171669-anhyzdargha-arqau-bolghan%C2%A0kieli-olke>
- [14] <https://stan.kz/t%D2%AFrkistanda-zhatkan-arystanbab-kim/>
- [15] Abdirasilkyzy A. Yasawi jyly – khazah ruhaniatynyng janga belesi. / Yassau murasy. 2016.
- [16] Ahmed Yassawi. Diuani Hikmet (the translator, the transcript, the text, the dictionary). Turkestan, Turan: 2010. - 400b.
- [17] Kunanbaev A. Oleng – sozding patshasy. Shygarmalarynyng bir tomdyq jinagy / Abay Kunanbayev; Designer: Clara Serikbayeva. Almaty: April, 2006. - 568p.
- [18] Kenzhetai D. Khoja Ahmed Yassawi duniyanymyn zerttew problemalary. Turkestan: Turan, 2004. - 341 p.
- [19] Baltabayeva A. Yu., Yesbalayeva R. Zh., Shaikhystamova M. B., Yildiz Naciye. Cultural heritage of Great Silk Road In Turkestan region // Bulletin of National Academy of Sciences of the Republic of Kazakhstan. Volume 4, Number 380 (2019), P. 170 – 174. ISSN 1991-3494. <https://doi.org/10.32014/2019.2518-1467.105>

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**GROWTH OF ECOGEOLOGICAL STRESSES IN MOUNTAINOUS
GEOSYSTEMS IN THE CONDITIONS OF ACTIVATION MODERN
DANGEROUS GEOMORPHODINAMIC PROCESSES
(on the example of Azerbaijan)**

Abstract. The questions of negative influence of modern dangerous geomorphodinamic processes (MDGP) within the limits of the Azerbaijan are considered in the article. With the purpose of definition of a degree of influence of modern dangerous geomorphodinamic processes to the human and on an economic infrastructure the classification of territory by a degree of ecogeomorphological dangers and division into districts of ecogeomorphological areas was carried out. To evaluate the structure of modern dangerous geomorphodynamic processes we used the method of expert and statistical estimates of the area of propagation (intensity) of a process in geoecological region. Analysis of modern dangerous geomorphodynamic processes within ecogeomorphological regions of Azerbaijan, mountain geosystems that have been actively developed in the recent years for development of mountain tourism, agriculture, etc. allows us to conclude that in this region the most dangerous processes are earthquakes, landslides, mud flows, caving, sheet and river erosion, etc. They create overall ecodynamically stressed situation that requires to conduct advanced consistent, large scale expert evaluation of ecogeomorphological situation within the boundaries of each mountain ecosystem prior to its large-scale development for mitigations of the threats for human activities. The results obtained during the assessment of the effect of natural and man-caused factors on the stability of montane ecosystems may be used to forecast dangerous natural phenomena and to research geodynamical dangerous geomorphodinamic process not only in Azerbaijan, but also in other regions of the Alpine-Himalayan orogenic belt.

Keywords: of modern dangerous geomorphodinamic processes, ecogeological stresses, ecogeomorphological danger, Caucasus, Alpine-Himalayan montane system, tectonics, ecogeomorphological regions.

Introduction. In the end of the 20th century and beginning of the 21st century the mankind entered into the period of the severe environmental crisis caused by overall destabilization of geosystems of the Earth under the excessive technogenic pressure. The crisis resulted from social and economic processes occurring in different countries and regions of our planet which are constantly provoked by economic blunders and sometimes simply by the negligence and lack of professionalism with regards to the environment. The intensity and the scale of human impact on the geosystems continuously grow together with the development of technical equipment and power supply capacity. Another factors that aggravate environmental crisis are modern dangerous geomorphodinamic processes such as earthquakes, eruptions of volcanoes, floods, avalanches, mudflows, landslides, cavings, etc. that are frequently triggered by anthropogenic impact [1-7]. The understanding of the danger and magnitude of environmental crisis that attain global trends predetermined the resolution of the problems of interaction of nature and humans as one of the focus areas of studies. In that respect the least resistant to external impacts, the most geodynamically active and strongly crushed geosystems of the young alpine-type mountains that are developed in the area of intensive convergence of heterogeneous geoblocks – lithosphere plates are the most the most vulnerable. Such geosystems have unstable intercomponent links that are relatively easily broken in the result of intensification of external impact which destabilizes these systems. Then their balanced development is disrupted and the probability of disastrous events affecting large areas increases [8-11].

Azerbaijan is situated in geodynamically active zone. Its area is characterized by high potential possibility of development of dangerous endo- and exogeomorphological processes.

It is known that modern dangerous geomorphodynamic processes are developed almost everywhere within Alpine-type mountainous regions. According to available data their consequence significantly increases especially in the mountainous regions of Azerbaijan.

To determine the degree of development and impact of modern dangerous geomorphodynamic processes on people and on economic infrastructure within the mountainous regions of Azerbaijan we identified the classes of environmental hazard and ecogeomorphological regions with characteristic types of modern dangerous geomorphodynamic processes. However each of ecogeomorphological regions like all geosystems of Azerbaijan in general is significantly differentiated in terms of the range and degree of modern dangerous geomorphodynamic processes. Regions differently respond to modern dangerous geomorphodynamic processes occurring within their boundaries. The diversity of such reactions is very great both in terms of the strength and character of consequence for the nature, population and economy of the region.

The studied region has very complicated morphotectonic structure and it is marked by wide development of tectonic mantles, olistostromes, ophiolites, magmatic and mud volcanism and also by frequent change of the direction of strike of large morphological structures, activity of seismotectonic and modern tectonic processes, sharp differentiation of exogenic processes, etc.

Materials and methods. To evaluate the structure of modern dangerous geomorphodynamic processes we used the method of expert and statistical estimates of the area of propagation (intensity) of a process in geoecological region.

Results of research. Azerbaijan occupies the area of collision of such global tectonic plates as Eastern European and Arabian plates. Modern morphotectonic framework of this region was formed as a result of subduction of Mesotethys oceanic crust under Anatolia-Iranian (up to the Upper Cretaceous) and collision of Trans-Caucasian continental crust under the Scythian plate and Anatolia-Iranian plate under Trans-Caucasian plates [12]. The occurring different morphotectonic processes created such complicated structure area where both results of rifting (extension) and folding (compression) occur. Intensive but differentiated horizontal and vertical tectonic movements caused by them created rootless structures of the Greater and Minor Caucasus. Differentiation of compressions within the boundaries of the studied area determined the development of imbricated zones, brachiform morphostructures and the intensity of numerous disjunctive and plicative dislocations determined thrusting of near-surface rock plates on each other which results in the formation of large near-surface overthrust sheets, olistostromes, olistoliths, etc. that strongly changed the morphology of the relief of this region.

Fault tectonics plays significant roles in the development of the modern relief of mountain regions of Azerbaijan under the conditions of the increase of tangential compression and extension. The mountain relief is especially complicated and mosaic in the areas of intersection of faults and dislocations of different direction and order. Large morphostructural blocks and their internal differentiation in the area of dislocations create complex, dynamic horizontal and vertical division of the area. It is expressed by the fact that in these areas intensive exogenic processes are almost always confined to weakened endogenically divided parts of the Earth's crust, i.e. to zones of development of faults. They are associated with the block tectonics and are limited by them [8]. It is found that in the orogenic regions almost all large river valleys are confined to complicated and multiorder grid of lineaments - faults (figure 1).

Within Azerbaijan the Major Caucasus forms large E-W mountain belt that stretches over several hundreds of kilometers from Tinov-Rosso mountain (3374 m) in the west to the Absheron Peninsula in the east. Tectonically the Major Caucasus is a large and complex structure mega anticlinorium composed mainly of sedimentary rock of Mesozoic, Paleogene, Neogene age and Quaternary sediments developed along river valleys, in intermount basins and on flat surfaces of watersheds. In the Major Caucasus high-altitude ridges alternate with massive plateaus, large intermount and intramount basins, high-altitude glaciers. The processes of ancient and modern erosion have a deep footprint almost everywhere in the mountain relief. They formed a dense grid of numerous differently oriented deep and narrow river valleys and gorges. In general the Major Caucasus is highly mobile geotectonic zone that composes one of the main seismically active belts of the Earth. Overall magnitude of the modern uplifts of the Major Caucasus in the area of peaks Bazardyuzyu, Shakhdag, Tufandag in Pliocene-Quaternary period exceeds 3600 m.

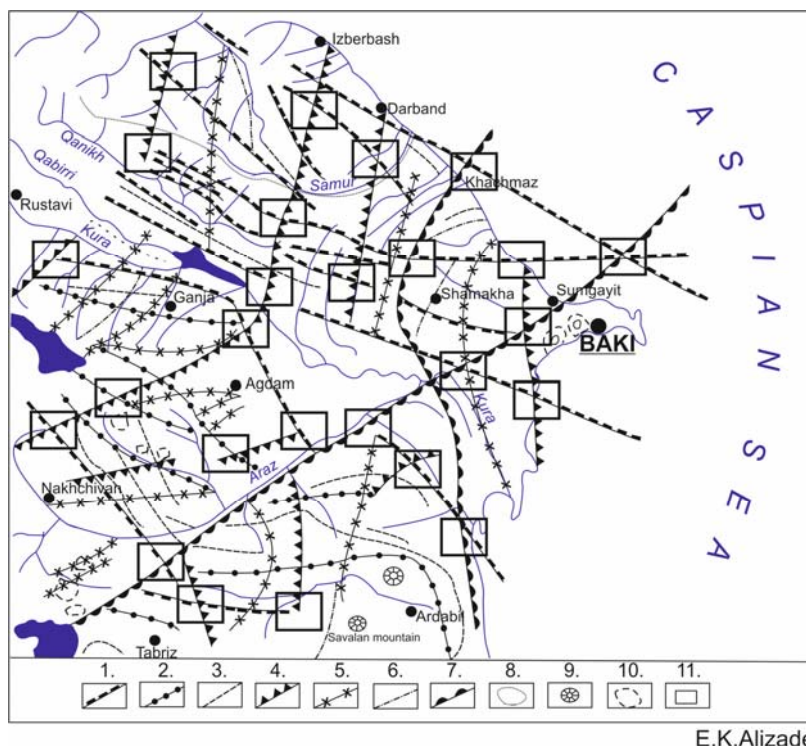


Figure 1 – Map of morphotectonic interpretation of lineaments of the Eastern Caucasus and the adjacent areas

Legend

Lineaments that correspond to faults (thrusts and overthrusts) of longitudinal (Minor Caucasus) direction: 1 - Regional deep faults that limit large longitudinal folding and block steps; 2 - Local faults corresponding to the boundaries of longitudinal folding and block morphological structures; 3 - Faults that determine the details of morphological structure.

Lineaments that correspond to faults (strike slips) of transverse (anti-Caucasus) direction: 4 - Regional deep faults that limit transverse megablocks; 5 - Local faults that correspond to the boundaries of transverse block segments; 6 - Faults; 7 - Large interregional diagonal volcanic centers; 8 - Contour of the circular object of Samur; 9 - Great volcanic centers; 10 - Ringed structures (tectonic and volcanogenic). 11 - Geodynamically stressed fields.

The above general geodynamic features of the relief of the Major Caucasus predetermined wide development of various modern dangerous geomorphodynamic processes within the boundaries of this mountainous region. Some of them (earthquakes, landslides, cavings, deep and surface erosion, etc.) during their development create a tense ecodynamic situation.

Taking into these data we divided the area of the Major Caucasus into the following ecogeomorphological regions:

1. North-Eastern slope of the Major Caucasus;
2. Southern slope of the Major Caucasus;
3. South-Eastern part of the Major Caucasus.

North-Eastern Slope of the Major Caucasus - class 3 - high ecogeomorphological danger. North-eastern slope of the Major Caucasus is situated to the north of the watershed line of the Major Caucasus Mountain Range and stretches to the coast of the Caspian Sea. It covers the northern slope of the Major Caucasus Mountain Range, Bokovoy Ridge and adjacent area. Four structural and denudation longitudinal steps are defined: Samur-Devechy, Gusar-Siyazan, Shakhdag-Khyzy, Tufan [8,12,13, etc.]. Geodynamically active heterogeneous overthrust-folding morphological structures with characteristic set of modern dangerous geomorphodynamic processes [14,15] are defined within the boundaries of the north-eastern slope. Nival caves and deep depressions of caroid type, kars, circuses, trough valleys, snow erosion are developed in high-altitude zones that is characterized by high intensity of divisions and wide development of nival-glacier relief forms. Areal landslides, stream landslides, collapsing landslides (basins of rivers Gilgilchay, Babachay, Atachay, slopes of Nokhular, Sokhyub, Yerfin, Khaltan syncline basins), avalanches, rockslides, solifluction and defluction processes are common [16,17,18] (figure 2).

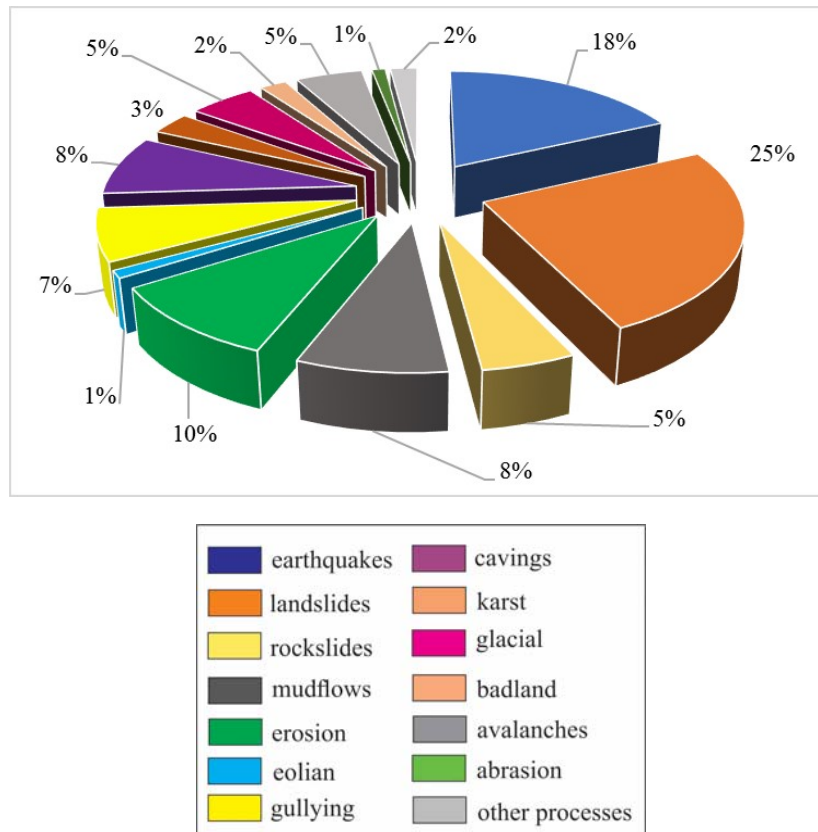


Figure 2 – Structure of modern dangerous geomorphodynamic processes within the boundaries of north-eastern slope of the Major Caucasus

Southern Slope of the Major Caucasus - class 3 - high ecogeomorphological danger. The southern slope of Major Caucasus Mountain Range in Azerbaijan is situated between Mazymchay river in the west and Girdymanchay river in the east. Low-hill terrain, medium mountains and highland is distinct within its boundaries. It is intensively divided by transverse river valleys separated by numerous branches of Major Caucasus Mountain Range that have erosion origin and complex orographic structure. Tectonically the southern slope corresponds to Tufan anticlinorium and Zagatal-Govdagsynclinorium composed of Jurassic and Cretaceous shale, sandstone, limestone that intensify weathering, denudation, erosion processes and accumulation of thick loose sediments that participate in formation of different relief features and mudflows [19]. The earthquake magnitude reaches 8-9 especially in the area of intersection of active faults. High seismicity of the area creates stresses in the relief which intensifies modern dangerous geomorphodynamic processes. Nival-glacial and gravitational processes (avalanches, landslides, cavings, trough valley, karst, cirques) occur in highland area on the background of intensive neotectonic uplifts. Erosion-denudation and gravitational processes (mudflows, landslides) prevail in the middle mountain belt. Erosion processes prevail in low-mountain terrain area where mudflow, alluvial-proluvial and landslide formation accumulate along river valleys (figure 3).

South-Eastern part of the MajorCaucasus – class 2 – medium ecogeomorphological danger. Mountainous Shirvan geomorphologically is a part of single Shemakha-Gobustan zone. Geotectonically it corresponds to two tectonic zones - Zagatala-Govdag in the north and Shemakha-Gobustan in the south. Elevations range from 200-300 m to 2200-3629 m. Orogenic processes, fault block movements also occur in the modern time which evidenced by earthquakes with magnitude of 9 and greater. Modern dangerous geomorphodynamic processes have complex regularities of areal propagation. Seismogravitational, gravitational, erosion-denudation, etc. processes are prevalent. Landslides, slips, badland (the valley of the middle course of the Sumgaitchay river and south-western slope of Lyangyabiz ridge), clay karst are common. A number of mud volcanoes are located here – Demirchi, Astrakhanka (Gyzmeydan), etc. [20, 21].

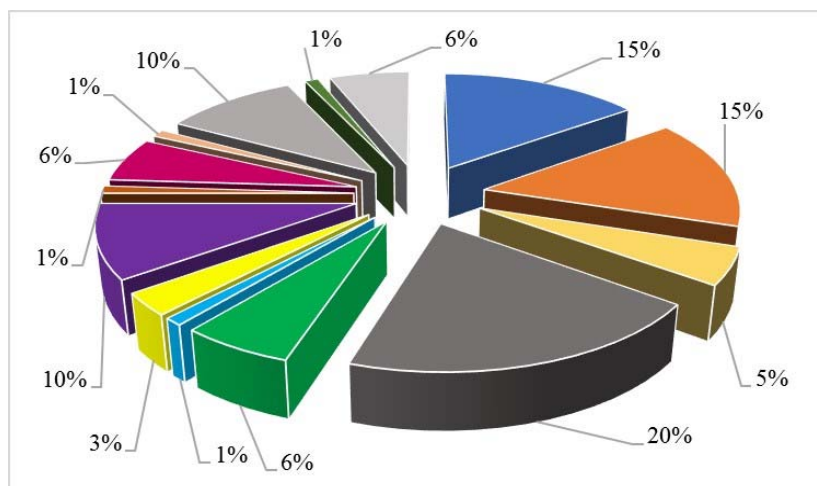


Figure 3 – Structure of modern dangerous geomorphodynamic processes within the boundaries of southern slope of the Major Caucasus

Arid-denudation processes and relief forms created by them (badland, clay karst, etc.) become common in Gobustan (in its south-eastern part). Mud volcanoes Touragay (400 m), Greater and Small Kyanizadag, Cheildag, Davalidag, etc. are situated in superimposed Jeyrankechmez syncline depression. Earthquakes magnitude reaches 7-8 (figure 4).

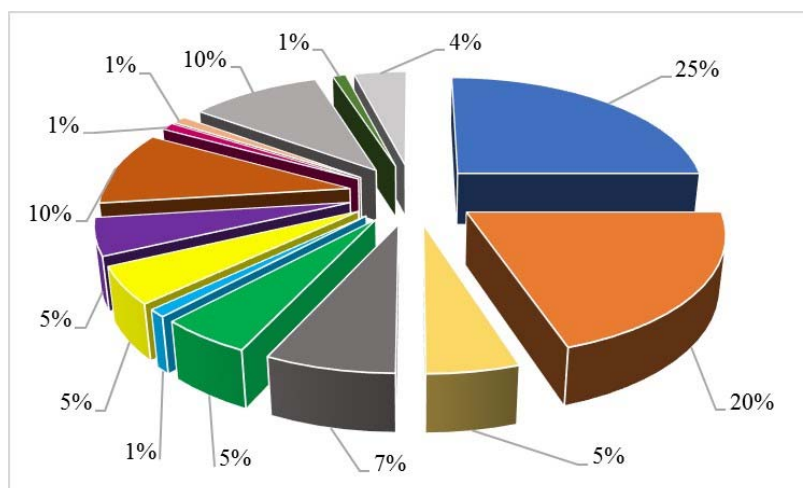


Figure 4 – Structure of modern dangerous geomorphodynamic processes within the boundaries of South-Eastern of the Major Caucasus

The area of Minor Caucasus was divided into the following ecogeomorphological regions:

1. North-Eastern slope of the Minor Caucasus;
2. South-Eastern part of the Minor Caucasus.

North-Eastern Slope of the Minor Caucasus - class 2 - medium ecogeomorphological danger.

North-eastern slope of the Minor Caucasus includes the slopes of Shakhdag and Murovdag ridges, Shamkir dome-shaped upland, Bashkend-Dastafyur basin. On the side of Kura depression it is bounded by the Pre-Minor Caucasus deep fault.

Gazakh ridge, Shamkir uplift, Pant ridge and Geygel uplift are large morphostructural elements of the north-eastern slope of the Minor Caucasus.

The lithology of composing rock plays a significant role in the plasticity of the modern relief. Their resistance to denudation is attributable to syncline peak Kyapyaz (composed of Upper Jurassic limestone), syncline plateau within Baskend-Dastafyur basin in the interfluve of Dastafyurchay and Gyandzhachay rivers and monocline ranges of peaks Ganly, Gamyshly, Murtuzdag in Shakhdag ridge.

The watershed of Murovdag ridge is strongly divided. The rocky-alpine relief is developed here. Nival-frost and gravitational processes prevail here facilitating significant renewal of slopes.

Ancient glacial relief forms are well preserved in the near-watershed part of Shakhdag and Murovdag ridges at the elevations of over 2400 m. A series of kars located at the altitudes of 2400 and 2600 m is developed in the head of Shamkirchay and Gyandzhachay rivers. Kars were preserved at elevations 2800, 3100 and 3280 m in the area of Gyamyshdag mountain. To the east the kars are preserved approximately at the same elevations – up to Murovdag peak. These forms of glacial relief belong to Upper Quaternary glaciation of the Minor Caucasus.

The elevation of landslide areas ranges from 1000 to 3000 m. Maximum atmospheric precipitation (600-900 mm) is confined to this strip. Landslides and mud flows are widely spread within the largest basins (Khoshbulag, Dastafyur and Novosaratovskaya) and their sides. They are especially well traced in the river terraces of valleys of Zeyamchay, Gyandzhachay, Shamkirchay, Kyuryakchay rivers and their tributaries. Dastafyur basin and closely located Khoshbulag basin are abundant in large mud flows-confined their southern sides. Numerous mud flows are observed in the area of Geygel lake and at the large benches near Kyapyaz mt. and in the head of Buzlukh river. A large technogenic landslide with width of 520 m, height from 5 to 30 m and over 4 mln. m³ of landslide material was formed in the southern part of Dashkesan mt. due to improper extraction of waste rock. Lateral speed of the movement of the landslide has been 0.36 cm/day since 1990 due to freezing of soil in winter and melting in spring, snow melting, seismic movements.

Landslides are especially common in the head of Gyandzhachay-Shamkirchay rivers and in the adjacent areas. They significantly reduce the area of mountain meadows. Therefore, exposed, strongly degraded and potentially geodynamically dangerous areas expand. Intensive deforestation in the middle-mountain area of the studied region intensified landslide dislocations.

Cavings are confined to the slopes of monocline ranges and uplands in the north-eastern periphery of the Minor Caucasus which are composed of sedimentary and volcanogenic-sedimentary rock. The cavings in the northern slopes of Kyapyaz mountain are gravitational and tectonic formed during disastrous seismic activations (for example, Geygel lake was formed in 1139).

Rock slides are spread within the boundaries of highland and middle-mountain belts but they also occur on the slopes of ridges. They are also confined to the sides of valley of Zeyamchay, Gyandzhachay, Shamkirchay rivers, etc. Earthquakes magnitude reaches 9 and more (figure 5).

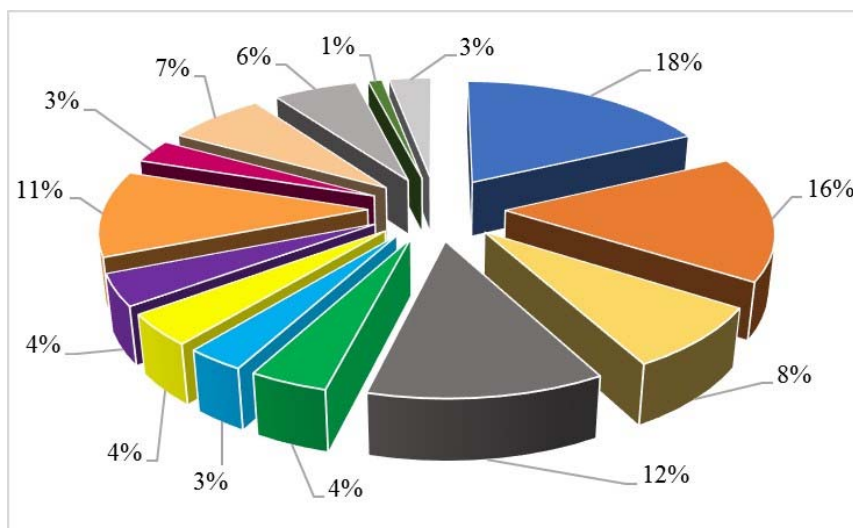


Figure 5 – Structure of modern dangerous geomorphodynamic processes within the boundaries of north-eastern slope of the Minor Caucasus

South-Eastern Part of the Minor Caucasus – class 2 – medium ecogeomorphological danger. South-eastern part of the Minor Caucasus is represented by Garabakh ridge and Garabakh volcanic upland.

Garabakh ridged is intersected by Terter, Khachinchay, Gargarchay transverse deep faults and their branches along which strike-slip movements occurred in the modern stage. Geomorphological consequences of faults and differentiated movements along the faults is sharp asymmetry of the slopes of Garabakh ridge and lateral deformation of its watershed where highly uplifted rocky massifs being partially the centers of Mesozoic volcanism alternated with deeply submerged through valleys and pass saddles with gradient ranging from 300-550 m to 700-900 m.

Transformation of morphostructural plane and river systems significantly affected modeling of morphological structures that complicated the conditions of development of their morphological sculptures [13].

Landslides occur in the bedrock in the basins of Terter, Akeri rivers. In the central part of the Minor Caucasus landslides are associated with ophiolite strip. Serpentine and serpentinitized rock that is common here is characterized by strong crushing, intensive fracturing and weak resistance to denudation. Under favorable conditions separate blocks and masses of this rock move along shear planes and tectonic slipping planes which well observed on the southern slope of Murovdag ridge in the head of Seyudlyuchay river, Levchay, Bulangysu river, etc. Cavings and talus material are widely spread in the area of Gyrkhyz, Sary-Baba, Beyuk-Kirs, Ziyarat mountains, etc.

The main features of Garabakh volcanic upland are determined by Upper Pliocene Quaternary volcanism and the elements of its relief are determined by modern subnival-denudation and ancient glacial processes. Beyuk, Ishygly, Gyzylbogaz and Kechaldag massifs composed of Late Pliocene lavas of different composition have dissected relief.

Lava sheets form highland plateaus with steep slopes and low (150-100 m and less) relative elevations. Lava sheets (Terter, Minkyand, Bazarchay, Pyarichyngyl, Gyrmzydag, etc.) were formed both in river valleys and on the plateau surface. Almost lava streams have stepped surface attributable to repeated lava outflows. Holocene lavas are characterized by piles of boulders, blocks (sometimes up to 305 cm) that form felsenmeer – chyngyly. Pyarichyngyl which is the largest boulder field within Trans-Caucasian upland is situated here.

Exaration and accumulation forms of the Quaternary glaciation are preserved in the highland part of the upland. They are represented by kars, circuses, trough valleys, moraine hills, knobs, ridges, intermoraine, closed lows which are more widely developed in BeyukIshygly and Gyzylbogaz massifs, in the head of Terter river (Garakhach, Aiychyngyl) and Eastern Arpachay river (Sarymsagly river). Exaration glacial forms (kars, circuses, through valleys) are have absolute elevations 2900-3300 m, accumulation feature have elevations of 2600 m (figure 6).

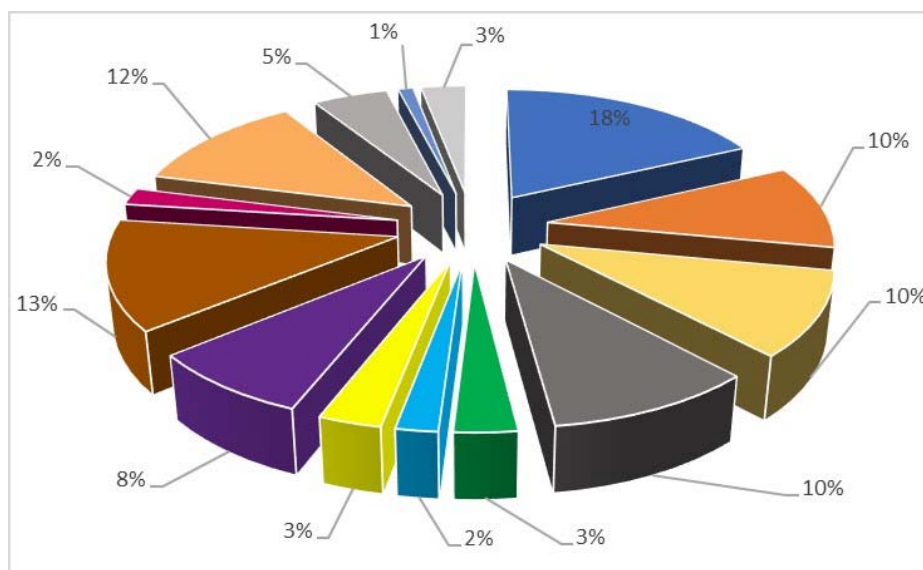


Figure 6 – Structure of modern dangerous geomorphodynamic processes within the boundaries of south-eastern part of the Minor Caucasus

Nakhchivan mountain structures – class 3 – high ecogeomorphological danger. Mountain structures of Nakhchivan surround Azerbaijan part of Middle Arazintermount trough in the north-east. They are represented by Zangezur, Daralayaz ridges and their numerous side branches.

Average height of Zangezur ridge is 3200 m (maximum height of Gapydzhyg mountain is 3904 m). The slopes of the ridge and peak-shaped tops are covered by coarse colluvial sediments that locally form rock flows.

The relief of highland Zangezur and Daralayaz ridges is characterized by extremely intensive dissection, presence of rock zone with cone-shaped mountain peaks, narrow, V-shaped deep weakly terraced valleys, gorges, canyons. Glacial forms (Quaternary) are represented by cirques, kars, through valleys (locally hanging valleys), kar lakes, morains.

Nival processes, intensive physical weathering prevail in the highland belt that results in wide-scale development of coarse detrital accumulations. The latter ones and partially ancient moraines are the main sources of mud flows. Intensive frost destruction (cavings) is observed in the south-east and in the eastern slopes of Sinor, Kyukyudag, Kechaldag, Salvarty, Gazangeldag, Gapydzhyg, Sapardere, Yaglydere, Aychyngyl mountains, etc.

Middle-mountain belt (1400-2400 m) is characterized by intensive erosion that determined presence of deep river valleys here along which cavings and rock slides are developed. Ancient glacial forms are developed in the head of Bichyanyakchay, Gyumurchay, Gilyanchay, Alindjachay, Nakhchivanchay, Duilunchay rivers. They are represented by strongly destroyed kars, cirques, kar lakes, moraines and fluvioglacial sediments.

The region is characterized by intensive mud flow processes. The most mud flow bearing rivers are Duilunchay, Aylischay, Ordubadchay, Ganzachay, Ketamchay, Kilitchay. Total area of basins of the most mud flow bearing rivers (Ordubadchay, Ganzachay, Ketamchay and Kilitchay) in the areas where mud flow and stone flows mainly occur reaches 390 km². The main part of this zone covers south-west slope of Zangezur ridge. The basin of the Ordubadchay river is composed of Upper Eocene–Oligocene felsic intrusive rock that form the slopes of the southern, south-western exposure. In the result of intensive weathering loose material is formed that feeds structural mud flows. Alinjachay and Gilyanchay rivers are also mud flow bearing. Within the studied are the basins of mud flow rivers located in the middle mountain belt do not have forest cover and grass and sparse shrub vegetation does not form dense cover. For this reason structural mudflows occurring here drive significant amount of material that is deposited in intramountain basins or within the boundaries of piedmont inclined plains.

The region is characterized by high seismicity – magnitude up to 8 (Gyunnyut-Gapydjyg area – magnitude 9 and greater) (figure 7).

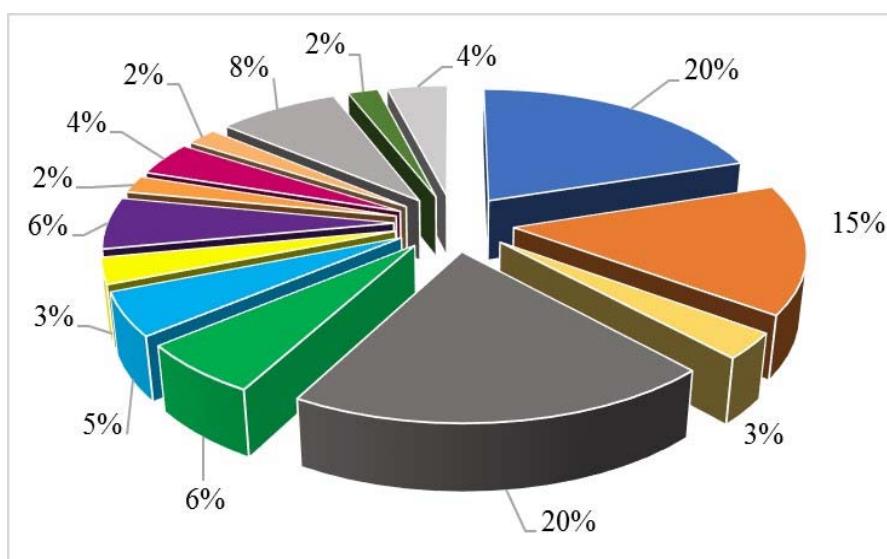


Figure 7 – Structure of modern dangerous geomorphodynamic processes within the boundaries of Nakhchivan

The Talysh mountains – class 2 – medium ecogeomorphological danger. The Talysh mountains occupy the extreme south-eastern part of Azerbaijan. Maximum height of the Talysh mountains – Kemyurkeymt. (2493 m).

The mountain part of Talysh is characterized by numerous transverse typical erosion ridges stretching over many kilometers in the form of narrow dividing ridges. They are the most common in the basin of Tangyarud, Astarachay and other rivers where the degree of erosion dissection is the highest. The Talysh and Peshtasar ridges are characterized by the most intensive dissection. It is determined by active physical weathering due to prevalence of arid conditions of relief formation.

Significant energy of denudation processes led to distinct determination of the relief by bedding and lithology of rock. Landslides frequently forming cirques in the riverheads are quite common in the mountain part of Talysh. The development of modern exogenic relief forming processes depends on the elevation of the relief, recent and modern tectonic movements, exposure of slopes, climate conditions, etc.

Physical weathering is intensively developed in the north-western part of Talysh that is associated with accumulation of clastic material on the slopes. Aeolian processes are developed here. The most typical forms of deflation relief are blowing off residual outcrops. Honeycomb weathering can be observed on some parts of slopes.

Chemical weathering is intensively developed in piedmont area to the south of the Lyankyaranchay river. It results in accumulation of diluvial loam that forms thick cover over densely forested foothill slopes.

Within the boundaries of Talysh landslides are mainly developed in the low mountain belt where there is sufficient atmospheric precipitation and clay rock is developed.

Landslides are confined to slopes with rather thick layer of diluvial sediments or that are composed of clay sediments. Landslides are mostly developed within the boundaries of Yardymlin depression where they are confined to the slopes composed by Maikop sandstone and shale sediments that do not have forest cover. Landslides within Yardymlin depression cover slopes of almost all river valleys. Landslides here destroy slopes transforming them into unsuitable land and interrupt transport communication.

Caving processes are widely developed on the slopes of Talysh and Peshtasar ridges. Rock slides (rock debris) are mainly developed in the middle mountain and low mountain belts of the Talysh Mountains, sand and clay slides are developed within Yardymlin intramount basin. Mudflow are formed rarely, mud content is low.

Earthquake magnitude is up to 8 (figure 8).

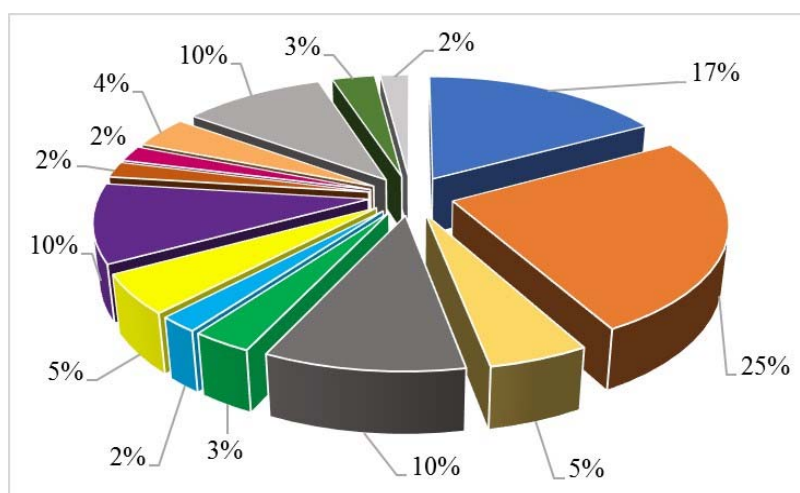


Figure 8 – Structure of modern dangerous geomorphodynamic processes within the boundaries of the Talysh Mountains

Conclusion. Brief analysis of modern dangerous geomorphodynamic processes within ecogeomorphological regions of Azerbaijan, mountain geosystems that have been actively developed in the recent years for development of mountain tourism, agriculture, etc. allows us to conclude that in this region the most dangerous processes are earthquakes, landslides, mud flows, caving, sheet and river erosion, etc. They create overall ecodynamically stressed situation that requires to conduct advanced consistent, large

scale expert evaluation of ecogeomorphological situation within the boundaries of each mountain ecosystem prior to its large-scale development for mitigations of the threats for human activities.

The obtained results allow analyzing in detail the factors that facilitate the occurrence of dangerous natural phenomena in the mountainous regions of Azerbaijan. Similar to all orogenic zones, these areas are characterized by an increasing rate of dangerous destructive natural phenomena, which is caused by an increased effect of both natural and man-caused factors. The analysis of the manifestations of most active (with catastrophic consequences) destructive natural processes and the morphotectonic structure of the studied area showed that their occurrence and maximum intensity was confined to the weakest plexuses of mountains – intersections of faults and fractures of various directions and orders.

Due to the complex interaction of natural and man-caused factors that cause the development of dangerous geomorphodynamic processes in mountainous regions, it is very difficult to determine the specific role that each of these processes plays. Therefore, these processes were considered in combination when predicting the risk of occurrence of dangerous natural phenomena. This approach took into consideration the entire set of factors, such as the intensity of the studied phenomenon, the seismic activity of the area, manmade influence, erosion stratification, lithological composition of rocks, and the dynamic of the process.

The scientific and methodological approach and the results obtained during the assessment of the effect of natural and man-caused factors on the stability of montane geosystems by the example of Azerbaijan may be used to study geo-dynamically dangerous geomorphodynamic processes in other regions of the Alpine-Himalayan orogenic belt, especially in France, Austria, Italy, Balkan countries, Switzerland, Russian Federation, Tajikistan, Kyrgyzstan, and other countries.

The obtained results can be used to plan and perform economic activities, determine and minimize the hazards and risks of occurrence of dangerous natural phenomena, and forecast such phenomena in the future.

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**ЗАМАНАУИ ҚАУШПТИ ГЕОМОРФОДИНАМИКАЛЫҚ ПРОЦЕСТЕРДІҢ
БЕЛСЕНДІЛІГІ ЖАҒДАЙЫНДА ТАУ ГЕОЖҮЙЕЛЕРІНДЕГІ
ЭКОЖҮЙЕЛІК КЕРНЕУЛЕРДІҢ ӨСУІ (мысалы, Әзірбайжан)**

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**РОСТ ЭКОГЕОЛОГИЧЕСКИХ НАПРЯЖЕНИЙ В ГОРНЫХ ГЕОСИСТЕМАХ
В УСЛОВИЯХ АКТИВАЦИИ СОВРЕМЕННЫХ ОПАСНЫХ
ГЕОМОРФОДИНАМИЧЕСКИХ ПРОЦЕССОВ (на примере Азербайджана)**

Аннотация. В статье рассматриваются вопросы негативного влияния современных опасных геоморфодинамических процессов (СОПП) в пределах Азербайджана. С целью определения степени влияния современных опасных геоморфодинамических процессов на человека и на экономическую инфраструктуру была проведена классификация территорий по степени экогеоморфологических опасностей и деление на районы экогеоморфологических районов. Для оценки структуры современных опасных геоморфодинамических процессов использовался метод экспертных и статистических оценок площади распространения (интенсивности) процесса в геоэкологическом регионе.

Анализ современных опасных геоморфодинамических процессов в пределах экогеоморфологических районов горных систем Азербайджана, которые активно осваиваются в последние годы для развития горного туризма, сельского хозяйства и др., позволяет сделать вывод, что в этом регионе наиболее опасными процессами являются землетрясения, оползни, селевые потоки, эрозия рек и т.д. Они создают общую экодинамически напряженную ситуацию, которая требует проведения последовательной крупномасштабной экспертной оценки экогеоморфологической ситуации в пределах границ каждой горной экосистемы до ее крупномасштабного развития, а также для смягчения последствий угрозы для человеческой деятельности. Результаты, полученные в ходе оценки влияния природных и техногенных факторов на устойчивость горных экосистем, могут быть использованы для прогнозирования опасных природных явлений и исследования

геодинамически опасных геоморфодинамических процессов не только в Азербайджане, но и в других регионах Альпийско-Гималайского орогенного пояса.

Ключевые слова: современные опасные геоморфодинамические процессы, экогеологические стрессы, экогеоморфологическая опасность, Кавказ, Альпийско-Гималайская горная система, тектоника, экогеоморфологические районы

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REFERENCES

- [1] Kotlyakov V. M. (1995) Global geographic changes // Proceedings of the Russian Academy of Sciences, Geography Series. Vol. 3. P. 70-80 (In Russ.)
- [2] Kuzmin S. B. (2014) On the methods of assessment of potential geomorphological danger in extensive geo-ecological studies in active fault area. Saint Petersburg, Nauka. 187 P. (In Russ.)
- [3] Mazur I. I., Ivanov O. P. (2004) Dangerous natural processes. Moscow, Economics. 702 P. (In Russ.) (ISBN 5-282-02406-3)
- [4] Kang S., Su X., Tong L., Shi P., Yang X., Abe Y., Du T., Shen Q., Zhang J. (2004) The impacts of human activities on the water-land environment of the Shiyang River basin, an arid region in northwest China // Hydrological Sciences Journal, Vol. 49, N 3. P. 413-427 (in Eng.) <https://doi.org/10.1016/>
- [5] Jansky L., Pachova N. I. (2006) Towards Sustainable Land Management in Mountain Areas in Central Asia, Global Environmental Research, N 1. P. 99-115 (in Eng.) <https://doi.org/10.1659/>
- [6] Lioubimtseva I., Henebry G. M. (2009) Climate and environmental change in arid Central Asia: Impacts, vulnerability, and adaptations // Journal of Arid Environments, N 3. P. 963-977 (in Eng.) <https://doi.org/10.1136/>
- [7] Guliev I.A., Khalilov M.Y., Mardanov I.I. (2019) Modern problems and rational use methods of arid soils in Azerbaijan (as an example of Jeyranchol) // Bulletin of National Academy of Sciences of the Republic of Kazakhstan. Volume 4. N 380. P. 60-64 <https://doi.org/10.32014/2019.2518-1467.93>
- [8] Gotvansky V. I., Lebedeva Ye. V. (2010) The effect of natural and man-caused factors on the intensity of geomorphological processes in the Far East // Geomorphology. N 1. P. 26-35 (In Russ.) https://doi.org/10.15356/2071-9388_03v09_2016_02
- [9] Corominas J., van Westen C. J., Frattini P., Cascini L., Malet J. P., Fotopoulou S., Catani F., Eeckhaut M., Mavrouli O., Agliardi F., Pitiakakis K., Winter M. G., Pastor M., Ferlisi S., Tofani V., Hervas J., Smith J. T. (2014) Recommendations for the quantitative analysis of land-slide risk // B. Eng. Geol. Environment, Vol. 73. P. 209-263 (in Eng.) DOI 10.1007/s10064-013-0538-8
- [10] Spengler R. N., Ryabogina N., Tarasov P. E., Wagner M. (2016) The spread of agriculture into northern Central Asia: Timing, pathways, and environmental feedbacks // Holocene. Vol. 26, N 10. P. 1527-1540. ISSN: 14770911 (in Eng.) <https://doi.org/10.1177/09596836166641739>
- [11] Schlögel R., Doubré C., Malet J. P., Masson F. (2015) Landslide deformation monitoring with ALOS/PALSAR imagery: a DInSAR geomorphological interpretation method // Geomorphology, Vol. 231. P. 314-330 (in Eng.) <https://doi.org/10.1016/j>
- [12] Alizade E. K., Tarikhazer S. A. (2015) Ecogeomorphological danger and hazards at Major Caucasus (in limits of Azerbaijan). Moscow: MaksPress. 207 P. (In Russ.) ISBN 978-5-315-05047-4
- [13] Liliyenberg D. A., Budagov B. A., Aliyev A. S. (1996) Morphotectonics of Azerbaijan and Eastern Trans-Caucasus from the positions of neomobilism // Geomorphology, Vol. 4. P. 31-50 (In Russ.)
- [14] Alizade E. K. (2004) Regularities of morphostructural differentiation of mountain structures of the eastern segment of the central part of the Alpine-Himalayan seam zone (based on materials of encoding of logs). Synopsis of a thesis. Baku. 365 P. (In Russ.)
- [15] Khain V. E. (1982) Comparison of fixist and mobilistic models of tectonic development of the Major Caucasus // Geotectonics, Vol. 4. P. 3-14 (In Russ.)
- [16] Khain V. E. (1984) Regional geotectonics. The Alpine Mediterranean Belt. Moscow, Nedra. 343 P. (In Russ.)
- [17] Budagov B. A. (1993) Nival-glacial morphosculpture. Relief of Azerbaijan. Baku, Elm. P. 17-20 (In Russ.)
- [18] Tarikhazer S. A. (1997) Development of methodology of decoding of morphosculptures of mountain regions (based on the examples of north-eastern slope of the Major Caucasus). Synopsis of thesis. Baku, 29 P. (In Russ.)
- [19] Alizade E. K., Tarikhazer S. A. (2010) Exomorphodynamics of the mountain relief and its evaluation. Baku, Victory, 236 P. (In Russ.)
- [20] Budagov B. A., Alizade E. K., Tarikhazer S. A. (2005) Modern trends of development of disastrous processes and evaluation of ecogeomorphological danger (based on the example of southern slope of the Major Caucasus). Baku, Elm. P. 25-29. (In Russ.)
- [21] Tarikhazer S. A. (2006) Specific aspects of manifestation of exodynamic processes in different altitude and geomorphological belts (on the example of Shakhdag-Gyzylgain massif // Proceedings of Geographic Society of Azerbaijan. Vol. 10. P. 238-242 (In Russ.)

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PROBLEMS AND PROSPECTS OF DEVELOPMENT OF APITOURISM IN KAZAKHSTAN

Abstract. In the modern world, one of the most popular and faster growing types of tourism is apitourism. This is due to the growing interest in this type of tourism from tourists of all ages who want to spend their holidays in the apiary tasting bee products (honey, propolis, royal jelly, etc.); tourists are interested in learning the secrets of the technology for making high-quality honey and products related to it. Apiaries become as excursion objects for tourists. Especially attractive for tourists are the goods in the manufacture of which they personally participated. Apitourism promotes the socio-economic revival of rural areas, ensures the diversification of agricultural production, and creates new jobs. The article discusses the current state of development of apitourism in Kazakhstan, review the problems and prospects for its development. The experience of the development of apitourism in foreign countries is analyzed. In the course of using mental modeling and analysis of scientific literature, using the deductive research method, we were able to identify the resource base for the development of apitourism, and assessed the current state of the beekeeping in Kazakhstan. As the main research method, we conducted a sociological survey of potential consumers of tourist services, during which the advantages of apitourism and the main directions of its development were identified.

Keywords: apitourism, ecotourism, beekeeping, apiary, agriculture, nature-based tourism, local community.

Introduction. Tourism is one of the fastest growing industries of world economy. There are many new possibilities to attract tourists and satisfied their needs. Demand for the development of modern world civilization, the relationship between people and environment is growing up. As a unique way of sustainable development, apitourism has become a new type of travel that combines the desire to create a natural and unique experience, such as a beekeeper's lifestyle [1].

Apitourism is one of the new directions in tourism, which unites the spheres of tourism and beekeeping. It performs not only the functions of ecotourism, but also considers the issues of medical, educational tourism. Apitourism is a new travel destination that is harmoniously connected with the modern culture of bee breeding and beekeeping. This type of tourism has a great potential as an additional opportunity to expand and strengthen beekeepers' presence in the tourist market.

Honey breeding is one of the most rapidly developing types of farms. The honey breeding has a great potential for socio-economic development, preserving natural forests [2].

It is necessary to pay attention to apitourism for the sustainable development of tourism through the development of beekeeping in Kazakhstan. One of the most favorable and attractive areas for the development of apitourism is the East Kazakhstan region, and the authors visiting several villages in the area to take research. The main objective of the study is to identify the importance of apitourism in the development of the country's economy and tourism, to analyze the problems and prospects of the development of apitourism in Kazakhstan.

The research methods. For a deeper understanding and a more detailed disclosure of apitourism, we began our research with a theoretical analysis and generalization of the scientific literature regarding the subject of our study.

Apitourism (the name comes from Latin name of honeybee - *Apis mellifera*), as a form of tourism that deals with culture and traditions of rural communities could be considered as one of the most sustainable way of development and a niche tourism. Apitourism is a form of tourism connected with beekeeping as a traditional profession and with bee products in ecological, food and medicinal aspects [3].

We used the continuous absentee online survey method to solve the tasks in this scientific study. The survey can be considered as one of the most common methods for obtaining information about the subjects - respondents to the survey. The survey is that the respondent was asked special questions related to apitourism, the answers to which allowed us to obtain the necessary information. When creating the survey, we first formulated program questions that were relevant to the solution of the problem, but which were accessible only to specialists. By using the questionnaire method, it is possible to obtain a high level of mass research with the least cost. A feature of this method can be called its anonymity (the respondent's personality is not recorded; only his answers are recorded). During the study, we were able to draw up an SWOT-analysis, identify the main areas, and lay the foundation for the future development of apitourism in Kazakhstan. As a conclusion, we came to the result that apitourism is a unique way of sustainable development; it has become a new type of travel, combined with the desire to create natural and unique news for yourself as a way of beekeeping.

The discussion of the received results. Educational function of apitourism promotes pro-ecological environmental activities making tourists aware of a huge role bees play in functioning of many ecosystems. One-third of products eaten indirectly and directly by a man depend on insect pollination [4].

Apitourism is a relatively new phenomenon and is primarily focused on the beekeeping community or those interested in apitherapy, i.e., medicinal use of products from honeybees [5].

Apitourism allows apiaries, students or ordinary tourists to be acquainted with the art of breeding bees, to study the culture of beekeeping. Most visitors consider apiaries to be "sights of ecotourism," more attention needs to be paid to their development [6]. Apitourism is an innovative form of tourism [7], which is suitable for the study area and provides new jobs, take support for local infrastructure development, provides opportunities for small beekeepers in rural areas of the region in terms of promoting the region.

Since apitourism has a broad concept, it was formed as a separate type of tourism. Excursions to apiaries, excursion museums of bees in the open air, tasting various varieties of honey, cooking various types of honey products, etc., all this is an integral part of apitourism

A clever combination of ancient and old-fashioned beekeeping skills revitalizes local crafts and helps preserve the environment. Beeswax or apitourism has two obvious advantages. Beekeeping products, including bees, beeswax, propolis, pollen and mother's milk, etc. products can be a source of income. Another advantage is that it plays an important role in ecology, spraying flowers and plants in everyday life. Bees are at risk around the world, because if bees die, it can negatively affect the environment and plant life [8].

Api-tours give an idea about and represent a nature, heritage, traditions, cuisine and hospitality of different regions of the country.

Apitourism as a sphere combine many things: craftsmen, apiaries, ethnography collectors for apiaries, open-air museums and herbivores, apiaries, honey confectioners, honey wax candles, honey and honey dump sands, honey drink producers, producers of cosmetics and care products, as well as special gift makers, etc.

On the grounds of conducted research, basic apitourism functions were distinguished.

Therapeutic function. A distinctive feature of apitourism is apitherapy. It affects the health and restoration of human vitality. Massage with honey, breathing chambers inside the apiary, aromatherapy and others, contribute to the restoration of the respiratory system, and improve blood circulation and helps in the prevention of various diseases. It is essential to attract attention to not well-known and rarely used bee products such as propolis, beebread, royal jelly, pollen and wax. Showing numerous applications of bee products in cooking, medicine and cosmetics it is also a promotion of pro-healthy lifestyle and the return to nature, which can successfully serve a man.

Cognitive function. For tourists, information about the traditions and customs of the local population is of great interest. Therefore, tourists are acquainted not only with the development of beekeeping in the country, but also get additional information about the history, traditions and customs of the visited place.

This function draws attention to the specific nature and tradition of a region and especially of beekeeper's work and the history of beekeeping.

Educational function. How the honey economy develops, what kind of plants are needed for its development, where it is favorable to develop, etc. providing relevant information and providing new information. For that reason, it is very important to retain the largest number of bee colonies and to ecologically educate allowing understanding and appreciating the role of bees in life and economy of a man. Environmental education - the leading competence of students and trainees in relation to the world around them and themselves: the ability to live in harmony with nature and culture, with themselves and with society - leading orienteer global education [9].

Social function - an apitourism offer allows activating a local community by creating new jobs at tourist traffic services, to develop agrotourism farms and to benefit from the potential of knowledge and experience of apiarists [10].

This is the spectrum of cognitive activity of apitourism associated with the ecotourism and the leisure tourism.

Beekeeping requires less use of land, labor and resources than other types of farming, and it is well suited to the environment and ecosystem of the region [11].

Development of beekeeping in the country is one of the most important factors for the development of apitourism. However, the amount of honey produced is not one of the mandatory requirements for apitourism development (figure 1).

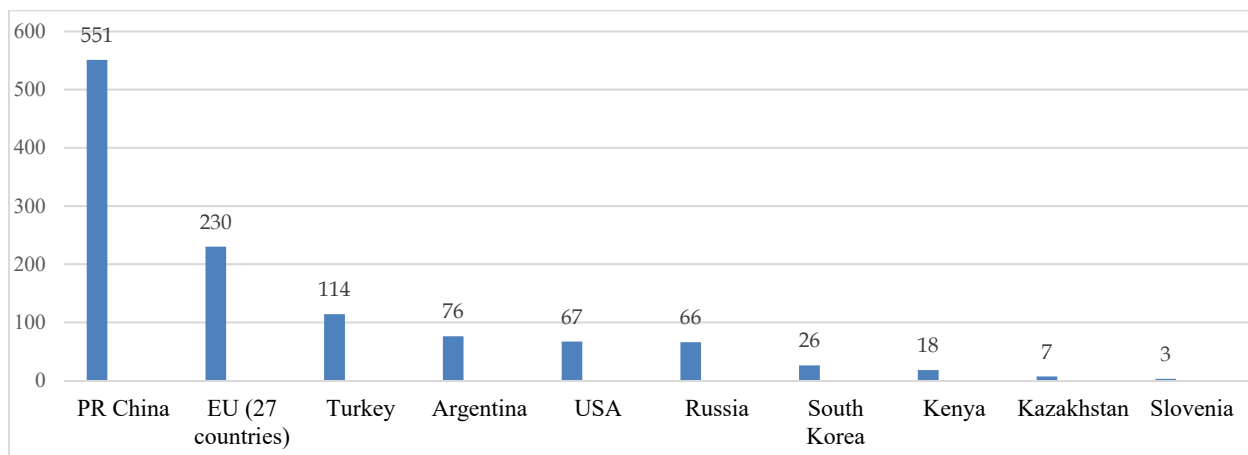


Figure 1 – World honey production in 2017 year (thousand tons) [according to 12]

China is the world leader in honey production and export. In 2017, China produced more than 550,000 tons of honey.

According to statistics, by the end of the 1990s Kazakhstan exported 50 thousand tons of honey per year. Most of them are exported to Germany, Japan, South Korea and China. At present Kazakhstan produces about 10 thousand tons of honey a year [13].

In Slovenia, about 10,000 beekeepers produce 3,000 tons of honey per year [14]. The main points of the api-tour's advertising are: "Acquaintance with the methods of biodynamic development of beekeeping, taking into account the natural integrity of apiaries, demonstration of different apiary systems, the introduction of apnea pollen, breast milk and propolis, as well as their beneficial effects on human health and well-being, with organization various seminars". Slovenian ApiRoutes company specializes in beekeeping tours [15]. Beekeeping is an ancient and well-developed type of economy that arose in Slovenia from the moment it was settled by the Slavs [16].

Countries with the highest number of bee hives are not the highest producers of honey. This mainly depends on the environmental climate, the number of bees, the number of plants with pollen, and so on.

It is generally recognized that a certain degree of state intervention in the development of tourism is important [17], therefore, for the successful development of apitourism, state support is necessary not only from the material side, but also legal support is needed. In 2010, the Kazakhstan's National Association of

Beekeepers “Bal-Ara” was founded, which made a significant contribution to the development of beekeeping in Kazakhstan, a targeted program for the revival of bee farming in our country was launched.

First of all, the main factors for developing of beekeeping are environment, vegetation and water resources [18]. Accordingly, apitourism may not develop in all regions of our country. In Kazakhstan, the most favorable zone for the development of apitourism is a region with well developed beekeeping industry. It is desirable to choose right places with the most favorable climate and effective in terms of location. In Kazakhstan, the most favorable conditions for the development of the beekeeping industry are in the east of the country. The collection and analysis of material gave us the opportunity to determine that apitourism can well develop in the East Kazakhstan and Almaty regions. Recently, the production of honey is also developing well in Northern Kazakhstan. Apitourism is not only an acquaintance with honey products, but also has a number of its own characteristics. It also contributes to the development of other types of tourism. Beekeeping is well developed in Katon-Karagaysky, Zyryanovsky, Glubokoy, Shemo-naikhinsky, Kurchumsky, Urdzharsky, Ulansky, Borodulikhinsky areas of the East Kazakhstan region.

By analyzing of 2019-year literature materials, we able to discover excursions to the Ulken Naryn, Kishi Naryn, Solonovka, Besuy, Sennoe, Katon-Karagay, Kaindy districts with the purpose of apitourism are being realized. In these areas, local and foreign tourists can get acquainted with local beekeeping and try various honey products. Farmers from "Sunkar", "Bee" and "Chekankin" LLP produced 5 tons of local honey in the Ulken Naryn rural district in 2017. In the small villages of Naryn and Solonovka, the number of nesting sites of bees in private farms is more than 1800. The total honey production in 2017 amounted to 46 tons in this region. Due to the high demand for beekeeping products, there is an increase the number of honey hives in farms.

At the same time, some regions of Kazakhstan have an apitherapy. Apitherapy is a scientifically-based medical concept that promotes traditional knowledge of beekeeping products and their nutrition and use in medicine [19]. Apitherapy - a solution to the problems of preserving and maintaining human health through beekeeping. Beekeeping products are food, biologically active substances and natural medicines. In recent years, medicine has rediscovered and confirmed the results of the prevention and treatment of diseases through beekeeping [20]. In Katon-Karagay and Glubokoe districts of the East Kazakhstan region, it is now widely spread to go to bed in specially built houses with the aim of preventing and treating various diseases with the help of apitherapy. Special api-houses were built in the area near Kaindy village in Katon-Karagai district of the East Kazakhstan region under the project “Altyn-Altai - Wealth for the development of the region” [21].

Sleeping near an apiary is an ancient and very effective way to strengthen the health of our ancestors. Bees pass into their nests through small openings against the wall. Special mesh near the hive prevents the bees from entering the interior of the house. The house next to the bees is ideal for strengthening immunity, strengthening the cardiovascular system, treating lung diseases, neurosis, and many other diseases [22]. Thanks to the free circulation of aromatic air, the chick peas have are very nice microclimate, which can easily penetrate into the body of steam and general sleepiness [23].

Innovation is important for the agricultural sector of the Republic of Kazakhstan, bringing the potential for long-term economic growth [24]. Therefore, the development of apitourism in is an innovative approach in the development of beekeeping in our country.

In the field of the scientific research, we prepare and carry out an online survey conducted with apitourism. For these purposes, we used the most affordable option for conducting an online survey – Google Forms platform.

About 1,200 people took part in an online survey. Before taking the information from survey, a brief information about apitourism was presented to respondents. The analysis of survey, show that the most of the respondents (55.8%) were interested in apitourism for medical purposes. The rest of the respondents chose a cognitive purposes - 33.3%, for educational purposes - 5.8%, for business purposes 1.7%, 39 respondents (3.3%) did not express interest in this type of tourism (figure 2).

The therapeutic function of apitourism has increased the importance, respondents identified improved health through apitourism as its main advantage (figure 3).

Due to the development of apitourism in Kazakhstan, it is possible to have a significant impact on the development of the tourism industry in the country as a whole. Nevertheless, the majority of respondents believe that there are some obstacles to the development of apitourism in our country (figure 4). Some

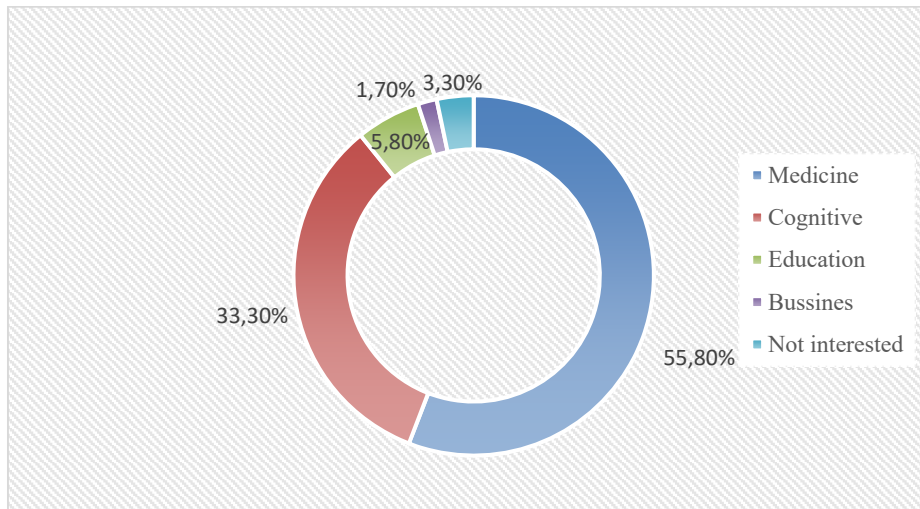


Figure 2 – The interest of potential tourists to apitourism in Kazakhstan

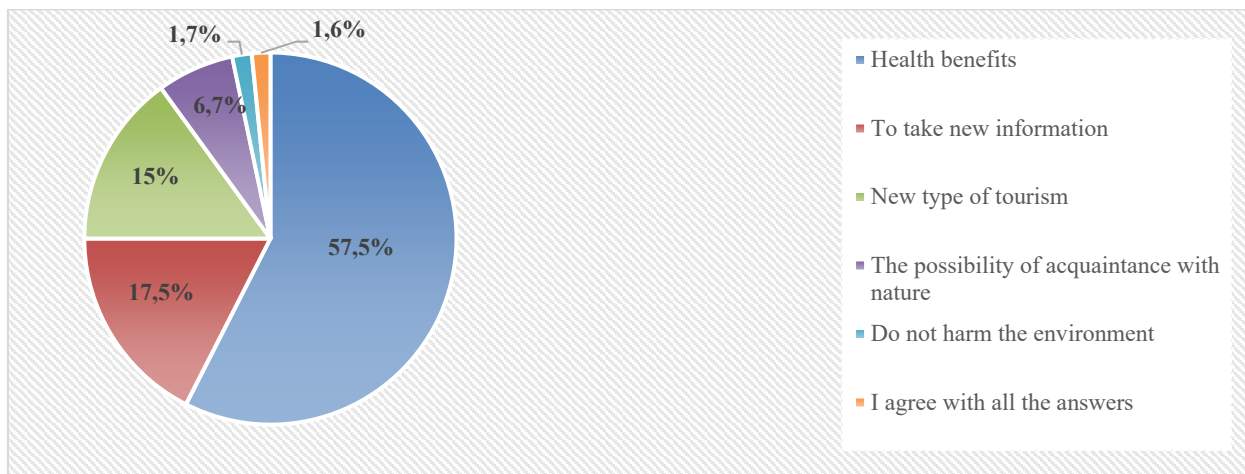


Figure 3 – The main advantages and features of apitourism, according to respondents view

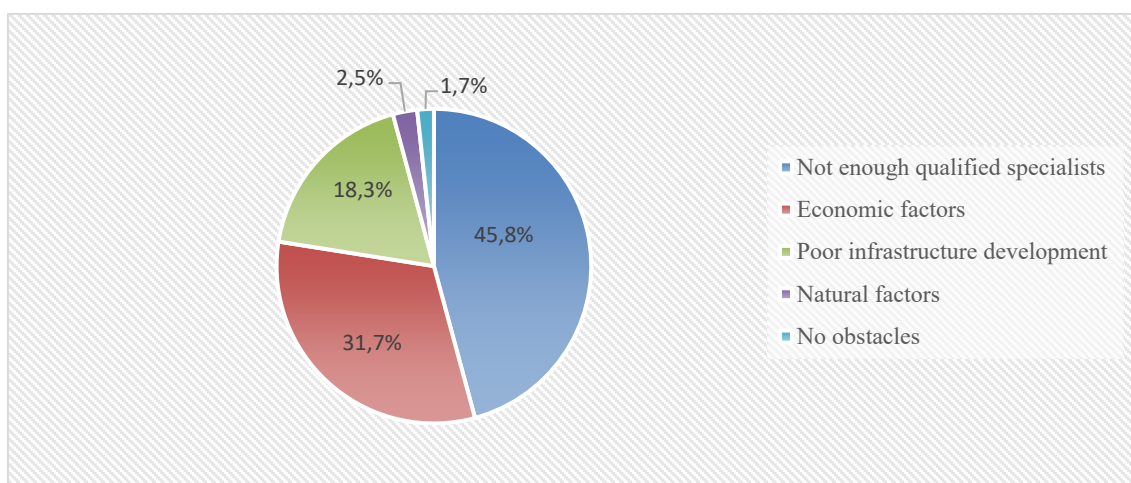


Figure 4 – Obstacles in development of apitourism in Kazakhstan, according to respondents view

respondents considered that one of the main obstacles to development apitourism is not enough qualified specialists (45.8%), some of them have chosen economic factors (31.7%). At the same time, some groups choose poor development of tourism direction with weak infrastructure development (18.3%), as well as a natural factor (2.5%).

Traveling with the aim of apitourism, apitherapy takes the most important place for mind of tourists (60%). Therefore, it's necessary to quality develop “apitherapy” for the development of tourism and attract tourists, and it is also necessary to include medical procedures in the local api-tour programs.

It is also advisable for future local managers and enterprises to take on a mind to organize excursions to honey fairs for tourists who are going to taste and buy various types of honey products in Kazakhstan (figure 5). As a additional result of the survey, we were able to identify that the main part of the excursionists, who choose visiting bee apiaries with excursion purposes are schoolchildren and students.

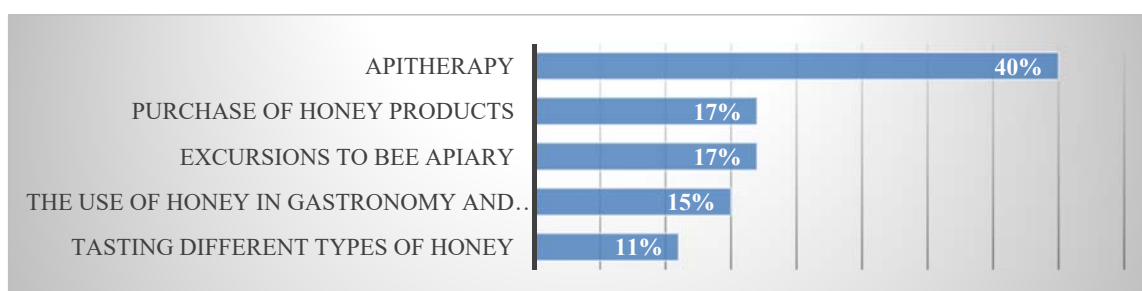
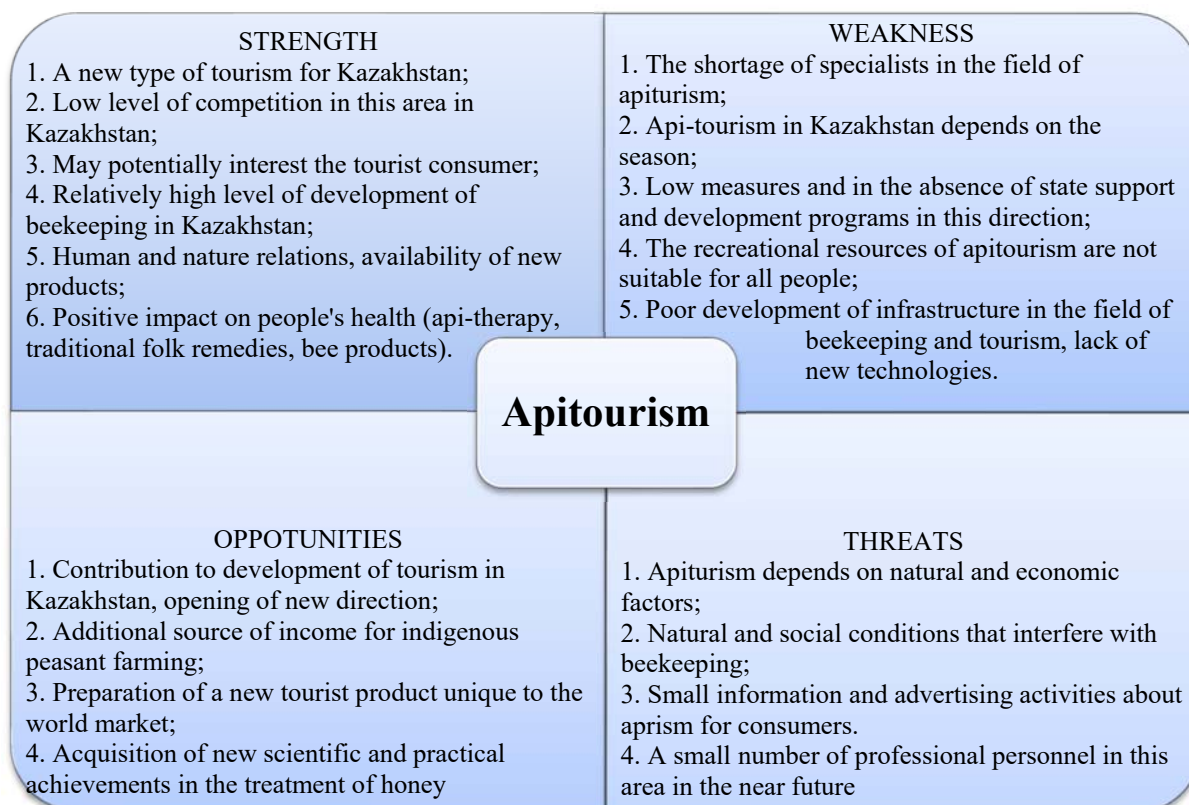


Figure 5 – The reasons of the local tourists for apitourism travel

For the development of apitourism in Kazakhstan, it is necessary to organize excursions to open-air museums for children and adolescents, organize workshops and master-classes on cooking and tasting honey in the cities of Almaty and Oskemen, educate and train highly qualified specialists who specialized in spa procedures using products based on bee honey and pollen.

SWOT analysis of apitourism development in Kazakhstan



East Kazakhstan and Almaty regions are favorable zones for the development of apitourism in Kazakhstan. In particular, East Kazakhstan is a region with a high development potential. The reason is that interesting excursions, festivals are already being organized here, apitherapy is used for medicinal purposes.

Conclusion. Today, interest in beekeeping is growing faster thanks to the efforts of modern society to consume environmentally friendly and organic products. The basis of apitourism is the production of honey and the agricultural sector as beekeeping. Beekeeping provides the local community in rural and suburban areas with many important products and services.

The success of this intervention to develop apitourism can be attributed to the people's access to all the types of resources needed to make their livelihoods sustainable: 1. Natural resources (strong populations of healthy bees and abundant forest); 2. Physical resources (lorries able to navigate rough forest tracks and to enable honey to be transported from the producers to the collection centre, buckets with lids allowing clean honey to be transported); 3. Social resources (the strong organization, owned and run by the producers and with access to market knowledge); 4. Human resources (the beekeepers skills at beekeeping and honey and beeswax harvesting); 5. Financial resources (access by the beekeeping enterprises to credit when needed).

Our research considers apitourism as a new direction of sustainable development. The number of tourists interested in apitourism is growing; this trend also applies to our Kazakhstan society. This was observed during the survey.

The East Kazakhstan region is one of the potential regions for the development of Kazakhstani ecotourism, the region meets all the parameters necessary for the development of apitourism in our country. This region of Kazakhstan is distinguished by its biological and landscape diversity. For the successful development of tourism in the region, it is necessary to attract qualified specialists in this field and develop infrastructure, it is necessary to coordinate the activities of local beekeeping enterprises and familiarize them with the high economic potential for the development of apitourism in their territories.

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ҚАЗАҚСТАНДА АПИТУРИЗМДІ ДАМУДЫҢ МӘСЕЛЕЛЕРІ МЕН БОЛАШАҒЫ

Аннотация. Қазіргі таңда туризмнің танымал түрлерінің бірі апитуризм болып табылады. Бұл өз демалыстарын омартада ара шаруашылығы өнімдерінің жоғары сапасы мен технологиясының сақталуына көз жеткізу арқылы бал өндірудің қыр-сырымен танысып, ара шаруашылығы өнімдеріне (бал, прополис, аналық сүт және т.б.) дегустация жасап, өткізуге ниет білдірген барлық жастағы, әлеуметтік және ұлттық санаттар қатарындағы туристер тарапынан қызығушылық тууымен байланысты. Омарталар туристер үшін экскурсиялық нысандар болып табылады. Әсіресе туристер үшін тартымды өнімдерге оларды дайындауға өздері қатысатын өнімдер жатады. Апитуризм ауылдық аймақтардың әлеуметтік-экономикалық қайта жаңғыруына ықпал етіп, ауыл шаруашылығы өндірісін әртараптандыруды қамтамасыз етеді, жаңа жұмыс орындарын құрады. Мақалада Қазақстандағы апитуризм дамуының қазіргі жағдайы, оның даму мәселелері мен перспективалары қарастырылады. Шет елдерде апитуризмді дамыту тәжірибесі талданды. Сонымен қатар апитуризмді дамыту үшін ресурстық база мен Қазақстандағы ара шаруашылығының қазіргі даму жағдайы қарастырылды. Апитуризмнің артықшылықтары мен оның дамуының негізгі бағыттары анықталып, елдегі апитуризмнің дамуына байланысты әлеуметтік сауалнама, SWOT-талдау жүргізілді. Сондай-ақ, апитуризмді дамыту үшін қолайлы жағдайлары бар аймақтар анықталды.

Түйін сөздер: апитуризм, экотуризм, бал шаруашылығы, омарта, ауыл шаруашылығы, табиғи туризм, жергілікті қауымдар.

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ПРОБЛЕМЫ И ПЕРСПЕКТИВЫ РАЗВИТИЯ АПИТУРИЗМА В КАЗАХСТАНЕ

Аннотация. На сегодняшний день одним из популярных видов туризма является апитуризм. Это вызвано нарастающим к нему интересом со стороны туристов всех возрастных категорий, социальной и национальной принадлежности, которые желают провести свой отдых на пасеке, дегустируя продукты пчеловодства (мёд, прополис, маточное молочко и т.д.), изучая таинство создания меда, убеждаясь в соблюдении технологий и высоком качестве продукции пасеки. Пасеки становятся экскурсионными объектами для туристов. Особенно привлекательными для туристов являются продукты, в изготовлении которых они лично приняли участие. Апитуризм способствует социально-экономическому возрождению сельской местности, обеспечивает диверсификацию сельскохозяйственного производства, создает новые рабочие места. В статье рассматривается современное состояние развития апитуризма в Казахстане, проблемы и перспективы его развития. Анализируется опыт развития апитуризма в зарубежных странах. Вместе с тем анализируется ресурсная база для развития апитуризма, текущее состояние пчеловодческого хозяйства в Казахстане. Был проведен социологический опрос, SWOT-анализ развития апитуризма в стране, выделены преимущества апитуризма и основные направления его развития. Также выявлены районы, имеющие наиболее благоприятные условия для развития апитуризма.

Ключевые слова: апитуризм, экотуризм, пчеловодство, пасека, сельское хозяйство, природный туризм, местное сообщество.

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REFERENCES

[1] Kline Arih I., Arih Korošec T. Api-tourism: transforming Slovenia's apicultural traditions into a unique travel experience. WIT Transactions on Ecology and The Environment, Vol 193, ISSN 1743-3541 (on-line), WIT Press, 2015 P. 963-974. DOI: 10.2495/SDP150811,

[2] Acopa D., Boege E. The Maya forest in Campeche, Mexico: experiences in forest management at Calakmul. In: R. B. Primack, D. Bray, H. A. Galletti and I. Ponciano, editors. Timber, Tourists, and Temples. Island Press, Washington, D.C., 1998 - 81 p.

[3] Woś B., Bień W. Aпитуристыка jako forma turystyki zrównoważonej. Zeszyty Naukowe Turystyka i Rekreacja, z.11 (1), Wyższa Szkoła Turystyki i Języków Obcych, Warszawa, 2013 – 6 p. DOI: 10.5604/01.3001.0005.3532

[4] Spevak M. A is for apiculture, B is for bee, C is for colony-collapse disorder, P is for pollinator parks, Cambridge University Press, 2012. P. 76-94.

[5] Horn T. Bees in America: How the Honey Bee Shaped a Nation, University Press of Kentucky, 2005. 352 p. ISBN-13: 978-08131916382005

[6] Lemelin R.H. The Management of Insects in Recreation and Tourism. // Leisure/Loisir Journal 37(3), 2013 P. 303-304. DOI: 10.1080/14927713.2013.848548

- [7] Pantoja G., Gómez M., Contreras C., Grimau L. and Montenegro G. Determination of suitable zones for apitourism using multi-criteria evaluation in geographic information systems: a case study in the O'Higgins Region, Chile. *Cien. Inv. Agr.* №44 (2), 2017 – P. 139-153. DOI: 10.7764/rcia.v44i2.1712
- [8] South D. Development Challenges, South-South Solutions. Issue: E-newsletter of the United Nations Office for South-South Cooperation, 2013.
- [9] Arpentieva M.R., Kassymova G.K., Lavrinenko S.V., et al. Environmental education in the system of global and additional education // *The Bulletin of the National Academy of Sciences of the Republic of Kazakhstan*. Volume 3, Number 379, 2019 – P. 158 – 168. <http://doi.org/10.32014/2019.2518-1467.82>
- [10] Wos B. Apiturystyka jako innowacyjna forma oferty turystycznej na terenach wiejskich, 2015 - P. 297-306.
- [11] De Medici Jaffee, C. *The Honey Road*. Annual Report: Kars, 2012.
- [12] Pollinators and bees. Official web sites of Food and Agriculture Organization of the United Nations (FAO UN). 2018. [Electronic resource] – URL: <http://www.fao.org/resources/infographics/infographics-details/en/c/1202954/>
- [13] Buyanov S., Kak nakormit' Kitay kazakhstanskim miodom, 2018. [Electronic resource]. – URL: https://forbes.kz/made_in_kz/kak_nakormit_kitay_kazakhstanskim_medom/ (in Russian)
- [14] Truman, R. Born to bee wild – the buzzing natural wonder of Slovenia, 2018. [Electronic resource]. – URL: <https://www.telegraph.co.uk/travel/beautiful-slovenia/bee-tourism/>
- [15] Carroll T., *Starting Beekeeping in Ireland - The No Nonsense Guide*, 2018 edition. First Edition, ISBN 9780244383879, 2018 – 474 p.
- [16] Plut-Pregelj L., Kranjc G., Lazarević Z., Rogel C. *Historical Dictionary of Slovenia*, Rowman & Littlefield, Rowman & Littlefield Publishers, 2018 – 744 p. ISBN-13: 978-1538111055
- [17] Tleuberdinova A.T., Shayekina Zh.M., Salauatova D.M., Pratt S. Organizational activities to stimulate the entrepreneurial activity in tourism // *The Bulletin of the National Academy of Sciences of the Republic of Kazakhstan*. Volume 2, Number 378, 2019 – P. 226 – 236. <https://doi.org/10.32014/2019.2518-1467.60>
- [18] Amiri F., Shariff M. Application of geographic information systems in land- use suitability evaluation for beekeeping: A case study of Vahregan watershed (Iran) // *African journal of agricultural research*, 7(1), 2012 – P. 89–97.
- [19] Mateescu C., APITHERAPY. CURRENT SITUATION AND PERSPECTIVES, 2018. [Electronic resource]. – URL: <https://apimedica2018.org/speaker/cristina-mateescu/>
- [20] Kapš, P. *Zdravljenje s čebeljimi pridelki, apiterapija* (Eng. Treatment with bee products, Apitherapy), Grafika Tomi, Novo mesto, 2012 – 168 p.
- [21] Vologodskaya G. Medoviy SPA, 2017. [Electronic resource]. – URL: <https://kazpravda.kz/articles/view/medovii-spa> (in Russian)
- [22] Sarycheva K. Zalog kachestva meda - pchely poroda [Text] / K. Sarycheva // *Ogni Priirtushya - Aq bulaq*. - 2017. - 1 sentyabriya., №35. - B. 3. (in Russian)
- [23] Šivic, F. Apitouristic. *Bee World* 90(3), 2019 – P.66–67.
- [24] Abraliev O., Beisenbaeva A., Naimanova Zh. The international experience of agricultural innovations // *News of the National Academy of Sciences of the Republic of Kazakhstan*. Series of agricultural sciences. Volume 1, Number 49, 2019. P. 5-15. <https://doi.org/10.32014/2019.2224-526X.1>

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COMPARATIVE ASSESSMENT OF THE IMPACT OF NATURAL ANTIOXIDANTS ON THE QUALITATIVE INDICATORS OF SEMI-FINISHED PRODUCTS FROM BROILER-CHICKEN MEAT AND OXIDATIVE PROCESSES IN THEIR STORAGE

Abstract. The effectiveness of use of dihydroquercetin bioflavonoid in comparison with other natural antioxidants was studied in the formulation of semi-finished products of broiler-chicken meat, indicating its high biological activity, positive impact on quality indicators, finished products yield and their consumer characteristics.

It was established that antioxidants with various efficiency inhibit the oxidative deterioration of samples primary products used in the production of semi-finished broiler-chicken products. With the introduction of vitamin E, for 28 days of storage, the acid number was lower on average by 0.84 mg KOH/g, with the addition of vitamin C, rutin and dihydroquercetin, respectively, by 1.27; 3.52 and 3.61 mg KOH/g compared with the control sample.

So, when adding tocopherol, the peroxide value in the test samples was 1.3 times lower than in the control ones. When adding ascorbic acid, rutin, and dihydroquercetin in samples of raw materials, the value of this indicator was even lower by 1.6; 1.7 and 1.9 times respectively.

As a result, after 28 days of storage of test samples of poultry processing primary products, the acid number reached smaller values by an average of 29%, and the peroxide value - by 1.5–1.7 times, in reference to the control.

The obtained results persuade of the high efficiency of using dihydroquercetin as an active antioxidant, making it possible to use it along with available analogues.

Keywords: natural antioxidants, broiler-chicken meat, poultry processing primary products, semi-finished products, quality indicators, oxidation products, storage period.

Introduction. Currently, in the meat industry, creation and production of functional products for healthy nutrition are acute. The consumption of such products helps to normalize body metabolism and improve human health [1].

It is known that meat products are not only susceptible to rapid bacteriological damage, in the fight against which preservative agents help, but also to oxidative deterioration. Oxidative processes reduce the shelf life of finished products due to the deterioration of organoleptic indicators and the nutritional value of products. Therefore, one of the modern trends in the manufacturing of meat products for healthy nutrition is an orientation towards the use of natural nutrient additives which can have a pronounced positive impact on the human body. In this regard, secure natural antioxidants deserve attention, which not only significantly inhibit oxidation process in meat products during storage, but also simultaneously serve as a primary nutrient of treatment-and-prophylactic products, that makes their use relevant in the formulation of a wide range of products [2, 3].

The aim of this research is a comparative assessment of the efficiency of natural antioxidants in semi-finished products of broiler-chicken meat during storage.

In order to achieve the aim, the following *objectives* were set:

1. To study the effectiveness of the inhibitory action of the studied antioxidants on the course of hydrolytic and oxidative processes in the lipid fraction of meat for processing and chilled chopped meat of semi-finished products during storage [4];

2. To determine the nature of the impact of the studied antioxidants on the main functional - technological, physicochemical and structural-mechanical indicators of the raw material of the model of minced meat of semi-finished broiler-chicken meat products [5];

3. To study the organoleptic properties of the finished products from the model minced meat of semi-finished products, made with the use of antioxidants.

Materials and methods of research. The most common types of raw materials in the production of semi-finished products are mechanically deboned meat (MDM) of broiler-chickens, fillets and skin, which contain fatty tissue in the subcutaneous tissue and, therefore, are significantly susceptible to the oxidative deterioration [5].

In this regard, there has been conducted a research on the comparative assessment of the main quality indicators of samples of poultry processing primary products and model minced meat of semi-finished products (table 1) with the addition of natural antioxidants used to reduce the formation of oxidation products during storage [7, 8].

Table 1 – Formulation of the model minced meat of semi-finished products using poultry processing primary products

	Control	Test No.1 (Vitamin E)	Test No.2 (Vitamin C)	Test No.3 (Rutin)	Test No.4 (DHQ)
Critical raw material (primary products), kg					
Broiler-chicken breast fillet, kg	60.00	60.00	60.00	60.00	60.00
MDM, kg	25.00	25.00	25.00	25.00	25.00
Skin from broiler-chicken carcasses, kg	6.00	6.00	6.00	6.00	6.00
Onion, kg	5.00	5.00	5.00	5.00	5.00
Melange, kg	4.00	4.00	4.00	4.00	4.00
Spices and materials, kg					
Food salt, kg	3.00	3.00	3.00	3.00	3.00
Ground black pepper, kg	1.00	1.00	1.00	1.00	1.00
Bread crumbs, kg	3.00	3.00	3.00	3.00	3.00
Vitamin E, kg	–	0.24	–	–	–
Vitamin C, kg	–	–	0.68	–	–
Rutin, kg	–	–	–	0.39	–
Dihydroquercetin, kg	–	–	–	–	0.72

The objects of the research were:

- “Dihydroquercetin” (DHQ), “Vitamin C”, “Vitamin E”, “Rutin” as antioxidant nutritional supplements [9, 10, 11, 12];

- chilled broiler-chicken meat of the 1 grade with pH24 6.2-6.5, according to GOST R 52702-2006;

- mechanically deboned chilled meat according to GOST 31490-2012;

- chilled skin from broiler-chicken carcasses.

During the research, within 4 weeks (28 days) of storage, every week it was carried out a study of test samples of primary products and model minced meat of a semi-finished product according to basic physicochemical, structural-mechanical, and functional-technological characteristics.

The investigated antioxidants were added to the homogenized samples of the raw materials in accordance with the recommendations. Their use is regulated by the Guidelines of the State Sanitary and

Epidemiological Regulations of the Russian Federation No. 2.3.1.1915-04 of 2004. “Recommended consumption levels of nutrient and biologically active substances” [13], which establish an adequate consumption level. These compounds are included in the list of food additives that do not adversely affect human health when they are used to prepare foodstuffs (Sanitary rules and regulations 2.3.2.1078-01 “Hygienic requirements for safety and nutritional value of foodstuffs”).

Antioxidants were added in accordance with the recommended dosage (table 2).

Table 2 – The share of natural antioxidants in test samples

Antioxidant	Hydratation	Сырье			Model minced meat of the semi-finished products
		fillet	mechanically deboned meat	skin	
Rutin, mg/kg	1:3	0.59	0.57	0.56	0.39
Vitamin C, mg/kg	1:2	0.57	0.56	0.53	0.68
Vitamin E, mg/kg	–	0.57	0.56	0.52	0.24
Dihydroquercetin, g/kg	1:3	0.62	0.58	0.57	0.72

Preparations, apart from a vitamin E solution, were hydrated before introduction into the primary product - to facilitate more uniform distribution in it. During storage of samples at a temperature of 3 ± 1 °C, after 7, 14, 21 and 28 days of storage, an investigation of basic physicochemical, structural-mechanical and functional-technological characteristics was carried out in 3 replications, in accordance with generally accepted standard techniques. As a result, the average values are calculated, processed by the methods of mathematical statistics.

Research results. Comparative analysis and comprehensive assessment of test samples objectively indicate the impact of natural antioxidants on changes in the studied parameters and organoleptic characteristics in research objects, but with various efficiencies (table 3).

The moisture binding capacity (MBC) of meat affects product yield, mass loss during storage, and resistance of the product in relation to the development of putrefactive microflora.

MBC is one of the most important functional properties of raw materials and characterizes the degree of bond of meat protein with immobilized and free water. MBC is determined by a number of factors: the quantitative ratio of moisture and fat, the depth of autolysis of primary product, freezing conditions, pH

Table 3 – The main functional and technological properties of the primary product

Samples	Control	Vitamin E	Vitamin C	Rutin	DHQ
<i>Moisture-binding capacity, %</i>					
Skin	48.61±0.92	52.06±0.81	53.28±0.51	56.16±0.39	56.67±0.20
MDM	52.72±0.39	55.87±0.41	56.40±0.37	57.22±0.23	58.09±0.16
Fillet	53.41±0.48	56.91±0.35	57.18±0.49	59.17±0.43	62.48±0.15
<i>Moisture-retention capacity, %</i>					
Skin	37.12±0.61	39.16±0.06	41.59±0.72	42.85±0.45	45.80±0.28
MDM	38.59±0.30	40.21±0.47	43.01±0.43	45.24±0.29	46.05±0.13
Fillet	40.16±0.52	42.60±0.18	45.22±0.51	48.39±0.15	50.39±0.10
<i>Emulsifying capacity, %</i>					
Skin	51.55±0.38	53.27±0.59	54.98±0.48	57.18±0.61	58.50±0.72
MDM	48.17±0.59	50.24±0.32	52.24±0.31	54.07±0.45	55.32±0.66
Fillet	45.15±0.18	48.19±0.48	51.60±0.16	52.18±0.94	53.71±0.41
<i>Emulsion stability, %</i>					
Skin	68.15±0.28	71.60±0.14	74.49±0.38	76.48±0.71	77.16±0.27
MDM	70.20±0.29	73.76±0.27	75.35±0.27	77.22±0.28	78.04±0.12
Fillet	73.49±0.15	75.05±0.38	77.92±0.18	80.14±0.93	82.69±0.52

value, the number of proteins, their composition, and properties, including the content and degree of solubility of myofibrillar proteins with pronounced ability to swell.

The introduction of antioxidants into the primary product has ambiguously affected the change in their moisture binding capacity (MBC). If in samples with added vitamin E, vitamin C, and rutin, this indicator increased by an average of 3.37, 4.04 and 5.94%, respectively, then in samples with the added dihydroquercetin, it was even higher - by 7.50%, relating to the control sample.

The results persuade that the addition of antioxidants to raw materials has a positive effect on its moisture-binding capacity.

The introduction of antioxidants also provided an increase in the moisture-retention capacity (MRC) of the primary product. In the samples with dihydroquercetin, this indicator was higher on average by 8.79% in regard to the control, while in samples with vitamins E, C and rutin it increased by 2.03, 4.65 and 6.87%, respectively.

The improvement of such important functional and technological properties as MBC and MRC provides the improvement of a number of important sensory characteristics of the semi-finished product - its juiciness, tenderness, and contributes to an increase in the finished product yield.

The introduction of DHQ into test samples of primary products influenced the increase in their emulsifying capacity (EC), as well as the emulsion stability (ES). Unlike the control, the EC of test samples containing dihydroquercetin increases on average by 7.55%, and in the remaining samples - by 2.28, 4.65 and 6.19%, respectively.

Similarly to this indicator, improvement of the ES in all types of primary products was also noted - by 2.86, 5.31, 7.33 and 8.68%, respectively. An increase in EC and ES indicates an improvement in the functional and technological properties of the primary product, which also determines the quality of the finished product.

The impact of natural antioxidants on the chemical composition of test samples is presented in table 4.

Table 4 – The chemical composition of the test samples of primary products,% by weight of primary products

Indicators	Control	Vitamin E	Vitamin C	Rutin	DHQ
Moisture	61.90±0.33	62.68±0.92	64.78±0.89	65.73±0.56	66.52±0.62
Dry matter	38.10±0.26	37.32±0.23	35.22±0.42	34.27±0.58	33.48±1.16
Protein	25.79±0.34	25.42±0.47	23.30±0.51	22.40±1.07	21.77±0.40
Fat	10.97±0.12	10.49±0.11	10.45±0.07	10.38±0.06	10.19±0.09
Ash	1.34±0.04	1.41±0.01	1.47±0.04	1.49±0.03	1.52±0.08
calorific capacity, kcal	204.47±0.38	198.63±0.61	189.58±0.23	185.26±0.45	180.97±0.78

When adding dihydroquercetin to the test samples of raw materials, the mass fraction of moisture increased on average by 7.46% and exceeded this indicator in other samples. The sample with the addition of vitamin E differed in the lowest moisture content, which is 1.26% higher than this indicator in the control sample since it did not contain hydrated supplements. A rise in humidity was observed in direct dependence on the level of addition of antioxidants to samples, which is associated with the hydration of preparations. Thus, with the addition of vitamin C, the humidity of the test samples increased by 4.65%, and with the addition of rutin - by 6.19% respectively.

A gain in humidity expectedly led to a decrease in the content of dry matter in model minced meat [14].

In the dry matter of poultry processing samples, the mass fraction of ash, in relation to the control, was increased by 0.07; 0.13; 0.15 and 0.18%, respectively.

Weight fraction of fat decreased, but to a greater extent - by 0.48; 0.52; 0.59 and 0.78%, respectively.

The variations in the mass fraction of basic nutrients naturally reflected on the energy value of the semi-finished products' samples. Due to the decrease in their fat content, the calorific capacity of minced test samples containing dihydroquercetin was reduced by an average of 23.50 kcal, compared to the control, the energy value of the remaining test samples also decreased by 11.68; 14.89 and 19.21 kcal, respectively.

The results of the research have shown that the introduction of natural antioxidants had a positive impact on the viscosity and adhesion of the test samples of the poultry processing primary products, presented in Table 5 and 6.

The obtained data confirm the positive effect of antioxidants on the viscosity of the primary products. The highest value of this indicator was for samples consisting of skin from carcasses. In these samples containing vitamin E, vitamin C, and rutin, within 28 days of storage, this indicator increased on average by 6.03%; 10.60% and 17.09%, respectively, in samples with the added dihydroquercetin, it was even higher - by 19.92%, relative to the control sample.

The lowest viscosity index was in samples of fillet of broiler-chicken carcasses. During the research, it was noted the increase in this indicator in samples with vitamin E on average by 7.41%, vitamin C, rutin and dihydroquercetin - by 12.24%; 19.18% and 25.47%, respectively (table 5).

Table 5 – Variations in the viscosity of the test samples of primary products, Pa•s

Indicators	Control	Vitamin E	Vitamin C	Rutin	DHQ
<i>At the beginning of the research</i>					
Skin	738.50±20.69	682.33±1.78	623.67±1.47	588.33±1.78	551.00±3.94
MDM	261.12±3.69	225.33±2.86	217.67±2.48	205.67±1.78	204.67±2.86
Fillet	247.92±12.68	220.67±3.56	212.67±3.56	164.33±4.60	123.67±3.19
<i>After 7 days of storage</i>					
Skin	783.92±5.65	708.53±3.84	645.67±2.86	627.37±3.52	614.40±9.49
MDM	329.30±3.72	313.00±3.24	302.67±4.32	296.33±3.19	275.67±2.86
Fillet	258.42±2.28	246.33±0.82	239.67±4.02	238.67±1.47	232.33±3.19
<i>After 14 days of storage</i>					
Skin	839.30±11.72	795.33±10.11	773.00±5.34	681.67±13.44	673.33±13.08
MDM	397.54±5.61	347.67±3.63	332.33±8.84	318.00±1.87	302.67±4.32
Fillet	322.86±3.90	293.67±5.31	281.67±4.71	256.33±6.38	244.33±4.02
<i>After 21 days of storage</i>					
Skin	892.73±12.10	849.86±11.24	831.95±6.94	752.62±5.49	728.27±6.31
MDM	567.82±10.25	528.47±8.12	416.93±6.74	388.50±3.21	373.67±1.26
Fillet	412.17±9.79	389.45±7.35	361.18±6.85	342.40±4.71	329.63±2.63
<i>After 28 days of storage</i>					
Skin	925.38±10.34	898.52±13.49	878.31±10.66	826.74±6.02	792.12±6.79
MDM	591.76±9.68	572.30±6.02	493.28±7.25	459.17±5.06	429.48±2.83
Fillet	459.32±8.91	427.86±8.06	392.38±5.75	381.20±5.09	354.72±3.35

Studies show that the highest adhesion rate was typical for the control sample of skin, the value of which exceeded the test samples with vitamins E and C by 1.78% and 9.65%, with rutin and dihydroquercetin - by 16.75% and 31.19 %, respectively.

Consequently, the adhesive ability of all test samples of primary products is reduced, on average, by 21.24%, that improves the rheological characteristics of semi-finished products, causing a more dense consistency of the finished product (table 6).

Comparative analysis and comprehensive assessment of the content of oxidation products in samples objectively indicate various effectiveness of the inhibitory effect of antioxidants on the oxidative deterioration of primary products (table 7).

The addition of antioxidants to the primary product samples promoted a significant inhibition of its oxidative deterioration. With adding vitamin E, the acid number for 28 days of storage was lower on average by 0.84 mg KOH/g, with the addition of vitamin C, rutin and dihydroquercetin, it was lower by 1.27 mg KOH/g; 3.52 mg KOH/g and 3.61 mg KOH/g respectively, compared with the control sample.

Table 6 – The variation in the adhesive ability of the test samples of primary products, Pa

Indicators	Control	Vitamin E	Vitamin C	Rutin	DHQ
<i>At the beginning of the research</i>					
Skin	208.35±14.99	194.34±9.82	191.34±6.22	166.65±2.20	159.03±9.82
MDM	205.35±16.20	151.48±8.98	144.03±16.10	137.02±13.01	135.62±6.72
Fillet	201.35±12.41	149.76±2.46	142.21±3.21	129.26±10.67	127.62±5.41
<i>After 7 days of storage</i>					
Skin	201.59±9.71	178.39±6.95	166.17±11.39	155.08±11.12	152.92±2.28
MDM	189.73±9.95	175.31±5.45	158.44±14.45	153.56±7.87	143.96±4.21
Fillet	167.30±5.25	131.83±6.77	115.49±6.60	106.22±5.10	103.12±4.32
<i>After 14 days of storage</i>					
Skin	231.40±5.76	212.74±6.98	200.37±1.82	175.85±11.51	170.23±18.30
MDM	203.19±7.80	185.86±3.40	179.09±6.89	166.75±2.57	163.92±7.14
Fillet	181.33±3.80	147.95±7.96	137.23±1.56	123.99±4.12	110.80±5.13
<i>After 21 days of storage</i>					
Skin	265.61±7.30	257.71±6.49	239.03±8.64	219.83±9.64	197.51±6.14
MDM	242.64±8.23	227.97±6.95	215.17±5.15	208.78±4.32	189.65±1.63
Fillet	228.30±9.05	215.26±5.25	179.54±3.24	168.38±2.75	152.18±3.67
<i>After 28 days of storage</i>					
Skin	302.93±8.05	297.54±5.02	273.70±5.32	252.18±6.28	208.45±5.72
MDM	281.72±7.92	263.39±5.24	249.91±4.34	230.49±6.22	204.50±2.82
Fillet	269.87±6.50	240.16±4.27	218.68±3.17	197.75±3.40	171.83±1.28

Table 7 – Change in the acid number of samples, mg KOH/g

Indicators	Control	Vitamin E	Vitamin C	Rutin	DHQ
<i>7 days of storage:</i>					
Skin	0.936±0.03	0.248±0.01	0.233±0.01	0.218±0.01	0.210±0.01
MDM	0.798±0.24	0.247±0.02	0.223±0.02	0.195±0.01	0.180±0.01
Fillet	0.668±0.57	0.134±0.04	0.122±0.03	0.116±0.04	0.112±0.04
<i>14 days of storage:</i>					
Skin	1.028±0.03	0.820±0.01	0.743±0.03	0.603±0.01	0.530±0.01
MDM	0.839±0.10	0.572±0.44	0.443±0.02	0.395±0.01	0.348±0.07
Fillet	0.719±0.01	0.554±0.01	0.422±0.03	0.321±0.03	0.262±0.03
<i>21 days of storage:</i>					
Skin	2.153±0.04	1.895±0.02	1.782±0.01	1.691±0.06	1.619±0.08
MDM	1.985±0.10	1.836±0.15	1.652±0.03	1.616±0.03	1.524±0.03
Fillet	1.974±0.09	1.793±0.04	1.593±0.07	1.543±0.07	1.438±0.02
<i>28 days of storage:</i>					
Skin	2.542±0.02	2.389±0.01	2.125±0.07	1.925±0.04	1.705±0.04
MDM	2.306±0.06	2.194±0.05	1.897±0.03	1.803±0.04	1.694±0.03
Fillet	2.200±0.08	2.122±0.02	1.822±0.04	1.794±0.06	1.525±0.03

When studying the antioxidant activity of preparations in test samples, in parallel with the acid number, the peroxide number was also determined, which characterizes the accumulation of hydroperoxides and peroxides, which are the primary products of lipid oxidation (table 8).

Table 8 – The change in peroxide number of samples, mmol (1/2O₂)/kg

Indicators	Control	Vitamin E	Vitamin C	Rutin	DHQ
<i>7 days of storage:</i>					
Skin	2.346±0.20	0.131±0.02	0.098±0.01	0.063±0.01	0.033±0.01
MDM	2.138±0.22	0.118±0.02	0.086±0.01	0.043±0.01	0.025±0.01
Fillet	1.154±0.09	0.078±0.01	0.033±0.01	0.025±0.01	0.013±0.01
<i>14 days of storage:</i>					
Skin	3.459±0.09	2.911±0.12	1.443±0.06	0.903±0.08	0.473±0.08
MDM	3.038±0.72	2.708±0.59	1.141±0.34	0.808±0.08	0.360±0.19
Fillet	2.765±0.06	2.078±0.01	1.033±0.01	0.715±0.01	0.313±0.14
<i>21 days of storage:</i>					
Skin	4.422±0.08	4.192±0.10	3.948±0.07	3.822±0.05	3.719±0.04
MDM	4.387±0.09	4.106±0.52	3.903±0.03	3.721±0.06	3.659±0.15
Fillet	4.072±0.09	3.922±0.01	3.872±0.08	3.715±0.02	3.595±0.09
<i>28 days of storage:</i>					
Skin	5.620±0.03	4.368±0.09	4.232±0.03	4.152±0.09	3.870±0.02
MDM	5.494±0.09	4.284±0.06	4.162±0.03	4.091±0.03	3.829±0.05
Fillet	5.452±0.04	4.219±0.05	4.105±0.08	3.986±0.06	3.729±0.07

After 7 days of storage, in the control sample of skin from broiler-chickens, the peroxide number reached 2.3459 mmol (½O₂)/kg, which exceeded the values obtained in the test samples and characterizes the sample, according to this indicator, as fresh, but not subject to storage. The introduction of antioxidants into primary product samples significantly inhibits the formation of lipid oxidation products and, consequently, that objectively testifies to the amount of peroxide number in them, which reaches lower values.

Thus, with the addition of tocopherol, this index in the test samples was 1.3 times lower compared to the control. Adding ascorbic acid, rutin, and dihydroquercetin to the samples of raw materials, the peroxide number in them was even lower - in 1.6, 1.7 and 1.9 times respectively.

The results of the organoleptic assessment are often final and decisive in determining the quality of products, especially of new types (table 8). The data of the organoleptic analysis make it possible to judge the impact of the studied factors on the quality of the products.

For the organoleptic characteristics of the investigated samples of semi-finished products from broiler-chicken meat, according to GOST 9959-91, a five-point rating scale was applied, including the main organoleptic indicators obtained by peer inspection (table 9).

Table 9 – Organoleptic indicators of the finished products (points)

Indicators	Control	Vitamin E	Vitamin C	Rutin	DHQ
Visual appearance	9.04±0.18	7.19±0.15	9.60±0.09	9.52±0.07	9.68±0.03
Smell, aroma	9.16±0.05	6.38±0.12	9.46±0.12	9.79±0.00	9.89±0.06
Taste sense	8.69±0.08	5.94±0.15	9.12±0.24	9.62±0.10	9.58±0.01
Consistence	7.47±0.14	8.24±0.20	8.75±0.20	9.15±0.07	9.42±0.05
Juiciness	5.08±0.06	7.58±0.16	8.05±0.20	9.61±0.00	9.79±0.01
Overall quality value	7.89±0.06	7.07±0.09	8.99±0.09	9.54±0.04	9.67±0.04

A degustation led the commission to the conclusion that there were significant differences in the main organoleptic indicators between the variants of the semi-finished products.

Organoleptic indicators of meat products are determined by a number of factors. The introduction of DHQ in different ways affects the quality indicators of the finished product, its taste and color characteristics, and structure.

Conclusion. The conducted studies have objectively shown that the use of antioxidants in samples of poultry processing primary products and in model minced meat of semi-finished products, in recommended dosages [8], provided for 28 days of storage lower values, relative to control, of indicators of oxidative deterioration: acid number on average by 29.42 %, and peroxide number - 1.5-1.7 times. The effectiveness of their antioxidant action was manifested in the following order: vitamin E → vitamin C → rutin → dihydroquercetin.

The addition of DHQ to the manufacture of semi-finished products, of course, contributes to the improvement of the rheological characteristics of minced meat, thus providing a positive impact on the technological and consumer properties of the finished product.

The results of the degustation allow to judge that the samples of semi-finished products made with the addition of DHQ exceeded the control and test samples in visual appearance, color, smell, aroma, consistence, and juiciness, which indicates a positive effect of this antioxidant on most tasting indicators. And the product with vitamin E was inferior to the other samples of the semi-finished product in all its sensory characteristics.

Thus, a comparative analysis of the results showed that dihydroquercetin has the best inhibitory impact, which causes some aspects of its widespread use as an effective antioxidant during storage of poultry processing primary products.

The possibility of extensive use of dihydroquercetin in the food industry is confirmed by studies conducted at the Sechenov Moscow Medical Academy. It is established that this antioxidant is non-toxic, physiologically non-hazardous to human health, does not give products foreign flavor and smell, and does not change their color when it is used. The substance is resistant to temperature (from minus 50 to plus 180 °C), mechanical effects, and processes occurring in the manufacture of products, that is, meets all the requirements imposed in general to all nutrient additives and, in particular, to antioxidants. This is an important aspect for the consumer, and the manufacturer, at the same time, is able to make products of guaranteed quality, taking into account unforeseen technological situations.

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ТАБИҒИ АНТИОКСИДАНТТАРДЫҢ БРОЙЛЕР ТАУЫҚТАРЫНАН ЖАСАЛҒАН ЖАРТЫЛАЙ ФАБРИКАТҒА ӘСЕРІН ЖӘНЕ ОЛАРДЫ САҚТАУ КЕЗІНДЕ ТОТЫҒУ ПРОЦЕССТЕРІН САЛЫСТЫРМАЛЫ БАҒАЛАУ

Аннотация. Дихрокроцет биохлокрекциннің басқа да табиғи антиоксиданттармен салыстырғанда қолданудың тиімділігі бройлердің тауық етінен алынған жартылай фабрикаттардың құрамында жоғары биологиялық белсенділікті, сапалық көрсеткіштерге оң әсерін, дайын өнімнің өнімділігі мен олардың тұтынушылық сипаттамаларын көрсетті.

Өртүрлі тиімділікке ие антиоксиданттар бройлер етінен жартылай фабрикаттар өндірісінде қолданылатын шикізат үлгілерінің тотығу нашарлауын тежейді. Е дәрумені енгізілгеннен кейін 28 күн сақтауға арналған қышқыл саны орташа есеппен 0,84 мг КОН / г, С, С дәруменін, рутин мен дихидроукеретинді тиісінше 1,27-ке қосқанда төмендеді; Бақылау үлгісімен салыстырғанда 3,52 және 3,61 мг КОН / г.

Осылайша, токоферол қосылған кезде сынақ үлгілеріндегі пероксидтің мәні бақылауға қарағанда 1,3 есе төмен болды. Шикізат үлгілерінде аскорбин қышқылын, рутинді және дигидрохверцетинді қосқанда, осы индикатордың мәні тиісінше 1,6; 1,7 және 1,9 есе.

Нәтижесінде, құс етін шикізатының эксперименталдық үлгілерін сақтаудың 28 күнінен кейін қышқыл саны орташа есеппен 29% -ға, асқын тотығы - 1,5-1,7 есеге дейін төмендеді.

Алынған нәтижелер белсенді антиоксидант ретінде дигидрохверцетинді қолданудың жоғары тиімділігін дәлелдейді, ол оны қолданыстағы аналогтарымен бірге пайдалануға мүмкіндік береді.

Түйін сөздер: табиғи антиоксиданттар, бройлер еті, құс етін өңдеу шикізаты, жартылай фабрикаттар, сапа сипаттамалары, тотығу өнімдері, сақтау уақыты.

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СРАВНИТЕЛЬНАЯ ОЦЕНКА ВЛИЯНИЯ ПРИРОДНЫХ АНТИОКСИДАНТОВ НА КАЧЕСТВЕННЫЕ ПОКАЗАТЕЛИ ПОЛУФАБРИКАТОВ ИЗ МЯСА ЦЫПЛЯТ-БРОЙЛЕРОВ И ОКИСЛИТЕЛЬНЫЕ ПРОЦЕССЫ ПРИ ИХ ХРАНЕНИИ

Аннотация. Изучена эффективность применения биофлавоноида дигидрохверцетина, в сравнении с другими природными антиоксидантами, в рецептуре полуфабрикатов из мяса цыплят-бройлеров, свидетельствующая о его высокой биологической активности, положительном влиянии на качественные показатели, выход готовых продуктов и их потребительские характеристики.

Установлено, что антиоксиданты с различной эффективностью ингибируют окислительную порчу образцов сырья, используемого в производстве полуфабрикатов из мяса цыплят-бройлеров. При введении витамина Е, кислотное число за 28 суток хранения оказалось меньше в среднем на 0,84 мг КОН/г, при добавлении витамина С, рутина и дигидрохверцетина, соответственно, на 1,27; 3,52 и 3,61 мг КОН/г - по сравнению с контрольным образцом.

Так, при добавлении токоферола перекисное число в опытных образцах было меньше в 1,3 раза, по сравнению с контролем. При добавлении аскорбиновой кислоты, рутина и дигидрохверцетина в образцах сырья значение данного показателя в них оказалось еще ниже, соответственно, в 1,6; 1,7 и 1,9 раза.

В результате, через 28 суток хранения опытных образцов сырья птицепереработки, кислотное число достигло меньших значений в среднем на 29 %, а перекисное – в 1,5–1,7 раза, относительно контроля.

Полученные результаты убеждают в высокой эффективности применения дигидрохверцетина в качестве активного антиоксиданта, что обеспечивает возможность его использования наряду с имеющимися аналогами.

Ключевые слова: природные антиоксиданты, мяса цыплят-бройлеров, сырье птицепереработки, полуфабрикаты, качественные характеристики, продукты окисления, продолжительность хранения.

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REFERENCES

[1] Bobeleva G.A., Trukhina T.F. (2013). Methodical approach to determining the competitiveness of poultry products. Bird and poultry products. Moscow. № 2. P. 62-65. (in Russ.).

[2] Aniksevich O.N. (2011). Dihydroquercetin in the meat processing industry. Food industry: science and technology. Moscow. No.3 (13). Pp. 38-42. (in Russ.).

[3] Guber N.B., Rebezov M. B., Asenova B.K. (2014). Promising ways of developing meat bio products. Bulletin of the South Ural State University. Series: Food and Biotechnology. Vol. 2. No. 1. P. 72–79. (in Russ.).

[4] Fomichev Yu.P., Nikanova L.A., Lashin S.A. (2018). Dihydroquercetin and arabinogalactan - natural bioregulators used in agriculture and food industry. Bulletin of the Michurin State Agrarian University. № 3. p. 21-32. Fomichev Yu.P., Nikanova L.A., Lashin S.A. (2018). Dihydroquercetin and arabinogalactan - natural bioregulators used in agriculture and food industry. Bulletin of the Michurin State Agrarian University. № 3. p. 21-32. (in Russ.).

[5] Petrov O.Yu. (2007). On the issue of creating meat products for healthful and dietary meals. Bulletin of the Mari State University. Yoshkar-Ola. Pp. 80-82. (in Russ.).

[6] Denisovich Yu.Yu., Forozda A.V., Mandro N.M. (2012). Development of technology of enriched meat products of functional orientation. Bulletin of the Altai State Agrarian University. Gorno - Altaisk. No. 6 (92). Pp. 83-87. (in Russ.).

[7] Borozda A.V., Denisovich Yu.Yu. (2009). New aspects of the use of dihydroquercetin in the production of semi-finished meat products. Agrarian science - agriculture: proceedings of the IV Intern. scientific-practical conf. Barnaul. Pp. 25-27. (in Russ.).

[8] Krasnova O.A., Hardina E.V. (2016). The efficiency of using a complex of natural antioxidants to prevent oxidative damage to lipids of chilled meat primary products. Bulletin of the Altai State Agrarian University. Gorno - Altaisk. No. 3 (137). Pp. 184-187. (in Russ.).

[9] LP-003326 Alpha-Tocopherol Acetate (Vitamin E).

[10] LSR – 000043 “Askorutin”.

[11] TU 9100–241–21428156–11. (2011). Biologically active food supplement "Dihydroquercetin".

[12] TU 9197–013–95152190–11 (2011). Biologically active food supplement "Ascorbic acid".

[13] Guidelines of the State Sanitary and Epidemiological Regulation of the Russian Federation No. 2.3.1.1915-04, 2004. “Recommended consumption levels of nutrient and biologically active substances”. (in Russ.).

[14] Baimukanov D.A., Pristupa V.N., Kolosov Yu.A., Donnik I.M., Torosyan D.S., Kolosov A.Yu., Orlova O.N., Yuldashbayev Yu.A., Chylbak-ool S.O. Improvement of breeding and productive traits of Kalmyk cattle breed. Bulletin of national academy of sciences of the Republic of Kazakhstan. Volume 1, Number 378 (2019), 128 – 145. <https://doi.org/10.32014/2019.2518-1467.51>. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print).

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ESTIMATION OF COMPOSITION, TECHNOLOGICAL PROPERTIES, AND FACTOR OF ALLERGENICITY OF COW'S, GOAT'S AND CAMEL'S MILK

Abstract. The article provides information on the basis of data obtained by different authors that camel's milk differs significantly from cow's and goat's milk due to the insignificant content of one of the allergenic factors - milk protein β - lactoglobulin. On the basis of the research, the article showed that the content of the main components of milk - the mass fraction of dry matter, fat, protein, and one of the most important mineral substances - calcium, in camel's milk these indicators are significantly higher than in cow's and goat's milk. Indicators of density, titratable acidity, and energy value of camel's milk are also higher than those of cow's and goat's milk.

It was established that the content of monounsaturated and polyunsaturated fatty acids, including omega - 3 and omega - 6 acids, is much higher in camel's milk than in cow's and goat's milk.

The difference in the protein structure of camel's, cow's and goat's milk was revealed. Camel's milk contains more α -lactalbumin, lactoferrin, immunoglobulins than cow's and goat's milk, but most importantly, unlike cow's and goat's milk, there is practically no β -lactoglobulin in camel's milk.

Sour milk produced on the basis of camel's, cow's and goat's milk using different starter culture: lactate lactococcus (sour milk ordinary), acidophilus bacillus (sour milk acidophilus) and Lactobacillus bulgaricus (Bulgarian sour milk) differs in their properties.

All samples of sour milk of camel's milk, unlike sour milk from goat's and cow's milk, prepared with the same technology, showed noticeable foot of fat and this requires additional development of technological processes in the production using camel's milk. The established difference in the chemical composition of the analyzed sour milk samples is mainly due to the composition of the raw milk from which the products are prepared.

β -lactoglobulin is not identified in sour milk from camel's milk, which confirms the data on its absence in camel's milk.

Keywords: cow's milk, goat's milk, camel's milk, allergens, protein fractions, intolerance, hypoallergenicity, lactoferrin, protein profile, sour milk.

Relevance of the topic. In most countries of the world, cow's milk is the most common type of milk. Despite the availability and useful properties of cow's milk, not everyone can eat it because of the presence of substances that cause allergies. One of the most likely causes of allergy to milk proteins is the presence in the cow's milk, as well as in the milk of other ruminants, of the protein fraction - β -lactoglobulin, which is practically absent in breast milk.

Goat's milk is traditionally considered to be less allergenic compared to cow's milk, which is associated with a lower content of α s1 - casein. However, in goat's milk, as in cow's, there is a protein fraction of β -lactoglobulin, although in smaller quantities than in cow's milk. According to a number of authors [1], camel's milk has significantly less α s1-casein fraction and β -lactoglobulin than cow's milk, which is of interest from the point of view of allergenicity of camel's milk and milk products manufactured from it. Along with this, there is a high nutritional and biological value of fermented milk products

from camel's milk, which depends on the composition and properties of the raw milk and the activity of probiotic cultures of lactic acid bacteria.

Camel milk is also believed to have a health-promoting effect on diseases such as tuberculosis, asthma, diabetes, autism [2, 3]. The reduced allergenicity of fermented milk products based on camel's milk is caused by the absence of β -lactoglobulin in it.

In this regard, it is relevant to study and practically justify the use of camel's milk as a raw material for the production of dairy products for people with food allergies to cow's milk proteins.

Based on the above, the aim of our research was to analyze the composition and technological properties of cow's, goat's and camel's milk, taking into account their protein profiles, as an allergenicity factor.

In connection with the aim, the objectives of the research included:

- to study the composition, organoleptic and physicochemical characteristics of the milk of animals of different species: cow, goat, camel;
- to investigate the composition of the fatty phase of raw milk, determine its protein profile and the content of β -lactoglobulin in it;
- to produce fermented milk products from different raw milk;
- to study the organoleptic, physicochemical indicators, nutritional, biological and energy values of dairy products produced from the milk of animals of three species.

The scientific novelty and practical significance of the work lies in the fact that camel's milk was compared for the first time with cow's and goat's milk, with a set of indicators determined in milk, its technological properties in the production of different types of sour milk and taking into account the allergenicity factor in the obtained product, which significantly complements the data of other authors who done research on camel's milk [1-3].

The results can be taken into account and used in farms and enterprises engaged in the production of animal milk of different species and its possible targeted processing into products for different categories of consumers, for example, camel and goat milk - for baby food.

The studies were carried out in accordance with the program of international cooperation of agricultural scientists of the EAEU countries for 2018-2020, as well as by order of the Ministry of Agriculture of the Republic of Kazakhstan for 2018 - 2020. URN: BR06249249-OT-18 Development of a complex system of enhancing productivity and improving the breeding qualities of farm animals, by the example of Bayserke-Agro LLP.

Methods of research. The experimental part of the research was performed in accredited laboratories of techno-chemical control and microbiology of the All-Russian Research Institute of Dairy Industry (ARRIDI), as well as in the laboratory of the Department of technology of storage and processing of animal products of the Russian State Agrarian University - Moscow Agricultural Academy named after K.A. Timiryazev in 2014 - 2015

Ferments of pure cultures of lactate microorganisms for the production of fermented milk products were provided by the Laboratory for Microbiology of the ARRIDI. The production of dairy products was carried out in 3 repetitions.

Cow's milk was received at the Zoo station of RSAU - MAA named after K.A. Timiryazev from Black-and-motley cows. Goat's milk of Zaanensky breed of goats was received on a subsidiary farm, Shelepanovo village, Solnechnogorsky district of the Moscow region.

Camel's milk from Bactrian camels was obtained on the farm LAIDOYA located in the Republic of Tatarstan, the Laishevsky district, the Kirbinsky rural settlement, the village of Travkino (figures 1, 2). Camel farm was founded in March 2013. At the time of the experiment, the population of camels was 90 animals.

Camel's milk was delivered to Moscow from Kazan by train storing in refrigerator. (4 °C).

The chemical composition of the camel's milk of the Kazakh Bactrian breed was carried out in the Educational Research and Production Center "Bayserke-Agro" LLP of the Talgar district, Almaty region. The studied milk has been taken from milk camels during the third month of lactation.

The research of all indicators of milk and dairy products was performed in accordance with common standardized and certified methods [4-12].



Figure 1 – Camels on the LAIDOYA farm in winter



Figure 2 – Milking of camels on the LAIDOYA farm

To measure contents of moisture and dry substances in dairy products, a gravimetric method was used (drying up to constant weight at a temperature of 102 ± 2 °C) according to GOST 3626-73.

Analysis of the mass fraction of fat in raw milk and dairy products was carried out using the Gerber acid-butyrometric method according to GOST 5867-90. Determination of total nitrogen and calculation of the protein mass fraction in raw milk and dairy products were conducted according to the Kjeldahl method in accordance with GOST 23327-98, the determination of whey proteins - in accordance with GOST R 54756-2011. The mass fraction of lactose was determined by the accelerated polarimetric method according to GOST R 54667-2011.

The study of the fatty phase was performed by gas chromatography using a Crystallux 4000M chromatograph. Supelco 37, Component FAME Mix was used as an identification mixture; chromatograms were recorded and processed using the NetChrom software program.

The protein composition was determined according to GOST R 53761-2009. A monochromatic blue marker of 10–250 kDa was used as a protein molecular weight marker.

The density in raw milk was determined by the areometric method according to GOST R 54758-2011, the titratable acidity - according to GOST R 54669-2011. Active acidity in pH units was measured according to GOST R 53359-2009.

An expert commission of five people conducted an organoleptic evaluation of milk and dairy products. Statistical data processing was carried out using the Microsoft Excel program.

Results and their discussion. Camel's milk obtained from Kazakh Bactrian dairy female camels during the third month of lactation is white, has a sweet-salty taste, thick homogeneous consistency when decantation foams strongly, it has a velvet of taste perception. Milk begins to boil at a temperature of $+100.3$ °C, and freezes at -0.5 °C.

The fat content of the milk received by the proportions from Kazakh Bactrian camels varies in large ranges. The fat content of the first portions of milk yield ranges from 3.2% to 5%, of the main yield - from 5.5% to 6.5%, and of the milk yield - 8-12%.

The lactose content in milk of the Kazakh Bactrian female camels (4.5–5.5%, on average $5.0 \pm 0.03\%$) is more constant compared to the fat content (4.9 - 6.7%, on average $6.2 \pm 0.3\%$) and protein (3.1-4.0%, on average $3.8 \pm 0.2\%$).

On the basis of the conducted research, it was established that the composition and properties of camel's milk differ significantly from cow's and goat's milk.

The organoleptic parameters of raw milk of different species of animals are presented in table 1. The consistency of camel's milk was thicker, there was an increased fat content, which gave the taste to milk more like dairy cream.

There were no differences in smell between cow's and goat's milk. The smell of camel's milk was somewhat different from cow's and goat's milk. There were caught barely perceptible unusual shades in it.

Camel's milk was different from cow's and goat's milk in color. Beta-carotene gives yellowish color to goat's and cow's milk, vitamin A is dissolved in fat of the camel's milk in the form of retinol, and not carotenoid precursors, therefore the color of camel's milk is white.

Table 1 – Organoleptic parameters of raw milk

Parameters of milk	Raw milk		
	Cow's	Goat's	Camel's
Appearance	Opaque liquid, without impurities, without phase separation		
Colour	Uniform throughout the mass, white with a slight cream tint		Uniform throughout the mass, pure white
Taste	Pleasant, slightly sweetish	Pleasant, sweetish	Pleasant, sweetish - salty
Smell	Clean, pleasant, milky		
Consistency	Homogeneous, non-sticky, without fat lumps, liquid		Homogeneous, non-sticky, without fat lumps, thick

Goat's milk taste was the sweetest and fully complied with the requirements [13-16]. Both goat's and camel's milk had their own specific, different from cow's, but not too pronounced flavor.

In camel's milk, compared with cow's milk, the dry matter concentration was higher by 2.75% (abs.%) and higher related to the goat's milk – by 2.08% (table 2).

Table 2 – Physicochemical parameters of raw milk

Parameters of milk	Raw milk		
	Cow's	Goat's	Camel's
Content, %: - moisture	88.47±0.10	87.80±0.07	85.72±0.36
- dry matter	11.53±0.10	12.20±0.07	14.28±0.36
- nonfat milk solids	8.48±0.09	8.61±0.01	9.32±0.11
- fat	3.10±0.10	3.5±0.25	4.67±0.33
- total nitrogen	0.479±0.004	0.542±0.02	0.70±0.001
- nonprotein nitrogen	0.0311±0.0001	0.0413±0.01	0.0454±0.003
- protein	3.05±0.02	3.45±0.15	4.45±0.004
- whey proteins	0.79±0.01	0.99±0.03	1.44±0.09
- lactose	4.72±0.33	4.59±0.41	3.99±0.11
- ash	0.72±0.01	0.73±0.01	0.75±0.004
Ca content, mg/%	118.09±0.26	124.58±0.42	132.92±0.69
Calorific value, kcal / 100 g	60.67±2.34	65.11±1.32	78.03±3.22
Density, kg/m ³	1028.4±0.3	1028.7±0.25	1030.5 ±0.35
Active acidity, pH	6.58±0.20	6.67±0.01	6.38±0.05
Acidity, °T	15.4±0.04	16.5±0.03	22.0±0.60

Camel's milk is superior to cow's milk in the number of whey proteins by 0.66% and in fat content - by 1.57%. Protein was more by 1.4% relative to cow's milk and calcium content - by 14.84 mg/% (P>0.999). Camel's milk exceeds in calorific value by 17.36 kcal per 100 g of cow's milk and by 12.92 kcal - the goat's milk (P>0.95). Titratable acidity exceeded the acidity in cow's and goat's milk by more than 5 units (P>0.99). The density of camel's milk was 2.1 g/cm³ (P>0.95) higher than the density of cow's milk. The differences between the cow's and goat's milk in the same indicators were not so significant.

The content of unsaturated, physiologically important, essential fatty acids - linoleic, linolenic, arachidonic, in camel's milk was significantly higher than cow's and goat's milk (table 3).

The amount of polyunsaturated fatty acids in camel's milk was 1.6% higher than in cow's milk, including 0.3% higher in the content of omega-3 acids and 1.3% higher in omega-6. Cow's milk contains the least polyunsaturated acids, goat's milk have them 0.8% more than cow's one.

The results of the study of the protein profile of the raw milk obtained using disc electrophoresis in polyacrylamide gel are presented in figure 3.

Table 3 – Composition of the fatty phase of raw milk

Fatty acids (to the total content of fatty acids, %)	Raw milk		
	Cow's	Goat's	Camel's
Linoleic	2.4655±0.0435	2.8353±0.8060	3.1558±0.4472
Linolenic	0.2953±0.0553	0.6307±0.5675	0.9187±0.2139
Arachidonic	0.0263±0.0044	0.0069±0.0013	0.0299±0.0127
Amount of fatty acids: - unsaturated	67.8005±2.3161	69.6428±0.2885	61.7018±2.5735
- monounsaturated	28.6275±2.2282	25.9707±0.2723	32.9150±2.6181
- polyunsaturated, including:	3.5721±0.0882	4.3309±0.0953	5.1262±0.2700
- omega - 3	0.3042±0.0210	0.4452±0.3190	0.6067±0.0072
- omega - 6	3.2679±0.0672	3.8857±0.2237	4.5195±0.2637

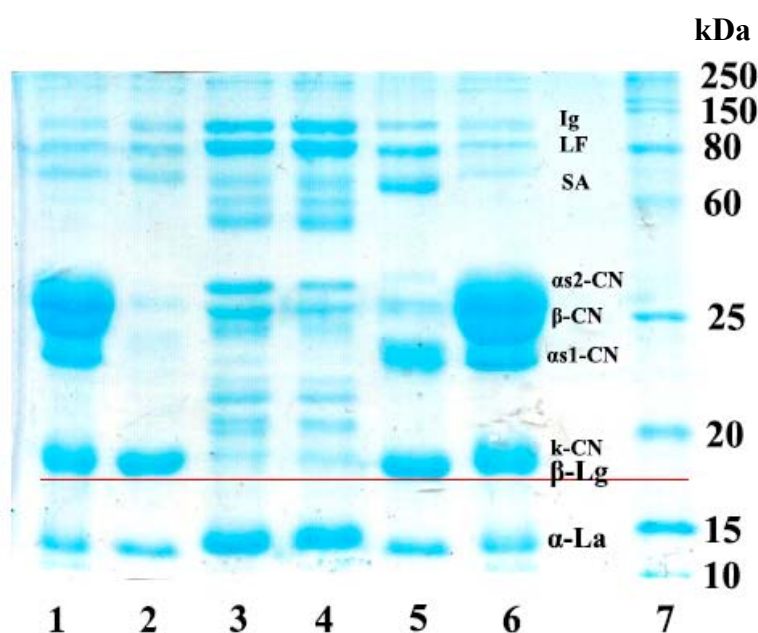


Figure 1 – Protein profile of raw milk:
 1, 2 – cow's milk; 3, 4 – camel's milk; 5, 6 – goat's milk; 7 – molecular weight marker at 10-250 kDa;
 α-La-α- lactalbumin; β-Lg-β- lactoglobulin; k-CN-k- casein; α1-CN – α1- casein; α2-CN – α2- casein;
 β-CN – β- casein; SA – serum albumin; LF– lactoferrin; Ig – immunoglobulins

The protein profile of camel's milk differs significantly from cow's and goat's milk. Camel's milk contains more α-lactalbumin, lactoferrin, immunoglobulins, β - and α2 - casein. But the most important thing is that β-lactoglobulin is almost absent in it.

When analyzing the organoleptic parameters of the products, it was established that the consistency of all samples of sour milk is equally dense (table 4). However, after mixing, the consistency of goat's and camel's milk products became less dense, and the consistency of cow's milk products remained thick. The obtained data to some extent vary from the studies of other authors [17-19].

In products from camel's milk, in contrast to sour milk from goat and cow milk, prepared using the same technology, a noticeable sludge of fat was observed. The consistency of camel milk products after mixing was liquid and resembled more kefir than sour milk, which requires additional technological processes in the production of camel milk products.

Goat's milk products had a thicker consistency compared to camel milk products, but were inferior in thickness to cow milk products. Sour milk from cow's milk had a rather thick consistency characteristic of this product.

Bulgarian sour milk produced from all types of milk was less dense than acidophilus and ordinary sour milk. Acidophilic sour milk, obtained from camel milk, surpassed the consistency of Bulgarian and ordinary sour milk (table 4).

Table 4 – Organoleptic parameters of fermented milk products

Types of sour milk		Type of milk		
		Cow's	Goat's	Camel's
Appearance	Acidophilic	dense, uniform clot, without serum separation		dense, uniform clot, with a foot of fat, without serum separation
	Ordinary	dense clot, with some serum		
	Bulgarian			
Colour	Acidophilic	uniform, cream	uniform, cream white	uniform, snow white
	Ordinary			
	Bulgarian			
Taste	Acidophilic	sour, pleasant	sour, with a not very pleasant tint	sour, pleasant, fat
	Ordinary	almost not sour, creamy, pleasant	almost not sour, pleasant, with an unusual tint	almost not sour, pleasant, milky, with a creamy tint
	Bulgarian	sour, pleasant	sour, with no tints	like acidified milk, with an unpleasant tint of bitterness
Smell	Acidophilic	Pleasant, typical	pleasant, a bit unusual	pleasant, milky, unusual
	Ordinary			pleasant, milky
	Bulgarian			with unpleasant tint
consistency	Acidophilic	thick, slightly viscous	like fatty kefir, a bit viscous	liquid, homogeneous, very viscous
	Ordinary	Thick with dense fractions	Like liquid sour cream, non-viscous	Homogeneous, liquid, non-viscous
	Bulgarian	Impure, liquid, non-viscous	Homogeneous, liquid, non-viscous	Homogeneous, very liquid, non-viscous

With the same terms of fermentation, the acidophilous bacteria were developed most actively in goat's milk (table 5).

Table 5 – Physicochemical indicators of sour milk

Indicator	Sour milk								
	Cow's milk			Goat's milk			Camel's milk		
	acid.	ordin.	Bul.	acid.	ordin.	Bul.	acid.	ordin.	Bul.
Content of, %: - dry matter	10.94 ±0.13	11.19 ±0.08	11.19 ±0.07	11.98 ±0.03	12.55 ±0.27	12.12 ±0.09	14.62 ±0.40	14.53 ±0.24	13.89 ±0.08
- moisture	89.06 ±0.13	88.81 ±0.08	88.81 ±0.07	88.02 ±0.03	87.45 ±0.27	87.88 ±0.09	85.38 ±0.40	85.47 ±0.24	86.11 ±0.08
- protein	3.07 ±0.01	3.06 ±0.04	3.11 ±0.06	3.34 ±0.01	3.29 ±0.07	3.35 ±0.04	4.43 ±0.03	4.43 ±0.04	4.39 ±0.04
- total nitrogen	0.481 ±0.003	0.479 ±0.006	0.488 ±0.009	0.524 ±0.003	0.516 ±0.009	0.525 ±0.006	0.695 ±0.004	0.695 ±0.006	0.689 ±0.006
- fat	3.00 ±0.1	2.20 ±0.1	2.60 ±0.1	3.30 ±0.1	3.30 ±0.3	3.30 ±0.1	5.00 ±0.1	4.90 ±0.1	5.00 ±0.07
- lactose	2.94 ±0.11	3.96 ±0.10	4.50 ±0.28	3.18 ±0.11	4.41 ±0.03	4.70 ±0.28	2.79 ±0.13	3.87 ±0.14	4.06 ±0.04
Calorific value, kcal/100 g	52.54 ±0.79	49.22 ±1.05	55.38 ±2.24	57.42 ±1.72	62.26 ±3.04	63.70 ±0.02	76.10 ±0.91	80.07 ±1.06	80.70 ±0.69
Active acidity, pH	3.62 ±0.10	4.40 ±0.03	4.48 ±0.04	3.59 ±0.13	4.45 ±0.07	3.74 ±0.06	3.64 ±0.06	4.56 ±0.08	4.12 ±0.03
Acidity, °T	167.84 ±1.19	68.80 ±1.27	60.64 ±2.14	185.44 ±0.79	61.60 ±2.36	150.40 ±1.26	151.84 ±0.93	77.92 ±1.30	109.60 ±1.27

Variations in the content of dry matter, fat, protein in all samples of sour milk relative to the raw milk were insignificant and unreliable. The titratable acidity of acidophilic sour milk from goat's milk was higher than the acidity of similar products of cow's milk by 17.7 °T and of camel's milk by 33.6 °T ($P>0.99$). The titratable acidity of sour milk obtained from camel milk was the highest. The highest acidity of Bulgarian sour milk was obtained by ripening goat milk. The not uniform increase in acidity of products from different raw milk should be taken into account when determining the terms of fermentation of products since the technological instructions for the production of fermented milk products are designed for cow's milk. Thus, in the case of acidophilic and Bulgarian sour milk from goat's milk, a reduction in the fermentation time is required in order to prevent an excessively sour taste of the product.

When comparing the fatty acid composition of the products, the difference in the level of essential linoleic, linolenic and arachidonic fatty acids was established between the samples of sour milk obtained from the milk of different animal species (table 6).

The content of linoleic acid in all three samples of sour milk from goat's milk was significantly higher ($P>0.999$) than in samples of yogurt from camel and cow milk. The level of linolenic acid in camel milk products significantly exceeded the indicators of this acid in samples of goat and cow milk products ($P>0.95$). In terms of arachidonic acid between product samples, a significant advantage has not been revealed.

Table 6 – Composition of the fatty phase of sour milk (to the total content of fatty acids, %)

Fatty acids	Sour milk								
	Cow's			Goat's			Camel's		
	acid.	ordin.	Bul.	acid.	ordin.	Bul.	acid.	ordin.	Bul.
linoleic	2.372 ±0.093	2.434 ±0.003	2.323 ±0.026	3.238 ±0.013	3.187 ±0.012	3.193 ±0.026	2.761 ±0.001	2.848 ±0.163	2.610 ±0.001
linolenic	0.338 ±0.023	0.293 ±0.008	0.276 ±0.057	0.239 ±0.013	0.187 ±0.003	0.194 ±0.032	1.293 ±0.121	1.239 ±0.013	1.409 ±0.002
arachidonic	0.031 ±0.001	0.02 ±0.001	0.01 ±0.002	0.003 ±0.001	0.025 ±0.002	0.001 ±0.001	0.004 ±0.001	0.012 ±0.001	0.019 ±0.001
Sum of acids: unsaturated	66.387 ±0.723	66.260 ±0.224	65.918 ±0.351	68.805 ±0.168	68.988 ±0.008	68.745 ±0.063	63.402 ±0.170	64.904 ±0.050	65.684 ±0.306
monounsaturated	30.134 ±0.737	30.33 ±0.293	30.717 ±0.161	27.064 ±0.120	26.85 ±0.031	27.217 ±0.190	31.690 ±0.249	30.020 ±0.109	29.341 ±0.353
polyunsaturated.	3.479 ±0.008	3.412 ±0.063	3.366 ±0.189	4.131 ±0.039	4.161 ±0.023	4.038 ±0.126	4.908 ±0.086	5.076 ±0.059	4.975 ±0.051
including ω-3	0.274 ±0.002	0.216 ±0.044	0.273 ±0.100	0.267 ±0.001	0.330 ±0.003	0.222 ±0.051	0.345 ±0.050	0.461 ±0.211	0.575 ±0.052
including ω-6	3.205 ±0.010	3.197 ±0.019	3.093 ±0.089	3.864 ±0.039	3.832 ±0.021	3.816 ±0.074	4.563 ±0.136	4.615 ±0.152	4.400 ±0.001

The content of monounsaturated fatty acids in sour milk from camel milk, especially in acidophilic sour milk, was significantly higher than in sour milk from goat's milk ($P>0.99$), with a slight difference in the level of monounsaturated fatty acids contained in lapper milk from cow milk. The amount of polyunsaturated fatty acids, including omega-3 and omega-6, in sour milk from camel milk significantly exceeded the content of these fatty acids in samples of goat and cow's milk. As for a sum of mono-unsaturated and polyunsaturated fatty acids in the samples of sour milk obtained from one type of milk, no significant difference was revealed. The established variations in the composition of fatty acids in products are due to the characteristics of the fatty acid composition of raw milk.

The most stable starter microorganisms advanced in camel milk (table 7). In the development of acidophilous bacterium, *Lactobacillus bulgaricus*, dairy and creamy lactococci, there was neither increase in number nor dying within five days of research. Their number was invariably 2.5×10^8 CFU/cm³, which corresponds to the requirements for the number of living microorganisms in the finished dairy product by the end of the storage period - not less than 1.0×10^7 CFU/cm³. *Lactobacillus bulgaricus* in goat's milk developed poorly.

Just after fermentation, the number of microorganisms in sour milk was 2.5×10^7 CFU/cm³, and already on the 3rd day, it decreased to 2.5×10^6 CFU/cm³, which is less than the required 1.0×10^7 CFU/cm³. The amount of lactic and creamy lactococci was consistently kept at the level of 2.5×10^8 CFU/cm³ for 5 days. The number of acidophilous bacteria increased on the 3rd day from 2.5×10^{10} to 2.5×10^9 CFU/cm³, and on the 5th day, it slightly decreased and was equal to the initial value.

Table 7 – Microbiological testing of sour milk

Storage time	Sour milk								
	Cow's			Goat's			Camel's		
	acid.	ordin.	Bul.	acid.	ordin.	Bul.	acid.	ordin.	Bul.
Ground	2.5×10^8	2.5×10^7	2.5×10^8	2.5×10^8	2.5×10^8	2.5×10^7	2.5×10^8	2.5×10^8	2.5×10^8
3 day	2.5×10^7	2.5×10^7	2.5×10^8	2.5×10^9	2.5×10^8	2.5×10^6	2.5×10^8	2.5×10^8	2.5×10^8
5 day	2.5×10^8	2.5×10^8	2.5×10^9	2.5×10^8	2.5×10^8	2.5×10^6	2.5×10^8	2.5×10^9	2.5×10^8

The number of acidophilous bacteria in yogurt from cow's milk on the 3 day decreased to 2.5×10^7 CFU/cm³ compared with the ground, and then their number again increased to 2.5×10^8 CFU/cm³. The population of microorganisms of *Lactobacillus bulgaricus* in cow's sour milk by the 5 day even increased slightly and amounted to 2.5×10^9 CFU/cm³. Milk and creamy lactococci advanced well in cow's milk, their amount slightly increased during the study period, and on day 5, it was 2.5×10^8 CFU/cm³.

The protein profile of fermented milk products from different raw milk with different microbiological starters is shown in figure 4.

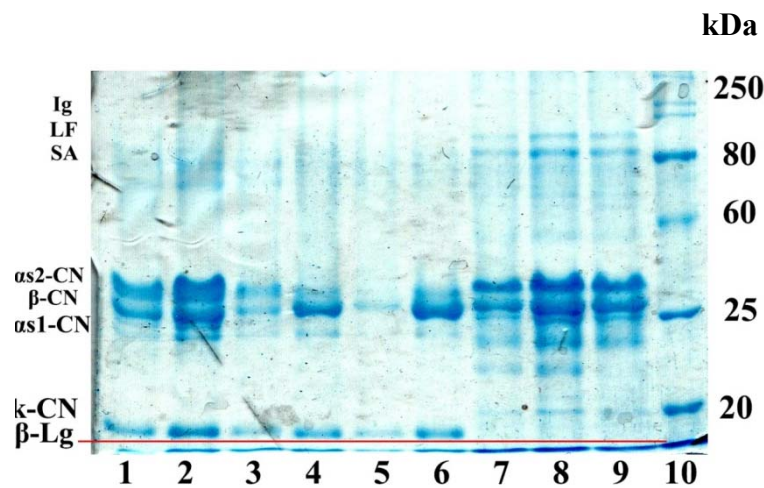


Figure 4 – Protein profile of fermented milk products:

- 1, 2, 3 – cow's milk (1 – ordinary sour milk, 2 – acidophilus sour milk, 3 – Bulgarian sour milk);
 4, 5, 6 – goat's milk (4 – acidophilus sour milk, 5 – ordinary sour milk, 6 – Bulgarian sour milk);
 7, 8, 9 – camel's milk (7 – Bulgarian sour milk, 8 – ordinary sour milk, 9 – acidophilus sour milk);
 10 – molecular weight marker; α -La- α - lactalbumin; β -Lg- β - lactoglobulin; k-CN-k- casein; α s1-CN – α s1- casein;
 α s2-CN – α s2- casein; β -CN – β - casein; SA – serum albumin; LF– lactoferrin; Ig – immunoglobulins

In fermented milk products of camel's milk, β -lactoglobulin is not identified, it confirms the data on its absence in camel milk.

Currently, camel milk products on the Russian market are positioned as medicinal, hypoallergenic, dietary, but not as mass-consumption products. However, the capacity of camel milk as raw milk is quite high due to its unique chemical composition. With an increase in the production of this type of milk, fermented milk products produced from it will be able to compete with other products from natural cow's milk [20].

Camel milk of the Kazakh Bactrian females can be kept fresh for a long time. Increased bactericidal properties of milk slow down the acidity growth. At + 100 °C in camel milk, the original acidity is kept

for 72 hours, while in cow's milk it increases continuously. At + 300 °C, camel milk is stored for 24 hours, and cow milk deteriorates after 5 hours.

Conclusions.

1. In a comparative assessment of the milk of different animal species, it was established that the physicochemical indicators of camel milk differ significantly from cow and goat milk.

2. Comparing with cow and goat's milk, In camel's milk, there are more polyunsaturated fatty acids, which have important physiological significance for the human body.

3. The study of the milk protein profile showed that in camel's milk there is no β -lactoglobulin - one of the main allergens of cow and goat milk. The protein profile of cow and goat milk has a similar pattern.

4. Camel milk can be used in manufacturing different types of sour milk up on the production technology of these products from cow and goat milk, but it is necessary, without fail, to include homogenization of milk, due to the sharp separation of the fat phase in the product, which does not occur in products from cow and goat milk.

5. The time of ripening of sour milk from cow, goat and camel milk varies, it should be considered when manufacturing these products.

6. In terms of organoleptic characteristics, all samples of the products were highly valued, except for the Bulgarian yogurt of camel milk, that is due to the uncharacteristic consistency and the presence of undesirable flavors in the yogurt.

7. Differences in the chemical composition of sour milk samples from cow, goat and camel milk are conditional upon the chemical composition of raw milk, rather than the influence of the type of starter culture.

8. Companies specializing in the dairy production for diverse groups of the population, including those with hypoallergenic products, are recommended to use camel's milk as a raw material, which does not contain an allergen β -lactoglobulin.

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СЫЫР, ЕШКІ ЖӘНЕ ТҮЙЕ СҮТІНІҢ ҚҰРАМЫН, ТЕХНОЛОГИЯЛЫҚ ҚАСИЕТТЕРІН ЖӘНЕ АЛЛЕРГИЯЛЫҚ ФАКТОРЛАРЫН БАҒАЛАУ

Аннотация. Мақалада түйенің сүтінің негізгі физика-химиялық көрсеткіштері бойынша аллергиялық факторлардың бірі- β - лактоглобулиннің сүт ақуызының болмашы болуына байланысты сыыр және ешкі сүтінен айтарлықтай айырмашылығы бар. Мақалада жүргізілген зерттеулер негізінде сүттің негізгі компоненттерінің құрамы – құрғақ заттардың, майдың, ақуыздың және ең маңызды минералды заттардың бірі – кальций, түйе сүтінде бұл көрсеткіштерден сыыр және ешкі сүтінде айтарлықтай асып түсетіні көрсетілген. Түйе сүтінің тығыздық, титрленген қышқылдығы мен энергетикалық құндылығының көрсеткіштері сыыр және ешкі сүтінің ұқсас көрсеткіштерінен жоғары.

Моноқанықпаған, сондай – ақ полиқанықпаған май қышқылдарының, сондай – ақ омега-3 және омега-6 қышқылдарының құрамы түйе сүтінде сыыр және ешкі сүтіне қарағанда айтарлықтай көп екендігі анықталды.

Түйе сүтінде сыыр және ешкі сүтіне, α -лактальбуминге, лактоферринге, иммуноглобулиндерге қарағанда көп, бірақ ең бастысы сыыр және ешкі сүтіне қарағанда β -лактоглобулиннің болмауы.

Түйе, сыыр және ешкі сүті негізінде әртүрлі ұйығатын дақылдарды: сүт қышқылды лактокококтарды (қарапайым айран), ацидофильді таяқшаларды (ацидофильді айран) және болгар таяқшаларын (Болгар айран) пайдалана отырып жасалған айран өзінің қасиеттері бойынша ерекшеленді.

Түйе сүтінен жасалған айранның барлық үлгілерінде бірдей технологиямен дайындалған ешкі және сыыр сүтінен жасалған ұйытқышқа қарағанда майдың Елеулі тұнбасы байқалды және бұл түйе сүтінен өнім өндіру кезінде технологиялық процестерді қосымша өңдеуді талап етеді. Зерттелетін айранның химиялық құрамындағы белгіленген айырмашылық негізінен өнімдер дайындалған сүт-шикізатының құрамына байланысты.

Түйе сүтінен шыққан айранда β -лактоглобулин сәйкестендірілмеген, бұл оның түйе сүтінде жоқ екенін растайды.

Түйін сөздер: сиыр сүті, ешкі сүті, түйе сүті, аллергиялар, ақуыз фракциялары, төзбеушілік, гипоаллергендік, лактоферрин, ақуыз профилі, айран.

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ОЦЕНКА СОСТАВА, ТЕХНОЛОГИЧЕСКИХ СВОЙСТВ И ФАКТОРА АЛЛЕРГЕННОСТИ КОРОВЬЕГО, КОЗЬЕГО И ВЕРБЛЮЖЬЕГО МОЛОКА

Аннотация. В статье приводится информация на основе данных, полученных разными авторами, что верблюжье молоко по основным физико-химическим показателям существенно отличается от коровьего и козьего молока из-за незначительного содержания одного из аллергенных факторов – молочного белка β -лактоглобулина. В статье, на основании проведенных исследований, показано, что содержание основных компонентов молока – массовой доли сухих веществ, жира, белка, и одного из наиболее важных минеральных веществ – кальция, в верблюжьем молоке существенно превышает эти показатели в коровьем и козьем молоке. Показатели плотности, титруемой кислотности и энергетической ценности верблюжьего молока также выше аналогичных показателей коровьего и козьего молока.

Установлено, что содержание мононенасыщенных, так и полиненасыщенных жирных кислот, а также кислот омега-3 и омега-6, в верблюжьем молоке значительно больше, чем в коровьем и козьем молоке.

Выявлена разница в белковой структуре верблюжьего, коровьего и козьего молока. В верблюжьем молоке содержится больше, чем в коровьем и козьем молоке, α -лактальбумина, лактоферрина, иммуноглобулинов, но самое главное, в отличие от коровьего и козьего молока, практически отсутствие β -лактоглобулина.

Простокваша, выработанная на основе верблюжьего, коровьего и козьего молока с использованием разной заквасочной культуры: молочнокислых лактококков (простокваша обыкновенная), ацидофильной палочки (простокваша ацидофильная) и болгарской палочки (простокваша болгарская) различалась по своим свойствам.

У всех образцов простокваша из верблюжьего молока, в отличие от простокваша из козьего и коровьего молока, приготовленной по одинаковой технологии, наблюдался заметный отстой жира и это требует дополнительной отработки технологических процессов при производстве продукции из верблюжьего молока. Установленная разница в химическом составе исследуемых образцов простокваша обусловлена в основном составом молока-сырья из которого приготовлены продукты.

В простокваше из верблюжьего молока β -лактоглобулин не идентифицирован, что подтверждает данные о его отсутствии в верблюжьем молоке.

Ключевые слова: молоко коровье, молоко козье, молоко верблюжье, аллергены, фракции белка, переносимость, гипоаллергенность, лактоферрин, белковый профиль, простокваша.

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REFERENCES

- [1] Baimukanov A. (1989). Camels. Animal genetic resources of the USSR. Animal Production and Health. Paper 65. Rome. FAO. P. 345-355.
- [2] Seitov Z.S. (2005). Kumis. Shubat Almaty.-288 p. (in Russ.).
- [3] Baimukanov A., Tokhanov M., Baimukanov D.A., Yuldashabayev Yu.A., Tokhanov B., Doshanov D.A. (2016). Production technology for camel breeding products. Monograph. (ISBN 978-601-310-754-7). Almaty Publishing Evero. 320 p. (in Russ.).
- [4] GOST 3626-73 (1973). Milk and dairy products. Methods for determination of moisture and dry matter (with changes in N 1, 2, 3). (in Russ.).
- [5] GOST 5867-90 (1990). Milk and dairy products. Fat determination methods. (in Russ.).
- [6] gost 23327-98 (1998). Milk and dairy products. Method for measuring the content of total nitrogen by Kjeldahl method and determining the protein content. (in Russ.).
- [7] GOST R 53761-2009 (2009). Milk. Identification of the protein composition by the electrophoretic method in a polyacrylamide gel. (in Russ.).
- [8] GOST R 53359-2009 (2009). Milk and milk processing products. pH determination method. (in Russ.).
- [9] GOST R 54756-2011 (2011). Milk and dairy products. Determination of the mass fraction of whey proteins by the kjeldahl method. (in Russ.).
- [10] GOST R 54667-2011 (2011). Milk and milk processing products. Methods for determining the contents of sugars. (in Russ.).
- [11] GOST R 54758-2011 (2011). Milk and milk processing products. Methods for determining the density. (in Russ.).
- [12] GOST R 54669-2011 (2011). Milk and milk processing products. Methods for determining the acidity. (in Russ.).
- [13] Zheltova O.A., Shuvarikov A.S., Pastukh O.N., Gladyr Ye.A. (2011) Yoghurt from milk of goats of different breeds and genotypes. Dairy industry. № 6. p. 81-82. (in Russ.).
- [14] Lawlor Jr. G., Fisher T., Adelman D. (2000) Clinical immunology and allergology. Moscow. Publishing Practice. 806 seconds. (in Russ.).
- [15] Shuvarikov A.S., Pastukh O.N., Aleshina M.N. (2013) Dairy productivity and milk quality of goats of Zaanen breed of different populations. Sheep, goats, wool business. № 1. P. 40–42. c
- [16] Shuvarikov A.S., Bryunchugin V.V., Pastukh O.N. (2012) The effectiveness of the use of goats of different breeds in the production of dairy products. Sheep, goats, wool business. № 3. P. 45–47. Shuvarikov A.S., Bryunchugin V.V., Pastukh O.N. (2012) The effectiveness of the use of goats of different breeds in the production of dairy products. Sheep, goats, wool business. № 3. P. 45–47.
- [17] Camel milk. (2006). El. El-Agamy Handbook of milk of nonbovine mammals. Ed. by Y.W. Park, G.F.W. H
- [18] Donkey milk production: state of the art. (2009). P. Polidori [et al.] Italian Journal of Animal Science. Vol. 8. № 2. P. 667-683.
- [19] Marshall K. (2004) Therapeutic Application of Whey Protein. Alternative Medicine Review. Vol. 9. № 2. P. 136–156. 2.
- [20] Baimukanov D.A., Abugaliyev S.K., Seidaliyev N.B., Semenov V.G., Chindaliyev A.E., Dalibayev E.K., Zhama-lov B.S., Muka Sh.B. (2019) Productivity and estimated breeding value of the dairy cattle gene pool in the Republic of Kazakhstan. Bulletin of the National Academy of Sciences of the Republic of Kazakhstan. Volume 1, Number 377 (2019), 39-53. <https://doi.org/10.32014/2019.2518-1467.5>. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print).

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ZOOTECHNIC CHARACTERISTICS OF MODERN POPULATIONS OF MUGALZHAR HORSE BREED

Abstract. The modern structure of the Mugalzhar horse breed consists of three intrabreed types - Embensky, Kulandinsky, Kozhamberdinsky (till 2009 - Saryarkinsky), six lines and 55 families. Live weight of stallions - 560 kg, mares - 520 kg, slaughter yield - 55-60%, yield of colts - 80-90%, milkiness of mares - up to 2000 l. Horses of Mugalzhar breed are distinguished by good health, excellent adaptability to year-round pasture maintenance.

The stallions of the Mugalzhar horse breed have an average live weight of 493.5 - 538.4 kg, mares - 452.7-469.3 kg. Body measurements in stallions of Kozhamberdinsky intrabreed type were 148.9 - 153.1 - 186.9 - 20.0 cm, of Kulandinsky intrabreed 144.9 - 151.6 - 181.9 - 19.9 cm and Embensky 145.8 - 160.7 - 184.7 - 19.8 cm.

Adult mares of the Kozhamberdinsky type have a height in the withers of 145.1 cm, an oblique body length of 152.5 cm, a chest girth of 180.2 cm and a metacarpus girth of 19.4 cm. The Kozhamberdinsky and Embensky mares showed an average body measurement of 143.8 - 149.9 - 179.3 - 19.1 cm and 144.7 - 155.2 - 180.8 - 18.9 cm.

The improvement of the breeding and productive qualities of Mugalzhar horses is carried out in order to accumulate and consolidate especially valuable economic useful traits inherent in each breeding type and the creation of a new meat and dairy breed.

The biological features of Kozhamberdinsky intrabreed type are: the ability of stallions throughout the year to maintain high fatness and even at the end of the breeding period to have higher standards. Mares are distinguished by high fecundity: 85-90 colting for 100 heads and pronounced maternal instinct. Even for the first time, the females that have become stubborn almost never throw foals. The colting, usually (up to 80.0%), occurs in the predawn hours.

Key words: Mugalzhar breed of horses, intrabreed type, live weight, body measurements.

Introduction. In 1948, a horse breed test was conducted at the farm of the Betpakdala Experimental Station (Ulanbel), Chui District, Zhambyl Oblast, which showed that the most promising, in the Betpakdala complex of seasonal pastures, is the Kazakh breed of Jabe type. According to the order of the USSR Ministry of Agriculture in 1969, the Ministry of Agriculture of Kazakhstan was tasked to create new horse breeds of meat and dairy productivity on the basis of the Kushumsky breed group and an array of Jabe type horses. Since that time, work has been begun on the creation of the Mugalzhar horse breed [1].

The work was carried out in three farms of the Mugalzhar stud farm in the Aktobe region and in the Betpakdala experimental station of the Karaganda region. In the Mugalzhar stud farm, Jabe were bred in cleanness, stallions and mares were bred and the best were sold to the two mentioned subsidiary farms [2].

There, these stallions were used with local dams, receiving the second and third generations, and the animals of the desired type were bred in "inter se". Kazakh mares and their hybrids did not have an established origin. They were covered with Jabe stallions, the hybrids of the first generation were again put under Jabe, and the colts were castrated, then transferred to the working squad or handed over for meat. Among the hybrids of the second generation, animals of the desired type were bred "inter se", and those that had not reached the parameters of the desired type were again covered with producers of Jabe and the third-generation hybrids were bred "inter se". At the same time, we conducted establishing the lines of the best producers and families of mares. The same scheme was used for breeding in the Kulandinsky horse stud of the Kyzylorda region. The work has been carried out for 30 years. According to the order of the Ministry of Agriculture of the Republic of Kazakhstan No. 156 dated December 30, 1998, the Mugalzhar horse breed was tested. This is the first meat and dairy breed in the world, created on the basis of Jabe non-specialized intra-breed type of a local horse breed - Kazakh without the blood of factory breeds. At the same time, it was possible to increase the live weight of stallions from the indicators of the initial individuals by 100-120 kg, mares - by 80-100 kg, without significant changes in the breeding technology, and the level of selective and breeding work was raised to the factory one [2].

The development of molecular biology, population genetics, biotechnology, the development and implementation of large-scale selection, the use of computer programs for analyzing selective information have enriched the arsenal of tools for studying biological patterns and managing animal heredity, breeding processes [3-8].

Materials and research methods. The measurements of the horses' bodies were studied according to the Instructions on bonitation of horses of local breeds [2, 9]. The live weight of horses was determined by weighing on stationary electronic scales.

When studying the meat productivity of horses, both linear and non-linear, a control slaughter of 2.5-year-old stallions was conducted at a slaughterhouse of the stud farm using the methods of the All-Russian Research Institute of Horse Breeding [10]. The quality of the carcass was assessed by the development of muscle tissue, the presence of fatty deposits on the surface and the thickness of fat on the abdominal wall (kazy).

Marketable milkiness of mares was determined monthly during lactation by the method of control milk yield, twice a month on two adjacent days. Dairy productivity was calculated taking into account milk sucked at night by a colt, according to the formula of prof. Saigin I.A. [11].

All experimental data were processed by the biometric method according to Baimukanov D.A., et al. [12].

Research results. The modern structure of the Mugalzhar horse breed consists of three intrabreed types - Embensky, Kulandinsky, Kozhamberdinsky (till 2009 Saryarkinsky) six lines and 55 families. Live weight of stallions is 560 kg, of mares - 520, slaughter yield is 55-60%, yield of foals is 80-90%, milkiness of mares is up to 2000 l. Horses of Mugalzhar breed are distinguished by excellent health, excellent adaptability to year-round pasture maintenance. Mugalzhar horses are bred in almost all regions of Kazakhstan.

The stallions of the Mugalzhar horse breed have an average live weight of 493.5 - 538.4 kg, mares - 452.7 - 469.3 kg. Body measurements in stallions of Kozhamberdinsky intrabreed type were 148.9 - 153.1 - 186.9 - 20.0 cm, of Kulandinsky - 144.9 - 151.6 - 181.9 - 19.9 cm and Embensky - 145.8 - 160.7 - 184.7 - 19.8 cm (table 1).

Adult mares of the Kozhamberdinsky type have a height in the withers of 145.1 cm, an oblique body length of 152.5 cm, a chest girth of 180.2 cm and a metacarpus girth of 19.4 cm. The Kozhamberdinsky and Embensky mares showed an average body measurement of 143.8 - 149.9 - 179.3 - 19.1 cm and 144.7 - 155.2 - 180.8 - 18.9 cm respectively.

The study of the exterior characteristics of herd horses showed that they have high rates of massiveness indexes of 142.6-158.5, which characterize them as typical meat animals.

The improvement of breeding and productive qualities of horses is carried out in order to accumulate and consolidate especially valuable economically useful traits inherent in each intrabreed type and the creation of a new meat and dairy breed of horses.

Table 1 – Body measurements and live weight of adult horses of the Mugalzhar breed

Type	Animals ex	n	Measurements, cm				Live weight, kg
			height in the withers	oblique body length	girth		
					of chest	of metacarpus	
Kozhamberdinsky	♂	15	148.9±1.2	153.1±1.4	186.9±2.9	20.0±0.21	505.9±18.1
	♀	150	145.1±1.1	152.5±1.8	180.2±2.2	19.4±0.05	465.2±11.4
Kulandinsky	♂	18	144.9±1.1	151.6±1.6	181.9±2.5	19.9±0.18	493.5±14.8
	♀	220	143.8±1.2	149.9±1.9	179.3±2.3	19.1±0.05	452.7±9.3
Embensly	♂	24	145.8±1.3	160.7±1.3	184.7±2.8	19.8±0.45	538.4±21.6
	♀	210	144.7±1.2	155.2±1.4	180.8±2.1	18.9±0.22	469.3±12.5

Kozhamberdinsky interbreed type of Mugalzhar horse breed. Horses of Kozhamberdinsky intrabreed type of Mugalzhar breed have high meat and dairy productivity. The live weight of stallions on average for the period of 2012-2018 was 538 kg, the best ones reach 580-600 kg, mares - 485-540 kg. Slaughter yield amount up 60%, the yield of colts is 85-90% per 100 mares. Year-round pasture maintenance of horses is practiced. The milkiness of mares is high, colts at the age of 6-7 months have a live weight of 220-240 kg.

Biological features of the Kozhamberdinsky intrabreed type horses are: the ability of stallions throughout the year to maintain high fatness and even at the end of the breeding period to have higher standards.

Mares are distinguished by high fecundity: 85-90 coltings for 100 heads and pronounced maternal instinct. Even for the first time, the females that have become stubborn almost never leave colts. The colting, usually (upto 80.0%), occurs in the predawn hours.

Stallions have well-defined herd instincts. The fights between them are mostly ritual, without serious injuries. However, in a limited space (pens, splits) stallions can even inflict damage to each other. Sexual maturity in mares usually occurs at the age of two, in colts - at the age of three.

As can be seen from the above materials, the improvement of herd horses by the method of purebred breeding can be conducted quite effectively. But, it takes quite a long time. For example, it took 15 years to increase the live weight by 56.0 kg.

Currently, Kozhamberdinsky type stallions are widely used in the subsidiary farms of Zhaitap-Mugalzhar LLP of the Akmola region, at Algabas-Mugalzhar LLP and KazybekBek LLP of the Almaty region. Stallions of this type are good improvers of low-producing local horses, bred by herds. Already the first generation exceeds in live weight by 40-45 kg of 2.5-year-old peers of local populations.

In the Kozhamberdinsky type of the Mugalzhar horse breed there are two factory lines of Maupas and Mesker. There are 54 mares and 3 stallions in the Maupas line, 58 mares and 4 stallions in the Mesker line.

The genealogical line of Maupas № 9 - 1955. The ancestor of the line - the stallion Maupas 9-55, champion of the USSR VDNKh breed of 1964, chestnut, without a sign, had a high live weight (520.0 kg), a long barrel-shaped body, a well-developed chest (chest girth 187.0 cm), sufficient height (144.0 cm), strong, well-placed legs with strong hoofs, somewhat short steep pastern, slightly lowered croup, good hair covering, strong mane, bangs and tail.

Maupas 9-55 perfectly kept the body throughout the year, had good herd instincts and sufficient sexual vigor. Every year, 18-22 mares were covered with a colting rate of 85.0-90.0%. For 15 years, this stallion has been used in the herd of the Betpakdala experimental station from 1958 to 1972. Now, the grandchildren and great-grandchildren of this outstanding producer successfully work in the republic's breeding farms. At the same time, the stallions of this line show a high hereditary capacity.

The line of Maupas 9-55 continues through the stallions: Maral 13-78 (144.0-156.0-186.0-19.5-525.0); Mak 87-79 (148.0-154.0-186.0-19.5-490.0); Madrid 147-79 (146.0-154.0-185.0-19.5-485.0); Marten 91-80 (146.0-156.0-180.0-19.5-495.0); Matery 77-79 (146.0-157.0-186.0-20.0-490.0); Mayak 115-72 (147.0-153.0-187.0-20.0-510.0) and Manezh 187-74 (143.0-155.0-186.0-20.0-510.0). On average, the height at the withers is 145.7 cm, the length of the body is 155.0 cm, the chest girth is 185.1 cm, the

metacarpus girth is 19.7 cm and the live weight is 500.7 kg. These indicators for mares were respectively 142-151.9-181.3-18.8 cm and 441.0 kg.

The genealogical line of Mesker M 98, 1962. The ancestor of this line was Mesker stallion No. 98, born in 1962, champion of the Kazakh SSR VDNKh in 1972. The stallion of the bay-brown suit, without signs, was distinguished by a good combination of medium-sized growth (139.0 cm at the withers), with a long massive body (format index 112.0%), a well-developed chest (182.0 cm), live weight (520.0 kg), relatively light head, powerful neck with a pronounced fat ridge, relatively short strong, well-set legs, strong hooves and well-developed muscles, especially in the area of the croup.

The Mesker line is presented by 98-62 stallions: Mergen 67-75 (144.0-162.0-194.0-20.5-555.0 kg); Metan 121-78 (148.0-154.0-189.0-19.5-530.0); Mramor 15-80 (147.0-154.0-183.0-19.5-490.0); Medok 59-78 (143.0-154.0-185.0-19.5-480.0); Meiman 107-78 (148.0-162.0-185.0-20.0-500.0); Meteor 16-82 (148.0-155.0-186.0-19.5-490.0); Mrak 179-78 (145.0-152.0-180.0-19.5-480.0) and Mesyats 10-83 (150.0-157.0-183.0-19.5-485.0). They have an average height in withers of 145.7 cm, body length of 155.0 cm, chest girth of 185.1 cm, metacarpus girth of 19.7 cm and live weight of 501.3 kg. For mares these figures were 141.8-152.5-181.3-18.8 cm and 445.7 kg, respectively.

Kulandinsky intrabreed type of Mugalzhar horse breed. The created Kulandinsky intrabreed type of the Mugalzhar horse breed possesses, first of all, very high adaptive qualities to the harsh and harsh conditions of the Aral Desert of the Republic of Kazakhstan.

The research and production work carried out in this direction in the “Kulandinsky” stud farm in the Aral region of the Kyzylorda region shows that this task was successfully completed by in-breed selection at isolating the most desirable type (Jabe), while the live weight of adult mares was increased on average from 350.0 to 430.0 kg, in stallions from 390.0 to 480.0 kg.

As a result of long and fruitful work aimed at improving the breeding qualities and increasing the meat productivity of Jabe-type horses, the highly productive factory lines of Mugalzhar breed of Kulandinsky intrabreed type of Patok 131-64 and Zaliv 136-65 stallions and uterine families 40-70; 56-71; 62-76; 28-78.

The selection of horses in the Kulandinsky intrabreed type, according to the data in table 2, will allow mares and stallions with good growth (142.0, 145.0 cm and more), with an elongated body (148.0, 150.0 cm and more), with a large chest girth (74.0, 178.0 cm and more) and high live weight (430.0, 475.0 kg or more).

Table 2 – Minimum indicators for classifying horses of the Mugalzhar breed to the Kulandinsky intrabreed type

Indicator	Stallion	Mare
Height in the withers, cm	145.0	142.0
Oblique body length, cm	150.0	148.0
Chest girth, cm	178.0	174.0
Metacarpus girth, cm	19.0	18.0
Live weight, kg	475.0	430.0

Zootechnical parameters of young stock selection are given in table 3.

It has been established that stallions and mares consistently differ in good heights at the withers 140.7-140.3 cm, oblique body length - 147.3-145.6 cm, chest girth -170.7-168.1 cm and live weight - 384.1-374.6 kg, as well as increased massiveness of 138.1% and 135.7%.

In the Kulandinsky intrabreed type of horses, two lines were formed: Aral 4-94 and Kulan 77-95 (table 4).

The lines of Aral 4-94 and Kulan 77-95 are distinguished by an elongated body, voluminous breast, high live weight and good adaptiveness for pasture and winter-grazing keeping in all seasons of the year, and their descendants have 8.6 points for fitness. All these qualities are well inherited. Their sons, daughters, grandchildren, great-grandchildren are characterized by good height, elongated body, large chest, and large live weight.

Table 3 – Zootechnic indicators of the young stock selection of the Kulandinsky type

Age, months	Body measurements, cm				Live weight, kg
	height in the withers	oblique body length	girth		
			of chest	of metacarpus	
Stallions					
6	118.0	113.0	127.0	15.0	175.0
12	124.0	122.0	139.0	15.5	230.0
18	135.0	136.0	150.0	16.0	280.0
24	137.0	138.0	156.0	17.0	320.0
30	138.0	140.0	164.0	17.5	365.0
Mares					
6	116.0	112.0	123.0	14.5	170.0
12	122.0	122.0	133.0	15.0	220.0
18	132.0	133.0	147.0	15.5	260.0
24	134.0	135.0	154.0	16.0	300.0
30	136.0	138.0	160.0	17.0	340.0

Table 4 – Live weight, body measurements and indices of horses of the Aral 4-94 and Kulan 77-95 lines compared to the breed standard

Indicator	Aral 4-94				Kulan 77-95			
	stallions n=10		maresn =55		stallionsn =7		maresn =50	
	M±m	to the standard, +, -	M±m	to the standard, +, -	M±m	to the standard, +, -	M±m	to the standard, +, -
Live weight, kg	486.0±2.5	+51.0	438.1 ±2.4	+23.1	479.4 ± 2.9	+44.4	431.2 ±5.3	+16.2
Height in the withers, cm	146.6±0.2	+3.1	143.7 ±0.2	+2.7	145.7 ±0.1	+2.2	141.9 ±0.3	+0.9
Oblique body length, cm	152.8±0.3	+4.3	150.3 ±0.3	+3.3	151.0 ±0.3	+2.5	147.2 ±0.4	+1.2
Chest girth, cm	183.3±0.6	+5.8	179.9 ±0.5	+3.9	180.0 ±0.28	+2.5	177.1±0.4	+1.1
Metacarpus girth, cm	21.1 ±0.1	+2.1	18.6 ±0.1	+0.6	20.6± 0.07	+1.6	18.2 ±0.05	+0.2
Indices, %								
Massiveness	154.7	+7.3	148.5	+0.3	156.6	+9.2	150.7	+2.5
Format	104.2	+0.8	104.6	+0.4	103.6	+0.2	104.4	+0.2
Wide body	125	+1.3	125.2	+0.3	123.6	-	124.8	-
Bone	14.4	+1.2	12.9	10.2	14.2	+1.0	12.8	+0.1

It was established that stallions from the Aral 4-94 line exceed the standard of the breed in live weight by 51.0 kg, height at withers by 3.1 cm, oblique body length by 4.3 cm, chest girth by 5.8 cm, metacarpus girth by 2.1 cm. The stallions from the Kulan 77-95 line exceed the breed standard by 44.4 kg - 2.2 cm - 2.5 cm - 2.5 cm - 1.6 cm, respectively.

Mares from the Aral 4-94 line exceed the breed standard in live weight by 23.1 kg, height at withers by 2.7 cm, oblique body length by 3.3 cm, chest girth by 3.9 cm; metacarpus girth by 0.6 cm, and the mares from the Kulan 77-95 line by 16.2-0.9-1.2-1.1-0.2 respectively.

Embenskyi ntrabreed type of Mugalzhar horse breed. Embenskyintrabreed stallions have a height at withers of 145.5-146.2 cm, an oblique body length of 159.1-157.2 cm, that is, oblique body length exceeds height at withers by 13.6-11.0 cm. For stallions - producers a chest girth is 185.8-184.9 cm, a metacarpus girth varies from 19.9 cm to 19.7 cm, live weight over the period 2010-2018 averaged 552.2-530.7 kg.

Mares of Embenskyintrabreed type have a height at withers 143.8 - 144.2 cm, slanting body length 151.8 - 159.9 cm, chest girth 175.6 - 185.7 cm, metacarpus girth 18.5 -18.7 cm, live weight 456.2 -

Table 5 – Zootechnic indicators of adult Embensky type mares obtained from inbreeding and outbreeding

Group	n	Measurements, cm				Live weight, kg	Index of massiveness
		height in the withers	oblique body length	chest girth	metacarpus girth		
Closeinbreeding	44	144.1±0.27	159.9±0.53	181.8±0.62	18.7±0.03	492.4±4.1	165.2
Mildinbreeding	570	144.2±0.07	155.2±0.13	185.7±0.16	18.7±0.01	481.9±0.9	161.7
Outbreeding	720	143.8±0.11	151.8±0.18	175.6±0.26	18.5±0.01	456.2±1.6	153.1

492.4 kg. For 2010-2018, the measurements and live weight of mares of this type are respectively equal to: 145.0-155.4-180.8-18.9 cm and 480.2 kg.

The modern population of stallions and mares of the Embenskyintradreed type in terms of body measurements and live weight are distinguished by uniformity in the main zootechnic indicators (body measurements, live weight, early ripeness). Table 5 shows the zootechnic characteristics of Embensky type mares of the Mugalzhar breed of horses.

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МУҒАЛЖАР ЖЫЛҚЫТҰҚЫМДАРЫНЫҢ ҚАЗІРГІ ПОПУЛЯЦИЯСЫНА ЗООТЕХНИКАЛЫҚ СИПАТТАМАСЫ

Аннотация. Мұғалжар жылқы тұқымының заманауи құрылымы үш түрден тұрады: Ембі, Құланды, Қожамберді (2009 жылдан бастап Сарыарқа) және алты аталық із және 55 аналық ұя. Тірі салмағы айғырдың 560 кг, бие 520, таза сойыс шығымы 55-60%, құлын шығымы 80-90%, сүттілік деңгейі 2000 л. Мұғалжар жылқы тұқымы өз денсаулығының мықтылығымен және жыл бойы жайылымға жақсы бейімделумен ерекшеленеді.

Мұғалжар жылқы тұқымының айғырларының орташа салмақтары 493,5 – 538,4 кг, ал, биелері 452,7 – 469,3 кг.

Қожамбердинді тұқым ішкі типінің айғырларының дене өлшемдері 148,9 - 153,1 - 186,9 - 20,0 см, Құланды 144,9 - 151,6 - 181,9 - 19,9 см және Ембі 145,8 - 160,7 - 184,7 - 19,8 см.

Қожамбердинді тұқым ішкі типінің сақа биелерінің дене өлшемдері: шоқтық биіктігі 145,1 см, денесінің қиғаш ұзындығы 152,5 см, кеуде орамы 180,2 см және жіліншік орамы 19,4 см. Ембі және Құланды тұқым ішкі типінің биелерінің орташа дене өлшемдері: 143,8 – 149,9 – 179,3 – 19,1 см және 144,7 – 155,2 – 180,8 – 18,9 см.

Мұғалжар жылқы тұқымының асылдық, өнімдік қасиеттерін жетілдіру кезінде жинақталған өте құнды қасиеттерін, шаруашылыққа тиімді жақтарын жаңадан құрылып отырған етті-сүтті бағыттағы жылқы тұқымдарына және тұқым ішкі типіне берілуі жүзеге асырылады.

Қожамберді жылқыларының биологиялық ерекшеліктері мыналар болып табылады: айғырлардың жыл бойы жоғары қонымдылығын сақтап қалу қабілеті және үйірге түскен кезеңінің өзінде жоғары қонымдылықта болуы. Биелері жоғары өнімділікпен сипатталады: 100 бас үшін 85-90 құлындайды және құлынына деген аналық сезімінің жоғарлығымен. Тіпті бірінші рет құлындаған бие құлындарын ешқашан тастап кетпейді. Әдетте, құлындау (80,0% дейін) таң уақытта болады.

Түйін сөздер: мұғалжар жылқы тұқымы, тұқым ішкі тип, тірі салмақ, дене өлшем.

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ЗООТЕХНИЧЕСКАЯ ХАРАКТЕРИСТИКА СОВРЕМЕННОЙ ПОПУЛЯЦИИ ЛОШАДИ МУГАЛЖАРСКОЙ ПОРОДЫ

Аннотация. Современная структура мугалжарской породы лошадей состоит из трех внутрипородных типов – Эмбинского, Куландинского, Кожамбердинского (до 2009 года Сарыаркинский) шести линий и 55 семейств. Живая масса жеребцов 560 кг, кобыл 520, убойный выход 55-60%, выход жеребят 80-90 %, молочность кобыл до 2000 л. Лошади мугалжарской породы отличаются отличным здоровьем, прекрасной приспособленностью к круглогодичному пастбищному содержанию.

Жеребцы мугалжарской породы лошадей имеют в среднем живую массу 493,5 – 538,4 кг, кобылы 452,7 – 469,3 кг. Промеры тела составили у жеребцов Кожамбердинского внутрипородного типа 148,9 – 153,1 – 186,9 – 20,0 см, Куландинского 144,9 – 151,6 – 181,9 – 19,9 см и Эмбенского 145,8 – 160,7 – 184,7 – 19,8 см.

Взрослые кобылы Кожамбердинского типа имеют высоту в холке 145,1 см, косую длину туловища 152,5 см, обхват груди 180,2 см и обхват пясти 19,4 см. Кобылы Кожамбердинского и Эмбенского типа показали в среднем промеры тела 143,8 – 149,9 – 179,3 – 19,1 см и 144,7 – 155,2 – 180,8 – 18,9 см.

Совершенствование племенных и продуктивных качеств лошадей мугалжарской породы ведется с целью накопления и консолидации особо ценных хозяйственно-полезных признаков присущих каждому внутрипородному типу и созданию новой мясомолочной породы лошадей.

Биологическими особенностями лошадей Кожамбердинского внутрипородного типа являются: способность жеребцов в течение всего года сохранять высокую упитанность и даже в конце случного периода иметь высшие кондиции. Кобылы отличаются высокой плодовитостью: 85-90 выжеребок на 100 голов и ярко выраженным материнским инстинктом. Даже впервые ожеребившиеся матки практически никогда не бросают жеребят. Выжеребка, как правило (до 80.0%), происходит в предрассветные часы.

Ключевые слова: мугалжарская порода лошадей, внутрипородный тип, живая масса, промеры тела.

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REFERENCES

- [1] Rzabaev S.S. (1981) Enhancement of the tribal and productive qualities of the Jabe. Alma-Ata, "Kaynar", 22 p. (in Russ.).
- [2] Akimbekov A.R., Baimukanov D.A., Yuldashbayev Yu.A., Demin V.A., Iskhan. K.Zh. (2018) Horse breeding (ISBN 978-5-906923-27-1). Moscow. COURSE. INFRA-M. 400 p.(in Russ.).
- [3] Semenov V.G., Baimukanov D.A., Kosyaev N.I., Alentayev A.S., Nikitin D.A., Aubakirov Kh.A. (2019) Activation of adaptogenesis and bioresource potential of calves under the conditions of traditional and adaptive technologies. Bulletin of national academy of sciences of the Republic of Kazakhstan. Volume 1, Number 377 (2019), 175 – 189 <https://doi.org/10.32014/2019.2518-1467.20>. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print).
- [4] Chindaliyev A. E., Baimukanov D. A., Karynbayev A. K., Chindaliyev E. (2018) Results of the targeted selective and breeding work of the simmental red-and-motley breed of dairy cattle. Bulletin of national academy of sciences of the Republic of Kazakhstan. ISSN 1991-3494. Volume 6, Number 376 (2018), P.p.34-38. <https://doi.org/10.32014/2018.2518-1467.24>. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print).
- [5] Alentayev A.S., Baimukanov D.A., Smailov S.D., Semenov V.G., Abdrakhmanov K.T., Begaliyeva D.A., Omarov M.M. (2018) Efficiency of breeding of the alatau breed of brown cattle in the "Adal" agro-industrial company JSC. Bulletin of national academy of sciences of the Republic of Kazakhstan. ISSN 1991-3494. Volume 5, Number 375 (2018), P.p. 12-29. <https://doi.org/10.32014/2018.2518-1467.2>. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print).
- [6] Ombayev A.M., Alentayev A.S., Baimukanov D.A., Karatayeva M., Nurbayev S. (2017) Dairy cattle breeding according to cytogenetic status. News of the National Academy of Sciences of the Republic of Kazakhstan: Series of Agrarian Sciences, No. 2 (38), March - April, 2017 - Pp. 18-26. ISSN 1991-3494 2224-526X (in Russ.).
- [7] Begaliyeva D. A., Alentayev A. S., Ombayev A. M., Baimukanov D. A. (2017) Improvement of the Technology for Young-Stock Breeding of Black-and-White Dairy Cattle in the Southeast of Kazakhstan. OnLine Journal of Biological Sciences (<http://thescipub.com/abstract/10.3844/ofsp.11376>). DOI: 10.3844 / ojbsci. 2017.
- [8] Baimukanov D.A., Pristupa V.N., Kolosov Yu.A., Donnik I.M., Torosyan D.S., Kolosov A.Yu., Orlova O.N., Yuldashbayev Yu.A., Chylbak-ool S.O. (2019) Improvement of breeding and productive traits of Kalmyk cattle breed. Bulletin of national academy of sciences of the Republic of Kazakhstan. Volume 2, Number 378 (2019), 128 – 145. <https://doi.org/10.32014/2019.2518-1467.51>. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print).
- [9] Instructions for bonitation of horses of local breeds (2014). Astana.22 p(in Russ.).
- [10] Method of determining the meat productivity of horses (1974) VNIIC. Moscow. 1974. Pp.5-22. (in Russ.).
- [11] Saigin I.A. (1963) Meat and dairy horse breeding. Agricultural production of the Urals.№ 5. Pp.12-14.(in Russ.).
- [12] Baimukanov D.A., Tarchokov T.T., Alentayev A.S., Yuldashbayev Yu.A., Doshanov D.A. (2016) Fundamentals of genetics and biometrics. Study Guide (ISBN 978-601-310-078-4). - Almaty: Evero, 128 p. (in Russ.).

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THE EFFECT OF CANOLA MEAL APPLICATION IN THE DIET OF DAIRY COWS OF HOLSTEIN BREED IN «BAYSERKE AGRO» LLP

Abstract. The impact of canola meal on dairy productivity and qualitative indicators of milk in Holstein breed cows was studied under the conditions of Baysyerke Agro LLP. The prime cost of milk was calculated with the inclusion of soybean cake and canola meal as well as the average dry matter intake in the diet when the nutritional breakdown of the experimental and control groups changed in a comparative aspect.

Keywords: soybean, canola flower, diet, fat, protein, NDF, ADC.

Introduction. Dairy productivity of dairy cows largely depends on provision with protein not decayed in rumen and formed by the microbial protein in the forestomachs and entered the bowel [1].

The provision with this protein at a sufficient level in accordance with the need for the productive capacity of cows is largely ensured by feeds with a high content of transit protein. The main protein feed is widely used in balancing the diet on protein of dairy cows in Kazakhstan is soybean in the form of a cake with the content of crude fat up to 10% and soybean meal up to 1.5%, protein - 35-40% or more. The generally accepted rate of adding soybean to the diet ranges from 100 to 150 grams per liter of products, while the highest fat content in milk without loss of volume is observed when using soybean meal. The only drawback of the use of soybean in balancing the diet of dairy cows according to protein is its relatively high cost, which greatly overestimates the prime cost of the final product since the main cost item in the diet accounts for protein feed.

In this regard, ways to reduce the diet cost without loss of dairy products, including fat and protein contents, are being sought. The main analogues are canola meal or presscake, which at the moment are much lower at market price, while the content of calcium, phosphorus, magnesium, and manganese exceeds soybean, and the optimal ratio of decayed and non-decayed protein ensures good development of rumen microflora. According to some scholars, the availability of calcium in canola is 68%, phosphorus - 75%, magnesium - 62%, manganese - 54%, copper - 74%, zinc - 44%. Canola also contains a significant amount of choline, niacin, riboflavin, folic acid and thiamine, and natural antioxidants like tocopherol, phenolic compounds, and tannins. In addition, it has good eating qualities providing excellent palatability when included in mono feeds [2].

Methods of research. Research work was carried out in a high producing herd of 132 animals, 3 groups of 44 heads each (1 experimental group and 2 control groups), milking was performed on a voluntary basis at the DeLaval robotic milking machine. Through the milking machine, the pelleted feed can be added through a feed unit at a rate of 100 grams per kg of milk up to 100 days of lactation, and 50 grams from 100 days or more of lactation each. The distribution of mono feed was conducted through a trailed horizontal feed mixer (DeLaval, 12 m³ volume) 2 times a day with an interval of 8 hours. Chemical examination of forage and qualitative indicators of milk was determined in Baysyerke Agro LLP laboratory.

Research results. The research work was conducted on the base of the dairy unit of Bayserke Agro LLP, the main experimental breed was Holstein of Canadian breeding. The average milk yield at the time of the experiment averaged from 38 to 41 liters, depending on the cows entering the machine, which varies from 2.9 to 3.2, the fat and protein mass fraction in milk is an average 3.4% and 3.1% respectively.

The aim of the research is to study the effect of canola meal on the dairy productivity of Holstein dairy cows and cost reduction of milk in the nutritional breakdown.

According to the results of a chemical examination of feed, the dry matter content in the diet of the control group averaged 23.5 kg per animal, digestible protein - 3520 g, exchange energy - 282 MJ, NEL - 162 MJ, the total crude fiber content in the diet is 16%. Similar indicators in the diet of the experimental group amounted to 24.7 kg of dry matter per animal, 3548 g of digestible protein, 279 MJ of exchange energy, 158 MJ of NEL and 15.8% of crude fiber. The structure of the experimental diet has been modified for 12 days according to the parameters of mono feed palatability (daily remainder on the feeding table not less than 5%) and the qualitative indicators of milk, such as fat and protein, taking into account the ratio of fat to protein with a coefficient of not less than 1.1. Due to identical indicators of crude protein content in soybeans and canola, which accounted for 38% each, at the beginning of the experiment, soybean cake was replaced by canola meal without changing the proportion of dietary ingredients, but due to a sharp decline in productivity in the experimental group up to 36 kg per animal, a clear recalculation of the diet was carried out with further modifications, which resulted in the approval of the above diet structure.

Table 1 – Diet structure of dairy cows of the control and experimental groups, productivity - 38-41 kg

Name of feed	Control group	Experimental group
Corn	2.2	3.3
Barley	4.6	4
Soybean cake	3.6	–
Canola meal	–	4.54
Pelleted combined feed(through the feed station)	2.2	2.2
IN-R 18 premix for dairy cattle	0.17	0.17
Tricalcium phosphate	0.2	0.2
Alfalfa haylage	8.4	5.8
Corn silage	24.4	27.4
Total	45.8	47.6

As a result of changes in the diet of the experimental group, the consumption of dry matter per animal increased by an average of 1.2 kg, from 23.5 to 24.7 kg, which is caused by a decrease in the content of neutral detergent fiber in the diet of the experimental group by 1.2%, from 25.6% to 24.4%. According to a number of researchers, a decrease in neutral detergent fiber in the diet leads to an enhancement in dry matter intake, but they also noted a reduction in the mass fraction of fat in milk [3]. It was found that the optimal case of the neutral detergent fiber content in the diets of dairy cows during the second phase of lactation is from 32.0 to 37.0% and the acid detergent fiber content is from 25.0 to 25.5% of the dry matter in the diet with productivity up to 25 kg, to ensure a high level of dairy production, the content of fat and protein mass fraction, and the best recovery of fatness after high milk yield[4]. In this connection, the high-priority task is to increase the proportion of neutral detergent fiber in the diet to 26% in order to improve the qualitative indicators of milk, including fat content up to 3.6-3.7% and protein of not less than 3.2%. The solution to this problem is possible by adding beetroot pulp or soybean peel to the diet, the input rate of which, according to preliminary calculations, averages 1.2-1.4 kg per animal. The obtained data on the enhancing milk yield are not inferior to those in other farms of the almaty region with black-and-motley and holstein black-and-white dairy cattle breeds [5-7].

As can be seen from table 2, the average productivity of animals in the experimental and control groups was 40.8 and 40.3 kg per cow, respectively, but there was a decrease in fat and protein in the experimental group by 0.07% and 0.08%.

Table 2 – indicators of dairy productivity of cows over the research period (90 days)

Indicators	Group	
	Experimental	Control
Total registered animals	44	88
Gross yield per animal, kg	2774.4±92.8	2741±68.9
Average per animal, kg	40.8±0.95	40.3±1.3
Fat mass fraction, %	3.36±0.9	3.43±0.7
Protein mass fraction, %	3.04±0.08	3.12±0.07
Prime cost in the diet structure, per 1 kg. tg.	58.2	73.1

Taking into consideration that milk sales are based on primary fat content (3.6%), the average productivity of the experimental group animals when transited to the basis was 38.08 kg and in the control group - 38.4 kg, but at the same time the prime cost of 1 kg of milk in the diet structure of the experimental group was lower by 20.4% than in the control one. As the state of the animals of the experimental group in relation to the control group, a difference is not marked.

Conclusions. In such a way, according to the research results, the possibility of preserving dairy productivity and enhancing profitability was shown using in the diet of dairy cows of canola meal as a protein feed. The average consumption of canola meal per 1 kg of products per diet averaged 110 grams, while the difference in the set of feed in the diets caused a change in the intake of dry matters between the groups.

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"БАЙСЕРКЕ АГРО" ЖШС ГОЛШТИНСКИЙ ТҰҚЫМДЫ САУЫН СИЫРЛАРЫНЫҢ РАЦИОНЫНДА РАПС КҮНЖАРАСЫН ҚОЛДАНУ НӘТИЖЕЛЕРІ»

Аннотация. "Байсерке Агро" ЖШС жағдайында рапсты күнжараның сүт өнімділігіне және голштин тұқымды сауын сиырларының сүтінің сапалық көрсеткіштеріне әсері зерттелді. Соя күнжарасы мен рапс күнжарасын рационға қосқан кездегі сүттің өзіндік құны мен тәжірибелік және бақылау тобының рационның құрылымы өзгергенде құрғақ заттың орташа тұтынуы салыстырмалы аспектіде есептелген. Зерттеу жұмысының қорытындысы бойынша сүт өнімділігін сақтау және рентабельділікті жоғарылату мүмкіндігі рапс дәмін диетада сүт сиырларын ақуыздық жем ретінде пайдалану есебінен көрсетті. Орташа тұтыну рапс жүні 1 кг-ға азық-түлік өнімдері орта есеппен 110 грамм, ал рациондардағы азықтардың жиынтығындағы айырмашылық топтар арасында құрғақ заттардың өзгеруіне әкелді.

Түйін сөздер: соя, рапс, рацион, май, ақуыз, нейтральді-детергенттік клетчатка, қышқыл-детергенттік клетчатка.

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РЕЗУЛЬТАТЫ ПРИМЕНЕНИЯ РАПСОВОГО ШРОТА В РАЦИОНЕ ДОЙНЫХ КОРОВ ГОЛШТИНСКОЙ ПОРОДЫ ТОО «БАЙСЕРКЕ АГРО»

Аннотация. Изучено влияние рапсового шрота на молочную продуктивность и качественные показатели молока дойных коров голштинской породы в условиях ТОО «Байсерке Агро». Рассчитана себестоимость молока при включении в рацион соевого жмыха и рапсового шрота и среднее потребление сухого вещества при изменении структуры рациона опытной и контрольной группы в сравнительном аспекте.

Ключевые слова: соя, рапс, рацион, жир, белок, НДК, КДК.

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REFERENCES

- [1] Fitsev A.I., Voronkova D.V. (1986) Current trends and rationing of protein for ruminants. Moscow. 54 p. (in Russ.).
- [2] Pristach N.V., Pristach L.N. (2017) The use of canola meal in animal feeding. Youth and science. № 4. (in Russ.).
- [3] Vorobyova S.V. (2003) Physiological rationale for the consumption of dry matter in cattle diets according to the content of structural carbohydrates in feed. The thesis of doctor biol. sciences. Specialty 03.00.13.Dubrovitsy. 252 p. RSL OD, 71:04-3/131.(in Russ.).
- [4] Sizova Yu.V. (2010) Effect of different levels of neutral detergent fiber in diet on nitrogen metabolism and dairy productivity of cows. Problems of biology of productive animals. Borovsk. №1. p. 61-67. (in Russ.).
- [5] Semenov V.G., Baimukanov D.A., Kosyaev N.I., Alentayev A.S., Nikitin D.A., AubakirovKh.A. (2019) Activation of adaptogenesis and bioresource potential of calves under the conditions of traditional and adaptive technologies. Bulletin of the National Academy of Sciences of the Republic of Kazakhstan. Volume 1, Number 377 (2019), 175 – 189 <https://doi.org/10.32014/2019.2518-1467.20>. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print).
- [6] Baimukanov D.A., Abugaliyev S.K., Seidaliyev N.B., Semenov V.G., Chindaliyev A.E., Dalibayev E.K., Zhamalov B.S., MukaSh.B. (2019) Productivity and estimated breeding value of the dairy cattle gene pool in the Republic of Kazakhstan. Bulletin of the National Academy of Sciences of the Republic of Kazakhstan. Volume 1, Number 377 (2019), 39 – 53 <https://doi.org/10.32014/2019.2518-1467.5>. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print).
- [7] Alentayev A.S., Baimukanov D.A., Smailov S.D., Semenov V.G., Abdrakhmanov K.T., Begaliyeva D.A., Omarov C.M. (2018) Efficiency of breeding of the alatau breed of brown cattle in the "Adal" agro-industrial company JSC. Bulletin of the National Academy of Sciences of the Republic of Kazakhstan. ISSN 1991-3494. Volume 5, Number 375 (2018), P.p. 12-29. <https://doi.org/10.32014/2018.2518-1467.2>.

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**ILLITERACY ELIMINATION AS MOBILIZATION POLITICAL
CAMPAIGN: PECULIAR FEATURES OF THE CAMPAIGN
IN THE NATIONAL REGION IN THE 1920s
(AS EXEMPLIFIED IN KHAKASSIA)**

Abstract. The aim of the study is to analyze the deals with the illiteracy campaign of 1920s-1930s. We used methods of analysis, synthesis and comparison. Referring to the main definitions and characteristics of the social mobilization, the authors consider the illiteracy campaign as mobilization political campaign. The need to use mobilization methods for this campaign was caused by the military communism to be further fixed by the active promotion of the external military threat. Under those conditions the illiteracy campaign pursued, first of all, political aims, such as political education, support of the government and formation of the Soviet citizen identity.

The illiteracy elimination combined persuasion and active enforcement that expanded possibilities of involving the Soviet citizens into the educational process. But the mobilization and bureaucratic nature of the illiteracy campaign implementation and the results assessment did not allow to achieve the goals in the 1920s.

One of the reasons for the low rates of the illiteracy elimination in Siberia was insufficient understanding of the cultural and political peculiarities of the national regions. The regional research in Khakassia showed that in the 1920s the illiteracy elimination difficulties were associated with the gangsterism, uncertain status of the region, problematic cross-national relations, Khakass writing obstacles and insufficient material and personnel resources.

It is concluded that the solution of these issues and the mobilization methods expansion allowed to intensify the illiteracy elimination in the national regions by the end of the 1920s.

Keywords: illiteracy elimination, illiteracy elimination campaign, social mobilization, mobilization political campaign, political education, Siberia, Khakassia.

Introduction. The illiteracy elimination in Russia is still called one of the main achievements of the Soviet government. Despite quite a share of propaganda exaggeration and optimism associated with the results of likbez, the soviet educational campaign to eliminate illiteracy, it is possible to consider the effectiveness of the measures taken by the political leadership of the state to involve the citizens of the multinational country into the education activities. In this way it also involved them into the social and political life of the country.

Methods. Various aspects of the activities of the authorities and community during the illiteracy elimination campaign determines different perspectives of the research. But likbez as educational campaign is most often considered to have been a priority of the Soviet government. It is an element of the cultural or national-cultural policy, an efficient experience that combined educational, outreach and political activities as well as the cooperation of social-political organizations and the party.

The use of methods of analysis, synthesis and comparison allows to identify the specifics of the educational program as a mobilization campaign, to form a holistic view of its implementation in Khakassia, as well as to identify the features of the implementation of such a campaign in the national Siberian region.

Results. The official start of the campaign is considered to be December 26, 1919, when the RSFSR Council of People's Commissars adopted a decree "On the elimination of illiteracy in the RSFSR". It

directed all the residents aged 8 to 50 years, unable to read and write, "to learn literacy in their native or the Russian language at will" [1, 118]. A number of documents of the Russian Communist Party of Bolsheviks, then of the All-Union Communist Party of Bolsheviks and, then, of the Soviet Union Communist Party were devoted to the illiteracy problem, such as decrees, resolutions of congresses, etc. The fact that these documents were issued both during pre-war and post-war periods shows the long-term duration and immensity of the illiteracy elimination activities. We believe that this factor is the key one that caused a controversial designation of the likbez format (status).

The information materials and scientific literature call likbez "a state program", "state activities", "process", "work", "Soviet educational project", "Soviet campaign", etc. We suggest that the illiteracy elimination should be considered as a political mobilization campaign characterized by clearly expressed political and administrative principles, regulatory framework, clear targets, methods of coercion, the use of both government and social political resources to achieve the campaign goal. Another argument in favor of the assumption is the compliance of this campaign with the basic characteristics of the social mobilization, namely institutionalization, intensity, directivity, inclusiveness, aggressiveness [2, 36].

Discussion. In the domestic research literature concept "mobilization campaign" is mainly used in the study of various wars. It is in general consistent with the traditional understanding of mobilization as the implementation of a set of measures in the army, economy, system of the public administration to ensure their functioning during the wartime or elimination of the war consequences. But, reference to the category of "social mobilization" within the scientific discourse and its study as a phenomenon of the national history have led to the situation when the term "mobilization" is used in regard to the peacetime (mobilization economy, mobilization type of development, mobilization technologies, mobilization project, etc.).

The term "political mobilization campaign" is still rare in the scientific literature. In our opinion, it is due to the fact that using this term, the researchers cannot always clearly explain the difference in a mobilization campaign and a political campaign proper as well as differences in their varieties, such as agitation-mass campaigns and ideological-propaganda campaigns. A. S. Kimerling offered to differentiate political campaigns of Stalin era according to their goals as "those mobilizing the population to build the socialism and the repressive ones supporting the totalitarian regime" [3, 109–118]. The researcher also described the implementation mechanism of those mobilization campaigns. The scientist characterized in detail all the campaign stages by the example of the elections for the Supreme Soviet of the USSR in 1946. According to this author, there were four stages of the mobilization campaign. They were an ideological message through the central and, then, local press, an organization stage, mass mobilization and implementation of the campaign goals and objectives together with a success report [4, 104–114].

However, we believe this technology is not universal, being characteristic of the period when the country had already established an extensive media network. Along with other means of agitation and propaganda it provided an ideological impact on almost every citizen of the USSR. The illiteracy elimination campaign was held under the prevalence of oral agitation and propaganda over the mass propaganda, especially in the 1920s. Moreover, the fact that the campaign had been implemented for several decades does not allow to conclude about a strict sequence of the stages pointed out by A. S. Kimerling, as the active periods of the campaign were replaced by its "decay". In this regard, we find it necessary to reconsider the essence and results of likbez as educational campaign from the perspective of social mobilization. We believe it will allow to step away from the fixed trends studying likbez and provide a fresh look at this educational project as political mobilization campaign.

The researchers studying social mobilization in relation to the Soviet society rely on the definitions of this historical category presented in the works of A. A. Galkin, A. G. Fonotov and other authors; the researchers offer their own generalizing definitions as well. So, S. A. Krasilnikov reveals social mobilization as "purposeful guidance impact of authorities on the people. It was based on the suppression or distortion of free and rational preferences, motivations and actions of individuals and groups to bring the society to an active state to support and implement the goals and objectives declared a priority, being recognized by the public majority." According to the researcher, this perspective shows the social mobilization as a "deformed, distorted and falsified version of the social contract / consent model of the Western type in the Soviet-Stalin modification" [5, 40–46].

When analyzing the illiteracy elimination campaign, we also see a contradiction between the declared goals and the desired results and a distortion of understanding the public good. Making efforts and involving considerable resources, the Soviet power promoted the idea of undoubted usefulness of the illiteracy elimination campaign for citizens, for reading and writing skills would help them escape from the "darkness of ignorance", get rid of the "fetters of the damned past", be a freeman, master professions and make career. But the politicization of *likbez* to form a new Soviet personality led to the persuasion measures as well as to the enforcement to participate in the illiteracy elimination process.

One of the major factors contributing to the possibility of social mobilization of the Soviet society is considered to be the external, first of all, military threat. In the political propaganda, especially in the press it was a personified "image" of the external enemy that generalized the Entente, fascist Germany, militaristic Japan or some other representatives of the hostile capitalist world. The illiteracy elimination campaign began during the Civil war to be later held under the constant external (real and imaginary) threat to the new Soviet state that turned to be in the "hostile capitalist environment". In this context, we believe that literacy was treated as a form to support the government and its activities and as contribution to the strengthening of the country's defensive potential. This explained the need to apply mobilization methods to wage the campaign and, above all, to take measures to compel citizens to study, including overall censure and warnings about criminal liability and fines.

However, political mobilization campaigns as a universal basis and a tool for the implementation of mobilization technologies were not only of a conflict (confrontational), but also of positive character. They were both based on the imperative nature of "struggle" as the main way to achieve a goal. Referring to this idea, S. N. Ushakova identified three types of political campaigns. They are those 1) based on the external threat factor; 2) directed against internal "enemies"; 3) pursuing the goals of positive mobilization [6, 22]. According to this typology, the illiteracy elimination can be classified as a political campaign of a positive type, since the result was to be the entire literacy of the population, their involvement into the social and political life, enculturation and more opportunities for self-realization.

The regulatory framework of the educational program was based on the program of the Russian Communist Party adopted at the VIII Congress of the Party in March 1919. During "the buildup raising the possibility of the full implementation of communism" the public education was considered to be a tool of "the up-brining of the generation able to finally establish communism". The document declared "comprehensive national assistance" to various forms of citizens' self-education and their training in the context of the "most extensive propaganda" of the Communist ideas [7, 419–420]. The decree "On the elimination of illiteracy in the RSFSR" logically continued this policy. It forced the illiterate population of the country to study by order, which was peculiar to the military communism period. At the same time, the decree did not indicate any sources of funding, personnel and other resources which would allow to implement this project when involved.

The mobilization status of *likbez* as a political campaign was bolstered with the establishment of All-Russian Extraordinary Commission for the illiteracy elimination in 1920 to give it broad powers to implement the adopted resolutions. Further, forms, scale, subjects and quantity indicators of the campaign were defined in the resolutions of congresses, party conferences, the I All-Russian Congress on literacy elimination (1922) and in Sovnarkom decree (1923). The analysis of these documents and some other documents allowed to conclude that in the first half of the 1920s the campaign emphasis was made on administrative pressure and enforcement. The campaign was supposed to be provided with teachers due to their civilian duty to organize reading seminaries and schools. It was also supposed to mobilize communists and class-conscious workers to read aloud the party documents and newspapers. The second resource for the educational campaign was an enthusiastic public initiative, which was embodied in the mass voluntary society "Down with Illiteracy" established in 1923. This tendency was on in the late 1920s in the way of voluntary-compulsory cultural outings.

The ideological essence of *likbez* as educational campaign was promoted by way of combining illiteracy elimination and political propaganda. This allowed to reach the goal of educating younger generation, developing new intellectuals and promoting "political re-education" of citizens. Moreover, an integral part of that education was education of citizens "in the aspect of Marxist worldview and communism" [8, 315–316]. The centralized and regulated administration determined the general direction,

methods and planned targets of the political campaign. But the real situation, progress rate and extent of the literacy campaign were different in different regions and depended on the local conditions.

The apparent lag of Siberia from the European part of the country in the illiteracy elimination rate was caused by a number of reasons, including wide geography and ethnic "diversity" of the population comprising indigenous Siberian peoples, complex landscape, the Civil war consequences, active migration, steady increase in the number of illiterates, etc. [9, 195]. As a result, the number of literates per thousand people in Siberia was one and a half times less than this number in the European part of the country (218 and 330). The educational campaign rate in the first six years also showed an evident lag of the Siberian region from the average rate taken for the RSFSR (9.1% and 12.6%) [10, 145–146].

But we believe this situation was determined by the ways of implementing the campaign as well. By the beginning of 1928/1929 the campaign had been predominantly organized with "apparatus methods of the national education authorities through the system of the commercial literacy offices and schools". The involvement of the community to educate adults was "limited" and mainly used in towns. This, at best, allowed to "keep the rate of illiteracy", but did not lead to the fundamental solution of the problem [10, 145–146].

The campaign in some Siberian regions took place in accordance with the all-Russian events, but it had its own peculiarities. When considering the illiteracy elimination for the "non-Russian ethnic minorities" in the early 1920s, the resolutions of XI All-Russian Congress were fundamental. The Congress designated the educational campaign in the row of minor ethnic goals as one of the "main tasks in improving the cultural and political level of the masses" and marked the end of the campaign, being the day of the October revolution decade [11, 120–121]. At the same time, the indigenous ethnic groups and national diasporas of Siberia were equalized in the rights to education, while the number of their representatives were of the first importance in the reporting documentation on the educational campaign. But their peculiar way of life, their writing language (or its absence), the possibility to train teachers and other factors were not taken into account. The change in this situation had become evident only by the end of the 1920s, which led to an increase in funding for the education system of the national regions.

However, the lack of knowledge about some Siberian ethnic groups and their "economic, household and linguistic characteristics" did not allow to use "differentiated approach" [12, F. 47. Op. 1. D. 740. L. 32-32 turn.] for these groups, which hampered literacy among the indigenous Siberian communities. This can be seen in Khakassia, one of the South Siberian national regions. In the 1920s, half of the local population were Khakass, people of the indigenous ethnic group. The educational campaign in the "non-Slavic" (Khakass) district of Minusinsk uyezd of the Yenisei province was held under difficult conditions of relieving the Civil war consequences. Moreover, the situation was complicated by the fight against political and criminal banditism which officially ended in 1921. But, in fact, the criminal situation in the region remained complex and influenced the activities of the Soviet authorities and the development of the education system.

The uncertainty of the "non-Slavic" district statute significantly hampered the educational campaign. The absence of the local authorities hampered the administrative management and financing of the region and the solution of the personnel issue. Many factors were taken into account to define the form of the national government structure in Khakassia, including the low literacy level of the population and almost total lack of the local ethnic labour. Therefore, on November 14, 1923, the Presidium of the All-Russian Central Executive Committee adopted a decree on establishing Khakass uyezd with eight districts departed from Minusinsk uyezd and Achinsk uyezd of the Yenisei province and Kuznetsk uyezd of the Tomsk province.

The establishment of the national uyezd was to expand the possibilities of the illiteracy elimination for adults. In fact, the ineffective organization and personnel management led to the situation that established in January 1924 the uyezd department of public education consisted of one person. The head of the department came to Khakassia only in August and was forced to make numerous reports and plans. Despite the demands to increase the number of students, the budget for the most pressing needs of the uyezd educational system was reduced from 76 thousand to 19 thousand rubles [13, . F. 14. Op. 1. D. 48. L. 21a–21b.].

The illiteracy elimination campaign in Khakassia was also complicated by the semi-nomadic way of life of the major part of the indigenous population engaged in cattle breeding, by the small number of schools in the settlements and the lack of the teaching staff. They tried to solve the problem by way of the extensive propaganda and organizational activities with the population, which determined the active use of mobilization methods. But the main difficulties and peculiarities of the political mobilization campaign were largely determined by the low literacy level of the indigenous population and the lack of native language writing.

Before the revolution of 1917 the "non-Slavic" district had accounted for 160 literate Khakass men and 40 Khakass women [13, F. R-16. Op. 1. D. 35. L. 66] per thousand people. According to the census of 1920, the total literacy of the male population of the "non-Slavic" district was 13.1%, female literacy rate being 4.6%, in small settlements such indicators were respectively 8.9% and 1.6% [14, 260]. In the context of the undeveloped Khakass writing, the task was to educate indigenous ethnic community in the Russian schools to eliminate their illiteracy. But we suppose that the mobilization approach to the educational campaign for the Khakass could not give the required effect, as Khakass people did not sufficiently comprehend the Russian language. According to the data of 1910, 31% of the Khakass population knew Russian. In the districts neighboring the Russian districts, this indicator was up to 100%, while in some districts it fell to 9%. Women who lived more isolated almost did not speak Russian [15, 508] and had no opportunity to learn even elementary literacy.

Therefore, despite the mobilization measures to take Khakass to the Russian schools, the illiteracy elimination campaign in the "non-Slavic" district had slow progress in 1921. The recording of the illiterate was made improperly, there were no textbooks, literature, curricula and guidance papers. But the most acute problem to solve to reach the educational goals was the teaching staff for the schools to teach illiterate people. The situation even worsened due to the fact that the "old" Russian teachers of the "non-Slavic" district did not completely take the Soviet ideology. "New system" training of teachers from the Khakass people was slow despite the teacher courses held in Krasnoyarsk, Minusinsk and some villages of Khakassia since 1921. Even in the academic year of 1923/1924, there were only 18 Khakass teachers of 81 teachers who worked in the uyezd schools [16, 75]. Except in rare circumstances, they had an extremely low educational level and lacked methodological skills as well as training educational experience. It affected the effectiveness of *likbez* where the main burden was on the teachers. To solve the personnel problem Minusinsk department of public education recorded all the literate Khakass people to force them to work in literacy schools. But these mobilization measures did not have an effect, because dealing with illiterate adult students required special teaching and aspiration to educate such students.

Women, especially the Khakass women, were even more difficult to get involved into the educational project. They made up a significant part of the illiterate population of the "non-Slavic" district, and to train them had some specifics. Khakass women needed some courage to overcome the patriarchal prejudices, fear and uncertainty, to cross the psychological barrier associated with age and national traditions. While the Russian women trained to read and write became more liberated and independent to get engaged in conducting the literacy classes, the Khakass women often remained inactive and full of complexes. According to the data of 1928, there were almost three times as many Khakass boys in schools as there were girls. This gap was even more evident with adult learners [12, F. 47. Op. 1. D. 740. L. 32 turn.]. The women's literacy was an essential requirement for achieving women's real equality with men in the social, political and cultural spheres. But teaching methods that did not take into account the peculiarities of women's psychology for this indigenous ethnic group as well as such unified methods of involvement into the literacy school as coercion and political agitation made it difficult to achieve this goal.

It should be noted that the indigenous population of the "non-Slavic" district gave a positive response to the illiteracy elimination idea. Particularly, it is evidenced by the meetings of the inhabitants of Sira, Big Monok and other Khakass villages in 1921, where they supported the opening of the literacy schools [17, F. 120. Op. 1. D. 257. L. 69, 76, 84.]. Though the analysis of the archival data shows that in the first years of the Soviet power the educational campaign was not very successful and widespread with the adults. The situation got even worse in 1921, when almost all the educational and cultural institutions were transferred to the local budget of the province executive committees which could not provide for them due to the lack of finance. The attempts to expand the school network without the appropriate material support

did not improve facilities of educational institutions. So, on July 21, 1922, the III Khakass non-party conference decided to reduce the number of schools in the "non-Slavic" district, "to keep those schools that were better equipped and provided sufficiently with textbooks and teachers" [16, 43]. Thus, a number of literacy schools were closed.

The situation began changing only in 1923-1924, when Khakassia started to construct buildings for schools again. However, by 1924 the literacy schools for adults had been established only in some villages and Khakass uluses (small settlements). But the lack of the permanent network of educational centers made them get closed. The adult education was also the duty of reading rooms where the illiteracy elimination was to be organized "locally", with the local literate people. When there were no such people, the reading rooms had to be at least responsible for "lists of the illiterate with their gender and age indicated" [18, 2]. The illiteracy elimination was organized more steadily in day schools, where adults were taught by professional teachers. But financial difficulties and an acute shortage of people able to teach reading and writing did not allow to open independent elementary literacy schools. Therefore, the literacy level in the national uyezd had increased insignificantly for the period from 1920 to 1924, while in many settlements it remained unchanged. The all-Union census of 1926 showed that the literate in Khakassia made up 31.5% of the population of the age from 15 to 50, the indigenous population literacy being 16%. There were totally 20% of literate women, with only 6.5% of Khakass literate women [19, 66].

In the second half of the 1920s, the literacy situation changed significantly, mainly due to the active mass propaganda in rural areas. The rural population awareness of the need for literacy was a notable result of the campaign. However, the archival documents on the campaign coverage (see table) show that only the Khakass population demonstrated positive dynamics. First of all, it is associated with the approval of the Khakass alphabet and edition of the educational and fiction literature in the native language since 1925. These events made it possible to organize teaching in schools and educational centers with Khakass textbooks in the academic year of 1927/1928.

Dynamics of the number of literacy students in Khakassia. Comp. according to State institution "National Archives" of the Republic of Khakassia. F. R-16. Op. 1. D. 35. L. 32-32 turn.

Number of illiterate persons trained		
Academic year	Total	Including Khakass people
1924/1925	1168	400
1925/1926	2047	1030
1926/1927	3380	1463
1927/1928	2609	1545
1928/1929	4364	2645
Total	13568	7083

To a certain extent, the society "Down with Illiteracy" contributed to the revival of the likbez campaign, with the first group of the society being formed in Khakassia in 1924. In 1926 mobile schools and nomadic "khyzyl ib" ("red yurts") also began organizational activities and propaganda for the educational campaign. Their teaching did not give high results because of the short period of their stay in the uluses and villages, but we believe it aroused the interest of adults in literacy as useful thing in everyday life and professional activities. Nevertheless, according to the contemporaries, despite the propaganda of the idea that the one who "does not gain knowledge now will lose the right to a decent human life in the future", adult schools were attended only by a small part of the illiterate. They preferred "wandering about the streets, hooliganism and drunkenness" [20, 1].

In the second half of the 1920s the cultural construction funding began to increase due to the "strengthening" of the local budget. This resulted in the significant increase in the number of the literacy schools in Khakassia: from 47 in 1924/1925 to 162 in 1928/1929 [16, 38]. To add, the financing of the literacy training of one Khakass student was almost three times more than that of the Russian student (25

and 9 rubles accordingly) [21, 52]. This proves that the educational campaign began taking into account the peculiarities of the indigenous ethnic groups of Siberia.

But by 1927 the literacy plans had not been fulfilled in the Republic of Khakassia as well as in the entire country. Nevertheless, the reporting documents recorded a significant increase in the number of literacy students. For example, there were 486 literate men and 162 literate women for one thousand Khakass people at the age from 14 to 36 in Askiz district which was the most culturally backward. The Russian population of the district showed higher results: 613 literate men and 251 literate women [13, F. R-16. Op.1. D. 35. L. 66.].

The literacy rate in the Republic of Khakassia significantly reduced the transfer of the ethnic writing into the new Turkic latinized alphabet (NTA) in the second half of 1928. The introduction of this alphabet made all the Khakass who learned to read and write and the literacy teachers be retrained. There were many teachers in the NTA committees. They were involved in the complex and time-consuming process of forming a new spelling of the native language. Moreover, they also had to introduce it in schools. This increased their workload and reduced the effectiveness of their participation in the likbez campaign. We believe that mass recurrence of illiteracy became one of the most compelling reasons to transfer the Khakass writing back the Cyrillic alphabet in 1939.

Thus, by the end of the 1920s the illiteracy elimination campaign in Khakassia had achieved some success; in particular, the adult education system was founded, which gave people the opportunity not only to learn literacy, but to apply their knowledge in practice. But, despite the many-sided activities of the national and public organizations, the illiteracy had not been completely eliminated in Khakassia by the end of the 1920s. We believe that to a large extent it was due to the mobilization character of the considered political campaign.

Its institutional character consisted in the public, political and regulatory support of the likbez. But, the insufficient funding of the campaign was accompanied by the top-down approach, when the organizational and methodological guidance of the campaign was replaced by the delivery of numerous orders and instructions; the assessment of the campaign results was mainly focused on the numerical values fixed in the notes and reports. The large scale of likbez as educational campaign and aspiration for the entire inclusiveness of illiterate people determined the aggressive propaganda with the main focus on the government demand for the mass political education of the population. The intensity of the campaign forced to ignore the psychological, ethnic, social, cultural, gender characteristics of the illiterate as well as the specifics of the regions, especially the ethnic ones.

The relative stabilization of the foreign policy and country economy by the end of the 1920s caused a change in the tools and methods of the educational campaign. The likbez mobilization character was preserved, but at the same time the educational system, training of teaching staff, edition of periodicals and educational literature and promotion of the national culture values got new financing possibilities. The main factor for improving the effectiveness of the literacy campaign was a differentiated approach that took into account the specifics of the regions and the ethnic characteristics of their population.

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**ЛИББЕЗ МОБИЛИЗАЦИЯЛЫҚ САЯСИ БАҒДАРЛАМАЛЫҚ ҚАМТАМАСЫЗ ЕТУ:
1920 СОҢДАҒЫ ҰЛТТЫҚ ОБЛЫСТАРДА ӨТКІЗУДІҢ НЕГІЗДЕРІ
(ХАКАСИЯ МЫСАЛЫНДА)**

Аннотация. Зерттеудің мақсаты - белсенді фазасы 1920-1930 жж. Болған сауатсыздықты жою жөніндегі науқанға талдау жасау. Талдау, синтездеу және салыстыру әдістерін қолдану, әлеуметтік мобилизацияның негізгі анықтамалары мен сипаттамаларына сүйене отырып, білім беру бағдарламасы жұмылдыру саяси науқан ретінде қаралды. Оны жүргізудің жұмылдыру әдістерін қолдану қажеттілігі әскери коммунизм саясатына негізделген және одан кейін сыртқы әскери қауіпті белсенді насихаттау арқылы күшейтілді. Мұндай жағдайда білім беру бағдарламасы, ең бастысы, саяси мақсаттар: саяси білім, билікті қолдау, кеңестік азаматтың жеке басын қалыптастыру.

Сауатсыздықты жоюдың сенімді әдістерін жою және белсенді мәжбүрлеу, бұл азаматтарды оқу үдерісіне тарту мүмкіндігін кеңейтеді. Бірақ білім беру бағдарламасын жүзеге асырудың мобилизациялық-бюрократиялық сипаты және оның нәтижелерін бағалау 1920-шы жылдарда қойылған мақсаттарға қол жеткізуге мүмкіндік бермеді.

Сібірдегі сауатсыздықты бәсеңдетудің себептерінің бірі ұлттық аймақтардың мәдени-саяси дамуына жеткіліксіз қарау болды. Хакасия мысалында 1920-шы жылдары көрсеткен болатын. білім беру бағдарламаларын іске асыруға байланысты қиындықтар: бандитизмге қарсы күрес, аймақтың мәртебесі туралы белгісіздік, ұлтаралық қарым-қатынас мәселесі, Хакас сценарийін әзірлеу және енгізу қиындықтары, материалдық-техникалық базаның жеткіліксіздігі. Осы мәселелерді шешу және 1920-ші жылдардың аяғына қарай рұқсат етілген жұмылдыру әдістерінің ауқымын кеңейту туралы қорытынды жасалды. ұлттық аймақта сауатсыздықты жоюды күшейту.

Түйін сөздер: сауатсыздықты жою, білім беру бағдарламасы, әлеуметтік мобилизация, саяси науқандарды мобилизациялау, саяси білім, Сібір, Хакасия.

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**ЛИКБЕЗ КАК МОБИЛИЗАЦИОННАЯ ПОЛИТИЧЕСКАЯ КАМПАНИЯ:
ОСОБЕННОСТИ ПРОВЕДЕНИЯ В НАЦИОНАЛЬНОМ РЕГИОНЕ В 1920-е гг.
(НА ПРИМЕРЕ ХАКАСИИ)**

Аннотация. Целью исследования является анализ кампании по ликвидации неграмотности, активная фаза которой пришлась на 1920-1930-е гг. Применяв методы анализа, синтеза и сравнения, и опираясь на основные определения и характеристики социальной мобилизации, ликбез был рассмотрен как мобилизационная политическая кампания. Необходимость использования для его проведения мобилизационных методов была обусловлена политикой военного коммунизма и в дальнейшем закреплена с помощью активной пропаганды внешней военной угрозы. В этих условиях ликбез преследовал, прежде всего, политические цели: политическое просвещение, поддержка власти, формирование личности советского гражданина.

Ликвидация неграмотности совмещала методы убеждения и активного принуждения, что расширяло возможности вовлечения граждан в образовательный процесс. Но мобилизационно-бюрократический характер реализации ликбеза и оценки его результатов не позволил добиться поставленных целей в 1920-е гг.

Одной из причин низких темпов ликвидации неграмотности в Сибири являлся недостаточный учет особенностей культурного и политического развития национальных регионов. На примере Хакасии было показано, что в 1920-е гг. трудности с реализацией ликбеза обусловили: борьба с бандитизмом, неопределенность статуса региона, проблема межнациональных отношений, сложности с разработкой и внедрением хакасской письменности, недостаточная материальная и кадровая база. Был сделан вывод о том, что решение этих вопросов и расширение спектра мобилизационных методов позволили к концу 1920-х гг. активизировать ликвидацию неграмотности в национальном регионе.

Ключевые слова: ликвидация неграмотности, ликбез, социальная мобилизация, мобилизационная политическая кампания, политическое просвещение, Сибирь, Хакасия.

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REFERENCES

[1] О ликвидации неграмотности среди населения РСФСР. Декрет СНК РСФСР от 26 декабря 1919 г. (1947). In *Директивы ВКР(б) и постановления Советского правительства за 1917–1947 гг.* 2, Moscow- Leningrad (In Rus.).

[2] Krasil'nikov S.A. (2013). *Stalinskaya model' sotsial'noy mobilizatsii v sovremennoy istoricheskoy literature.* In *Sotsial'naya mobilizatsiya v stalinskom obshchestve (konets 1920-kh –1930-e gg.)*. Novosibirsk: 34–41. ISBN 978-5-4437-0207-0 (In Rus.).

- [3] Kimerling A.S. (2017). Bor'ba za urozhay: mobilizatsionnye kampanii v derevne v 1946–1953 godakh (na primere Molotovskoy oblasti). In Vestnik Permskogo universiteta. Istoriya. 4 (39): 109–118. doi 10.17072/2219-3111-2017-4-109-118 (In Rus.).
- [4] Kimerling A.S. (2016). Vybory v Verkhovnyy Sovet SSSR 1946 goda v Molotovskoy oblasti kak primer mobilizatsionnoy politicheskoy kampanii. In Vestnik Permskogo universiteta. Istoriya. 4 (35): 104–114. doi: 10.17072/2219-3111-2016-4-104-114 (In Rus.).
- [5] Krasil'nikov S.A. (2011). Stalinskaya model' sotsial'noy mobilizatsii: nekotorye problemy izucheniya. In Vestnik Novosibirskogo universiteta, Seriya: Istoriya, filologiya, 10 (10): 40–46. Novosibirsk (In Rus.).
- [6] Ushakova S.N. (2013). Ideologo-propagandistskie kampanii v praktike funkcionirovaniya stalinskogo rezhima: novye podkhody i istochniki. Moscow. ISBN 978-5-8243-1822-7 (In Rus.).
- [7] KPSS v rezolyutsiyakh i resheniyakh sezдов, konferentsiy i plenumov TsK. 1998-1953 (1953). Izd. 7-e. Moscow. (In Rus.).
- [8] Ponomarev B.N, Wolin M.S, Zaitsev V.S. (1982). Istoriya Kommunisticheskoy partii Sovetskogo Soyuza. Moscow. (In Rus.).
- [9] Sagalakov E.A. (2019). Socio-political development of the Altai-Sayan region. In Bulletin of National academy of sciences of the Republic of Kazakhstan. V. 1. 377: 195–198. ISSN 1991-3494. <https://doi.org/10.32014/2019.2518-1467.22> (In Eng.).
- [10] Mikhaylov A. (1932). Likvidatsiya negramotnosti i malogramotnosti. In Sibirskaya sovetskaya entsiklopediya. Novosibirsk. 3 (L–N): 145–146. (In Rus.).
- [11] Direktivy VKP(b) i postanovleniya Sovetskogo pravitelstva o narodnom obrazovanii za 1917-1947 gg. (1947). Moscow-Leningrad. 24: 120–121 (In Rus.).
- [12] State Public Institution of Novosibirsk Region "State Archives of Novosibirsk region.
- [13] State institution "National Archives" of the Republic of Khakassia.
- [14] Kyshpanakov V.A. (1995). Naselenie Khakasii: 1917–1990 gg. / edited by N.Ya. Gushchin. Abakan. ISBN 5-7479-0112-5 (In Rus.).
- [15] Butanaev V.Ya. (2008). Ocherki istorii Khakasii (s drevneyshikh vremen do sovremennosti). Abakan. ISBN 978-5-7810-0542-0 (In Rus.).
- [16] Asochakov V.A. (1983). Kul'turnoe stroitel'stvo v Khakasii (1917–1937). Abakan (In Rus.).
- [17] Municipal State Institution "Archives of Minusinsk".
- [18] T. (1924). Rabota izby-chitalni. In Vlast truda. 18 December (In Rus.).
- [19] Cheremnykh M.Ya. (1938). Ekonomicheskyy i kul'turnyy rost Khakasskoy avtonomnoy oblasti. In Sovetskaya etnografiya. Moscow- Leningrad. 1: 60–72 (In Rus.).
- [20] Dobrozhelatel (1926). Chto daet likbez. In Zhizn i rabota nashey shkoly. The newspaper was published in December 1926 in a mobile school in the village of Abaza (Khakassia). State institution "National Archives" of the Republic of Khakassia. F. 1. Op. 1. D. 119. L. 3 (In Rus.).
- [21] Kazarin V.N. (1998). Obrazovanie, nauka i intelligentsiya v Vostochnoy Sibiri. Irkutsk. ISBN 5-7430-0699-7 (In Rus.).

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GREAT SILK ROAD LEGENDS AND MYTHS: “FORTY LEGENDARY GIRL”

Abstract. The article deals with the importance of studying the immortal legendary prose examples of legendary stories about the monuments on the adjacent territories of Turkestan region along Great Silk Road. Looking at mythical stories within this legendary prose, it is thought of how ancient the human consciousness, the degree of thinking, the way of life were. As world myths become the main topic of scientific research and are comparable to historical comparisons, myths also have different levels of social development, historical levels, types and thematic areas. One of such models is compared to several versions of the legend about “Forty Girls” in Kazakh, Uzbek and Kyrgyz folklore. This article discusses the tragic fate of the forty girls and the smell of the national consciousness, the high spirit in the hearts of girls who wanted to remain in their own country instead of living in the hands of enemy. Forty Girls monument – an old natural mountain hills where nature has long been regarded as a sacred monument.

There are many similarities in variants of this legend among Turkic peoples. Everywhere it is said that the tragic fate of forty girls and the end of the legend are similar. In any country, the stone sculpture “Forty Girl” has become a great place for travelers. Locals treasure and sanctify this holy place.

Key Words: Great Silk Road, Turkic people, Forty Girls, Mythic Prose, Myth.

Introduction. One of the ways where science space flies is the process of continuity, the dynamics of diverse changes are in the direction of progress and unity, and in current globalization every nation, states and regions will not be able to stay out of it. The wisdom, one of the most noble qualities that human beings have in the world is now being pursued for good purposes. The art of adventurism, which has become a spiritual treasure for humanity, originated from the earliest history of the world, and became the treasure of its own worldview of folk wisdom. The wisdom of people led to the spiritual heritage of the national traditions and customs of the ancestors, which has passed from generation to generation. In turn, the long-established lifestyle, spiritual heritage of any nation is a testimony to the survival of the nation. One of these lifetimes is the Great Silk Road, and its main direction in modern Kazakhstan is its main artery. It has contributed to the trade of developed countries, the development of science, the formation of religious and cultural traditions. Studying the continuity of this cultural and spiritual heritage today is based on history, literature, philosophy in science and so on.

Materials and methods. In today’s globalization, every combination of cross-over and intercourse in cultures leads to a need for a real historical analysis. We can never abandon the best of our minds, samples, the achievements of human civilization; self-respect, success, happiness are beyond the daily life, and beyond and beyond, because there is no progress beyond that. It does not matter to the people who return to the history of the long history, to their business, to the exhausted, or to the ordinary life, whether in the East, in the West, or even where they live.

Definition of the first centers of civilizations, their classification theory are well-known in the works of scientists as Toynbee, O. Spengler, N. Ya. Danilevsky and others. There is no clearly defined set of civilizations and no obvious beginning and the end. People can do their job differently. As a result, the composition and form of civilization change over time. People’s cultures is interconnected with each other [1]. S. You can fully agree with Huntington’s opinion. Because of the change of social, economic and political relations in the Middle Ages, trade, culture, and social thought were rapidly developing throughout the Great Silk Road and had a great impact on the entire East and West, Europe and Asia.

There was also the Muslim Renaissance along the Great Silk Road. The culture and philosophy developed by Eastern thinkers, specific sciences and scientific discoveries have given a true picture of prosperity, civilization. The eastern nature of the East was even more dominant than the Renaissance, and east news for the western survivors of the Middle Ages nowadays became a huge treasure, an inexhaustible treasure. They built their philosophy for themselves, passing through the oriental knowledge of their own filters with their own temptations.

Humanity and civic identity are the traditions of these ancestors. Today's young wave, the spirit of our nation, which is a source of strength for the new generation, not only for business, talent, but also for the nation's lover, who is worthy of being the future of the people, has widespread the national field. No doubt, through spiritual exploration and historical ties, our nation's centuries-old history is reflected in its historical roots.

Geographical science has the branch as mythography, ie the place of origin and distribution geography of legends. This area of science is very old among the Kazakhs. And this science has a great deal of humanity. I. Mitin believes: "It is easy to see just a few realities in one place. It is a multitude of things – it's going to drift. Even if the name of a single or a place is already present, it hints at an infinite number of times, which means that you can build up to the level that you want to build your own world (or myth) and specify a specific operation - the banal geographical game scales. It is still unclear how much you can do in a specific place where you can cope with the many realities as they move one to another and come up with a friend [2, 12].

Results and discussions. The idea that something like this is a matter of fact, whether it is a legend or not, gives a person a sense of spiritual prosperity and enhances the status of a native land. The nature of the native land is one of the main conditions for the survival of the nation. Therefore, it is wise to use his spiritual wealth. And one of these spiritual treasures is fairy-tales, their geographical distribution.

He studied the mythology, including many works. He says, "Mythology, myth is not an imaginary imagination, it is an ancestor of the past who preserved the truth of the past. It is not a trap of delusional mischief in the past, but a bogus of truth, which has not been found in the dust of the inevitable collapse of truth and error, which has been repeatedly folded, returned" [3, 9].

"Linguistic" waste" in mythological consciousness is a natural phenomenon. Language not only preserves such "waste" ("canned"), but also refreshes it, takes a cognitive point of view in a new way. As a result, the long-term preservation of the language units in the history is a testimony to that. Gradually opening the mythic layers, we can gradually open the frontiers of ancient worlds, and see the fathers' lifespan with "our own eyes." [4, 13].

In the modern world, the restrictions on ideology are diminishing and modernization of integration processes is expanding. This process sets new trends in the study of common phenomena and differences in the Turkic peoples. It is lawful for peoples who have created their homeland and have the inheritance of Turkic origin in order to identify their history, origin and development in the nation. Especially this process does not dispute the fact that Turkic peoples share common literary vocabulary, including legendary prose examples, such as myths, legends, traditions. «The phenomenon of cultural heritage is a dynamic system of elements and levels of socio-cultural interaction. The components of this system include: subject (object) and subject, preservation mechanisms and forms, functions, boundaries and levels. Object of cultural heritage can be spiritual and material» [5].Legends about the monuments of the Great Silk Road are examples of legendary prose examples.

Looking at mythical stories within this legendary prose, we are looking forward to the way in which human consciousness and spirituality are shaped by the way we think and how we live. Since myths of the peoples of the world have been the subject of research and historical comparative perspectives, myths also have different levels of social social development, historical levels, types and thematic areas.

Myth is legendary stories about unnatural and "amazing" phenomena and phenomena. In these legends, which are considered to be one of the common folklore literature, people have a common understanding of the world around them. ... Myth is mostly based on ancient beliefs. Archaic myth is thought to be imaginary when people perform their cognitive functions. The Kazakh folklore has a number of ancient myths ("Kazygurt", "Kok-ogiz", "Korkyt" and others). Ancient heritage sites, including various rock, ghosts, telling us that they were human beings in the early ages ("Forty Girl", "Gynyshek Mountains", "Big Dipper" and others) [6].

As one of these things, we may compare versions of “Forty Girl” legend. Forty girls is an ancient historical monument. There are several versions of the legend about Forty Girls, one of them is told as this:... *Forty girls were swimming in the water of Karabuu without a shower, and the country was hit by an enemy. Thus, forty girls were subjected to hostilities and expulsion. They prayed and wish that it would be better for them to die than to die in the hand of the enemy, “Make us and the enemy a stone here. Forty girls and a large number of people turned into a sculpture.*

In another version, *the only daughter in one family has been engaged from her early age. The day was coming to that date, and the country begins to strangle the banquet. Girls were singing and boys playing fight wrestlers and start to warm up. At one time, the village was buried in thick dust. The girl and her 40 coworkers wanted to meet the groom. Sadly, it is not a ghostly bridegroom, but a thick enemy. At that moment, a group of horsemen came up to the roof of the hill, begging themselves to turn the enemy into a rock until it was time to destroy my country. The wishes of the girls were tearful, and they all became rock. Nowadays, the local people believe and are proud of it.* [7]

Doctor of Philology, Kyzdarkhan Rysbergen in her article “Forty Females Have Fallen Stone”, pointed out that the enemy was a rock in Karatas. Stone sculptures are located on the Akkum River in the north-east of Turbat village. It is located near the waterfall in 5-6 kilometers from the village” [8]. The second stone sculptures called “The Forty Girl” are located on the Ogem subsoil, on the slopes of the Ogem River, on the Ogem River, at the foot of the eastern hill of the Kazygurt Mountains (“Orda Mountaineer”). According to the legend, it is the image of forty girls who became the stone. Here, the time of adventurism is also mentioned.



Picture 1 – The monument of Kyryk Kyz,
a stone sculpture on the bank of Ogem River in the Tolebi district of the Turkestan region

The following story about the forty girls tells about the unexpected attack of enemies when they celebrate wedding of the khan’s daughter. Girls prayed as “...let our bones stay in our country, stay in our land and save our men from death” they asked to become stones instead of living with enemies. One distinctive feature of this version is that there is a stone sculpture in the vicinity of these sculptures. There exist two assumptions about it. In one of them it was groom, and the second one it was the mother looking for girls.

The most interesting thing is that the legend about “Qyryqqyz” is also existing in the neighboring Kyrgyz and Uzbek folklore. Professor Sultangali Sadybaevich in his book named the legend about “Forty Girls” as the “Muzart Mountain”. The name of the mountain in the Kyrgyz country is called as it, means *Ice Mountain*. It is located in the middle of the Zhuzgal region and the mountain Koshkarata in the Naryn region. The scientist writes that forty young girls are making a wedding in Koshkarata, whereas the whistle blows the girls into ice [9]. And the book, “Ipak Yuli Afsonalari” in Uzbek language which means

Myths along the Great Silk Road, (Myths connected with the names of places) consists many stories along the Silk Road. In this book there is a legend about the Kirk kiz rocky hill located in the Machay village in Baysun, Surkhan-Darya Province: *One day, through the fragrance of Zilal's soul, it becomes a circle. The whole valley is filled with wonder. From there some girls heard the sound of horses near them. In the meanwhile, there was a tremendous downpour of stroke. The daughters of the women ran away to the mountain. The adventure is closer to the grave. Unheard of gloves fall into the abyss and prefer to turn into a stone, and beg the Sky until they find it. They say that these girls became stones*[10].

In 1938, during the archaeological excavations on the territory of Khorezm, 27 km north from Biruni (Uzbekistan), the ancient settlement of Kyrk-kyz-Kala (I-VI centuries B.C.) was discovered. Scientists agreed that it was a defensive fortress, which most likely entered the chain of fortifications to protect the borders of the north-eastern part of ancient Khorezm. The name of the fortress is very interesting. "Kyrk-kyz-Kala" literally translates as "Fortress of Forty Girls". There are many legends and myths all over Central Asia connected with these mysterious "forty virgins": there is a fortress with the same name in the Termez region (Uzbekistan), Merva (Turkmenistan), similar places are also found in Azerbaijan, northern Afghanistan, and northern Iran.

And if we deeply go to the etymology of the name "Kyrgyz" ("Kirk Kyz"), then again we see the direct participation of the same "forty girls". What kind of girls these were and why they played such a significant role in the history of Central Asia, the versions of legends differ somewhat in these questions. One group of folk tales asserts that it was in Kyrk-kyz-Kala that they found refuge after the painful wanderings around Ustyurt, the female warriors of the Amazons (the Karakalpak epic "Kyrk Kyz"). This also includes the legend of the brave queen Gulaim, who, together with her forty friends, bravely defended the fortress from the invasion of strangers. Other legends tell about forty exiles who lived as recluses in this fortress. In the mythology of many Turkic-speaking peoples of Central Asia, these "forty girls" are the righteous who turned into stones in order to be saved from their pursuers, the "infidels". In other myths, forty girls (childukhtaron) were venerated as good protecting spirits.

Also on the territory of the ancient settlement of Kyrk-kyz-Kala were found Zoroastrian burials, made in compliance with all the rules of the ceremony of ancient fire worshipers. The bones of people were found in humah - ceramic jugs, made in the shape of a female head.

For a long time the fortress Kyrk-kyz-Kala was one of the important trading points on the Great Silk Road.



Picture 2 – Kirk-kyz-town, Uzbekistan, (27 km from the city, located 27 km north from Biruni, (1-6 centuries B.C.)

Special attention should be paid to the Childuhtaron valley, located in the south of Tajikistan. Its main attraction are unusual pyramidal rocks. They proudly rise above the valley, reminding proud slim girls. The height of the rocks reaches 60 meters.

The name Childuhtaron valley is translated as the Valley of Forty Girls, with which is connected an interesting legend. According to her, 40 stone blocks, towering over the valley, were once beautiful and charming girls.

When the conquerors came to the valley and decided to make them their concubines, the inhabitants of the mountains begged and asked Allah to turn themselves into silent stones.



Picture 3 – Childuharoni plains, southern region of the Republic of Tajikistan

There is another legend among the locals, according to which the rocks grew on this place after a fierce battle with Genghis Khan. Protecting their land, 40 young horsewomen blocked the way for Genghis Khan himself. But the forces were unequal and the horsewomen died in battle. Huge stone blocks that adorn the valley grew on this very spot [11].

The Kyrgyz people have another legend about “Forty Girls”. Whether it was or not, nobody knows. One of the legends says that once in ancient times the Kyrgyz had a tradition to celebrate the Day of God. On that day, everyone was having fun, fried lids of bread (bread baked in butter or fat), cooked shorpoo (meat soup) and the families went to visit each other. Girls and boys, dressed in their best clothes, went to visit the residents of other ayils scattered among the mountains. On one of these days, forty girls, dressed in bright silk dresses, went to ayil, located behind the pass. It took them a long time to climb the steep mountain trails to the pass. And finally, they reached that place. But then came the evening, and the girls did not dare to continue the path. Suddenly, as often happens in the mountains, where the climate is very harsh, the weather has changed.

Black clouds closed the sky, a thunderstorm raged over the pass, struck the girls with blinding flashes of lightning and torrential rain. There was nowhere to run for girls, nowhere to hide. They had to stay in place and wait for the morning to come. Meanwhile, their parents were alarmed in the village and went in search. Only in the morning they reached the pass, the storm had subsided by then. They saw the bodies of frozen girls. Only one girl was alive and told a terrible story. This girl was able to survive thanks to her old, but warm fur coat and felt boots. She was from a poor family. Other girls were daughters of rich people, and their expensive silk dresses could not protect them from bad weather. The girls were buried at the place of their death. Since then, people have begun to call this pass the Forty Girl Pass - Kyrk-Kyz Ashuu. You can still see forty graves there [12].

Visible or invisible links are established between today and the past. Turkish literature with the adoption of Islam, Arab and Persian, brought by Westernization as a result, Europe undergoes transformation and change while being influenced by it, but it does not completely cut off its ties from oral culture. It just makes your presence feel second. With the re-dominance of a literary yacht that dominated national lines since the beginning of the 20th century, the concepts of legend, fairy tale and epic were re-established. The reinterpretation of the legend about Forty Girls by two different writers is a result of this mental environment by Ömer Seyfettin and Ahmet Zuhurî rewritten in two different ways. Reproducing a subject known in oral culture with written narrative forms means the evaluation of the past and enables the transfer of cultural memory. The movement to return to essence, which started with the understanding of National Literature, manifests itself in the interpretation of the legend of Forty Girls. The legend of the Forty-Girls is an important myth that manages the birth of the Kyrgyz as well as the human-nature connection [13].

Conclusion. Whatever version of the legendary stories about the Forty Girls is the tragic fate of the forty girls. The desire of the girls to remain in own country as long as the enemy is in stock is reflected in a sense of national consciousness, a high spirit.

As we mentioned above, there is a sphere of geographical science, such as the mythography, the origin and geographical distribution of myths. This science field has a lot to offer. According to I.Mitin’s opinion that one must understand that several truths coexist with one another, and that these few truths go

to one another and coincide and in contrast, the legend of “Forty Girls”, we believe that the result of a comprehensive study of common framework that combines geographical and geographical spheres will continue to produce fruitful products in the future, comparing the coexistence of one and the same reality in several points.

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ҰЛЫ ЖІБЕК ЖОЛЫ АҢЫЗ-ӘҢГІМЕЛЕРІ – «ҚЫРЫҚ ҚЫЗ» АҢЫЗЫ

Аннотация. Мақалада Ұлы Жібек жолы бойындағы ескерткіш-жәдігерлерге қатысты ел арасында таралған аңыз-әңгімелердің таптырмас аңыздық проза үлгілерін зерттеудің маңыздылығы туралы сөз қозғалады. Осы аңыздық прозаның ішіндегі мифтік әңгімелерге үңіле отырып, ежелден адамзат санасы мен рухани дүниесі, ойлау дәрежесі, өмір сүру салты қандай болғандығы туралы қарастырылады. Дүниежүзі халықтарының мифтері ғылыми зерттеулердің негізгі тақырыбына айналып, тарихи салыстырмалы тұрғыдан қарастырылғалы бері мифтердің де түрлі-түрлі қоғамдық әлеуметтік даму сатылары, тарихи деңгейлері, түрлері мен тақырыптық аясы болатыны байқалады. Осындай үлгілердің бірі «Қырық қыз» туралы аңыздың қазақ, өзбек және қырғыз фольклорында кездесетін бірнеше нұсқалары салыстырыла зерделенеді. Қырық қыз туралы аңыз-әңгімелердің қай нұсқасы болмасын бәрінде қырық қыздың аянышты тағдыры туралы сөз айтылып, жау қолында қор болғанша өз елімде сүйегім қалсын деген қыздардың тілегінде елдік сананың, биік рухтың иісі байқалатыны туралы осы мақалада қарастырылады. Қырық Қыз – көне тарихи, табиғи ескерткіш. Көп замандардан бері табиғаттың өзі жаратқан киелі ескерткіш болып саналады.

Түркі халықтарының аңыз-әфсаналарында осындай көп ұқсастықтар кездеседі. Барлық жерде қырық қыздың аянышты тағдыры мен аңыздың соңы бір-біріне ұқсас екендігі туралы айтылады. Қай елде болмасын «Қырық қыз» тас мүсіні саяхатшылардың көп келетін орнына айналған. Ел осы араны қасиетті орынға санап, қастерлеп жүреді.

Түйін сөздер: Ұлы Жібек жолы, түркі халықтар, Қырық қыз, аңыздық проза, миф.

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ЛЕГЕНДЫ ВЕЛИКОГО ШЕЛКОВОГО ПУТИ – ЛЕГЕНДА О «СОРОКА ДЕВУШКАХ»

Аннотация. В статье рассматривается важность изучения памятников культуры, основанных на легендах и мифах, передающихся из поколения в поколение, расположенных по Великому Шелковому пути. В этой легендарной поэме можно увидеть и ощутить духовный мир древнего человеческого сознания, степень мышления, образ жизни. Поскольку мифы народов мира стали предметом научных исследований и с момента изучения их с историко-сравнительной точки зрения, мы определяем, что мифы также имеют разные этапы социального развития, исторические уровни, типы и тематические области. Одной из таких легенд, встречающихся в казахском, узбекском и кыргызском фольклоре, является легенда о «Сорока девушках», о которой пойдет речь в статье в сравнительном варианте с несколькими версиями. В каждой из нижеприведенных версий легенда рассказывает о трагической судьбе сорока девушек и об осознанном желании, высоком духе девушек остаться на родине даже в виде каменного памятника, лишь бы не находиться в руках врага. «Сорок девушек» – древний исторический, природный памятник. Этот памятник на протяжении многих веков считается священным памятником, который создала сама природа.

В легендах тюркских народов есть много общего. Все легенды тюркоязычных народов посвященные «Сорока девушкам» с трагическим и схожим концом. В любой стране каменная статуя «Сорока девушек» стала отличным местом для посещения путешественников и каждая страна, где находится этот памятник благословлен этим священным местом.

Ключевые слова: Великий Шелковый путь, тюркские народы, Сорок девушек, мифическая проза, миф.

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REFERENCES

- [1] Khantington.S. Stolknoveniye tsivilizatsiy. – M.: OOO Izdatel'stvo AST, 2003. - 603 s.
- [2] Ivan Mitin. Mifogeografiya: prostranstvennyye mify i mnozhestvennyye real'nosti, Kommunitas №2. 2005.
- [3] Qondıbay S. Arǵı qazaq mifologiyası. – Almatı, 2004. – 3-kitap
- [4] Avakova R.A. Frazemalar dıńşıǵıwderek közderi. – Älem keńistigindegi türki tanwǵılımı. – 3-16 bb.
- [5] Yu. Baltabayeva , Naciye Yıldız , A.U. Beskempirova Cultural values of Great Silk Way: past and future // Bulletin of National Academy of sciences of the republic of Kazakhstan. - ISSN 1991-3494 Volume 1, Number 377 (2019), 222 – 228 <https://doi.org/10.32014/2019.2518-1467.25>
- [6] Qazaq ädebieti enciklopediyalıq anıqtamalıq, «Arwana», Almatı, 2005.
- [7] <http://old.el.kz/blogs/entry/content/3308>
- [8] Qızdarxan Rısbergen, Tasmüsingeaynalǵan Qırıqqız, Ana tili, 2013.
- [9] http://el.kz/kirikiz_tas_musii_turali_anizdar
- [10] M. Zhurayev, Ipakyúliafsonalari, Legendy shelkovogo puti. Tashkent, 1993.
- [11] [tg.wikipedia.org/wiki/Чилдухтарон_\(кӯх\)](http://tg.wikipedia.org/wiki/Чилдухтарон_(кӯх))
- [12] www.open.kg/about-kyrgyzstan/culture/myths-and-legends/34050-sorok-devushek.html
- [13] Meral Demiryurek An evaluation on two samples of two literacy of Forty Girls' legend MilliFolklor 2017 № 116

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DEVELOPMENT OF PRIMARY LISTS OF WOOD PLANTS FOR INTRODUCTION IN THE CONDITIONS OF NORTH KAZAKHSTAN

Abstract. Nowadays, in North Kazakhstan and in whole steppe ecosystems of the Republic there have been no research institutions developing theoretical and applied issues of introduction and green building in the region, first of all, target institutions for the conservation and sustainable use of the flora of the region.

To solve these problems, a state botanical garden was created in the city of Nur-Sultan. During the formation of the botanical garden, the primary task was to develop primary lists of woody plants for introduction tests, which will create a plan of dendrological expositions representing various types of communities and geographical regions, as well as to recommend an assortment of woody plants for landscaping the capital of our country and the region in overall.

The system-arealogical approach and the interpolation forecasting were used to develop promising lists of woody plants. Introduction procedures were carried out according to traditional techniques. As a result of the research, a perspective list of woody plants of Kazakhstan's Red Book was developed for introduction tests, numbering 19 species, including 10 species attracted from East Kazakhstan and 4 species from the southeast of the country.

The analysis allows us to state that the communities of Boreal (Northern) Kazakhstan - birch, aspen, pine pines, steppe vegetation, and partially forest ecosystems of Altai - will be potentially viable in the open ground of the botanical garden. According to this, the natural vegetation of Kazakhstan can be represented in the Nur-Sultan Botanical Garden with the following expositions: «Dubnyak with a birch of Western Kazakhstan», «Woody plants of the Kazakhstan's Altai», «Kolka of Kazakhstan».

Based on the system-arealogical approach to introduce forecasting cold tolerance of woody plants for introduction tests in the capital, 345 species of Eurasian woody plants from 25 genera are recommended and divided into three groups of introduction prospects: A - compliance with the conditions of the Nur-Sultan natural range of the species; B - compliance with the conditions of the city of Nur-Sultan of the species introduction range; B - potential compliance of the species with the conditions of the city of Nur-Sultan by the mechanism of its resettlement. The introduction of plants from each of these groups will require specific approaches to mobilize plant reproduction material.

The Botanical garden created in the city of Nur-Sultan will represent a man-made specially protected natural area, for the creation of which should be taken into account "pros and cons" of its location.

Keywords: woody plants, Botanical garden, ecosystems, green technologies, genetic fund, Northern Kazakhstan, floristic area, introduction, introductions, woody plants.

Introduction. One of the primary objectives at the initial stage is the development of primary lists of arboreal plants for introduction tests. The solution to this problem will make it possible, firstly, to create a dendrological plan, according to which expositions of arboreal plants representing various types of communities and geographical regions will be represented in the Botanical Garden of Nur Sultan. Secondly, the plants that have passed the introduction tests with the greatest success in the botanical garden will be further proposed as an assortment for landscape works of the capital of our republic and the region as a whole.

Research methods. To develop prospective lists of arboreal plants, a system-arealogical approach and interpolation forecasting were used. Introduction procedures were performed according to traditional methods. The taxonomic affiliation of plants was specified according to works by S.K. Cherepanov.

Results. Introduction studies of plants in Kazakhstan did not develop uniformly in the geographical regions of the Republic. In the southeastern, southern, central, eastern and western regions, two or more introduction nurseries operate. There is only one in the northern region, and no introduction studies have been carried out to date in the north-western region.

In the northern region of Kazakhstan, the only introduction nursery so far has been the arboretum of the Forestry Research Institute of the Forestry Department of the Ministry of Agriculture of the Republic of Kazakhstan located in the city of Schuchinsk. By its departmental affiliation, this nursery is largely engaged in forestry issues. However, the main thing is not even this, but the fact that this nursery is not climatically representative of the northern region.

While a frost-free period per year in most geographical locations in the region, including the northernmost, more than 120 days, this figure in Schuchinsk is only 105 days. A shorter vegetation period of half a month or more, typical of the region, determines the limitation of the positive results of the introduction tests of the arboretum. In northern Kazakhstan, one can expect successful introduction of plant species that are not able to adapt to Schuchinsk due to the limited vegetation period.

The average long-term annual minimum air temperature was used by A. Raeder [1] as an unambiguous criterion for dendrological zoning of the territories of North America. A. Raeder identified by gradations of this indicator the following zones of plant wintering conditions: 1-st - below -50 degrees; 2-nd - from -50 to -35 degrees; 3-rd - from -35 to -20 degrees; 4-th - from -20 to -10 degrees, etc. In accordance with this classification, the northern, eastern and central regions belong to the 2-nd category of plant wintering conditions. The southeastern, southern, and northwestern regions belong to the 3-rd category of plant wintering conditions. In the western region, conditions of the 3-rd and 4-th categories of the winter period are combined.

Positive temperatures have a dual effect on plants. On the one hand, positive air temperatures are indicators of solar energy - an energy source of photosynthesis and plant life reaching the Earth's surface. The active physiological state of plants - "vegetation" - is only possible in the presence of positive air temperatures. On the other hand, high air temperatures cause both thermal shocks and desiccation of plants with a deficiency of atmospheric and soil moisture.

The southern and western regions, where there is a maximum availability of energy resources for plants, where the annual accumulation of positive temperatures is 3.8 -4.7 thousand degrees. Further, in respect of this indicator, this is followed by the south-eastern region (3.4-3.9 thousand degrees), the central and north-western regions (2.7-3.3 thousand degrees). The eastern and northern regions (2.2-2.9 thousand degrees) are characterized by the minimum availability of energy resources for plants.

Adaptation of introduced plants under new growing conditions depends on the duration of the annual frost-free period, which determines the annual duration of the plant vegetation [2]. The ratio of the average long-term annual duration of the frost-free period in the regions of Kazakhstan is similar to this ratio of energy supply resources.

We hereby consider seven geographical regions of Kazakhstan. Should the region, which is most rich in energy, with the maximum potential duration in the year of vegetation of plants be defined as Grade 1, and the least energy-rich with the shortest potential duration of the year of vegetation of plants be defined as Grade 7, then the ratio of these indicators will be as follows: Southern and Western regions - grades 1-2; Southeast Region - Grade 3; Central and North-West - ranks 4-5; Eastern and Northern regions - grades 6-7.

The aridity of plant growth conditions is characterized by the Selyaninov hydrothermal coefficient (HTC). This indicator varies significantly in each of the regions, since along with atmospheric processes it is determined by the altitude of a geographical point above sea level. The average for the region HTC and the average altitude of the points analyzed in the region (N, m) are fundamentally different in the southeast, south and central regions in comparison with other regions of Kazakhstan. In respect of the southeastern, southern and central regions, this relationship has the following form:

$$HTC = 0,002 H - 0,3,$$

and in respect of all the other regions the following equation is characteristic of them:

$$HTC = 0,003 H + 0,4.$$

The different quality of the relationships between the hydrothermal coefficient and the altitude of the geographical point above sea level indicates the different quality of climatic regimes, which is certainly essential for plants.

The generalized climatic characteristics of the geographical regions of Kazakhstan are summarized in table. It ensues from it that each of the selected geographical regions is climatically specific. Should two regions reveal the proximity of one or more indicators, they still necessarily differ at least in the values of one of the summarizing indicators.

Comparison of generalized climatic characteristics of geographic regions of Kazakhstan

Geographical regions of Kazakhstan	Categories of conditions of plant wintering by a Rehder	Ranges of Energy Supply and Vegetation duration of plants	Average value of hydrotherman coefficient of Selyaninov (HTC)	Relation ship between the altitudeabove sea level (N, m) and HTC
South-east	3	3	0,8	HTC = 0,002H – 0,3
South	3	1-2	0,3	
Central	2	4-5	0,5	
East	2	6-7	1,7	HTC = 0,003H + 0,4
North	2	6-7	1,2	
North-west	3	4-5	1,1	
West	3-4	1-2	0,3	

In the eastern region, there is currently one introduction nursery- the Altai Botanical Garden of the Ministry of Education and Science of the Republic of Kazakhstan, located in the city of Ridder. Our data, obtained as a result of the scientific justification for the creation of a botanical garden in the city of Nur-Sultan [3] show that this introduction nursery is not representative of the northern region. Due to its mountainous location, it is characterized by the annual frost-free period of less than 105 days and a very high (SCC = 3.2) humidity.

The completed analysis of climatic regimes demonstrates that the establishment of the state botanical garden in the city of Nur-Sultan will ensure the representative nature of the system of botanical gardens of the Republic of relative northern Kazakhstan, which is currently absent. This will ensure an increase in the effectiveness of fundamental introduction studies, and ensure the provision of the northern region, specifically, the capital of Kazakhstan, with effective scientific recommendations for improving green construction. Moreover, the establishment of a botanical garden in Nur-Sultan will make it possible to provide such recommendations to the settlements of low-mountainous eastern Kazakhstan.

The site, within which boundaries the formation of collection funds of the botanical garden is currently underway, is located in the floodplain of the Yesil (Ishim) river with a distance of 300-2000 m from the left bank of the river. The River (Ishim) is a tributary of the Irtysh River, into which it flows outside of Kazakhstan. The city of Nur-Sultan is located on Ishim, 200 km below its origins. In this section, Ishim is characterized by strongly pronounced seasonal variability of the watercourse with a maximum in May and a minimum in December - February [4]. In 2002, the river flow along Ishim within Kazakhstan amounted to 4.9 cubic kilometers of water [5]. According to this indicator, the river occupies the fourth position in Kazakhstan, second only to the Syr Darya, Ili and Ural rivers.

The level of surface groundwater occurrence in the Yesil floodplain (Ishim), as in the floodplains of other rivers, depends on the fullness of the channel and its seasonal dynamics. At the stage of the scientific substantiation, in some parts of the territory of the botanical garden, we recorded the *Elaeagnusoxycarpa* self-sowing, which indicates a shallow occurrence of groundwater, which is an additional stress factor during the introduction of plants in the new botanical garden of Nur-Sultan.

When raising the question of establishing a botanical garden, an analysis of the floristic specific nature of the region of its location is necessary. The territory of the city of Nur-Sultan is located in the floristic region “Western Shoal” [6]. Based on floristic reports [6] and their current taxonomic refinement [7], an analysis of the species diversity of vascular plants of this floristic region and Kazakhstan as a

whole has been performed. The analysis demonstrated that 20.3% of the species of seed plants characteristic of Kazakhstan grow in the floristic region "Western Shoals"

Representation in the floristic region of various plant life forms is different in the floristic region. Here, the maximum number (30.3% of the number of species in Kazakhstan) are represented by full-season annual herbs. Trees, shrubs, and ephemeral grasses are characterized by an average representation (about 20%). Shrubs, shrubs, perennial ephemeroïd herbs are characterized by the minimum representation (13.1-16.5%).

The representativeness in the floristic region of various systematic plant groups is also different in the floristic region. Gymnosperms are represented by 13.0% of the total number in Kazakhstan, monocots - by 14.7%, dicots - by 21.5%.

According to the above characteristics, we can conclude that in the analyzed floristic region, dicots perennial and annual herbs are characterized by the greatest variety.

The territory of the floristic region "Western Small Hills" comprises 10.3% of the area of Kazakhstan. The species diversity of seed plants in the floristic region makes up 20.3% of the total flora of the Republic. From this it ensues that the concentration of species diversity in this floristic region is 2 times higher than the average for Kazakhstan. 1101 species of seed plants naturally grow in the floristic region "Western Small Hills".

Including 19 species of trees, 47 types of shrubs, 8 types of shrubs, 48 types of shrubs and 979 species of herbaceous plants. This species diversity is the "source" for the development of promising lists of plants of collection funds of the botanical garden in the city of Nur-Sultan.

A special objective of botanical gardens is the ex situ conservation of regional rare and endangered plant species. Based on the above literature sources [6, 7] and the "Red Book of Kazakhstan [8], an analysis of the severity of the threat of species extinction in the Western Shallow Hills and in Kazakhstan as a whole was performed. The analysis showed that in the floristic region the proportion of species requiring protection is 10 times lower than in Kazakhstan as a whole (0.5% and 5.3%, respectively). In accordance with the affiliation with the floristic region, the priority tree species for ex situ conservation of the botanical garden will be: sticky alder *Alnus glutinosa* (L.) Gartn., *Betulakirgisorum* Sav.-Rydzg., *Atraphaxisteretifolia* (M. Pop.) Kom. When it comes to grassy plants the list is as follows: thin poppy *Papaver tenellum* Tolm., *Tulipaschrenkii* Regel, *Paeoniahybrida* Pall., *Pulsatillapatens* (L.) Mill.s.l. [9].

In general, we have developed a promising list of Red Book arboreal plants of Kazakhstan for introduction tests in the botanical garden of Nur-Sultan, which has 19 species, 10 of which are from East Kazakhstan (mountain peaks of Southern Altai, Tarbagatai, Saur), and 4 species from the south-east of Kazakhstan.

Along with the ex situ conservation of rare plant species, the objective of the botanical garden is to preserve the unique natural communities of northern and low-mountain eastern Kazakhstan. The analysis performed so far suggests that communities of Boreal (Northern) Kazakhstan- birch, aspen, pine pegs, steppe vegetation, and partially forest ecosystems of Kazakhstan Altai - will be potentially viable in the open ground of the botanical garden.

According to this, the natural vegetation of Kazakhstan can be represented in the Nur-Sultan Botanical Garden by the following expositions: "Dubnyaki with a birch of Western Kazakhstan", "Arboreal plants of the Kazakhstan Altai", "Kolka of Kazakhstan". We have compiled a promising list of arboreal plants "Dubnyaki with a birch of Western Kazakhstan" which is represented by 19 species, belonging to 9 families and 8 genera. Among the dominant plants of this exhibition, we propose that the following species be tested in the botanical garden: *Betula pendula* Roth., *Corylus avellana* L., *Quercus rubra* L., *Lonicera tatarica* L., *Caragana frutex* (L.) C. Koch, *Genista tinctoria* L., *Crataegus sanguinea* Pall.

The promising list of arboreal plants "Kolka of Kazakhstan" that we developed is represented by 5 species: *Betula pendula* Roth., *Betula pubescens* Ehrh., *Rosa acicularis* Lindl., *Cerasus fruticosa* Pall., *Populus tremula* L.

For the exposition: "Arboreal plants of the Kazakhstan Altai", a promising list of 12 species was developed in the botanical garden of Nur-Sultan: *Abies sibirica* Ledeb., *Betula pubescens* Ehrh., *Lonicera caerulea* L., *Larix sibirica* Ledeb., *Picea obovata* Ledeb., *Pinus sibirica* Du Tour., *Ribes atropurpureum* C.A.Mey., *Spiraea chamaedryfolia* L., *Sibiraea altaensis* (Laxm.) C.K. Schneid., *Daphne altaica* Pall., *Calophacasoongorica* Karelin & Kir.

The obvious objective of the botanical garden in the city of Nur-Sultan is the introduction of foreign district plants, both for resolving scientific matters and for the development of green construction in the capital of Kazakhstan and in the region. To assess the possibility of introducing enrichment of plant assortments for green construction of the capital of Kazakhstan, the use of wood and flower-decorative plants in its landscaping was analyzed [10].

The research included surveys of 36 model landscaping areas where there were 6181 arboreal plants and 25 flower gardens with a total area of 1722 sq. M. meter. In the landscaping of the capital, 50 taxa of arboreal plants were revealed, of which 7 are breeding varieties. Of the 43 identified species of arboreal plants, 22 (51.2%) have a Kazakhstani natural habitat, 9 species (20.9%) have a European and North American natural habitat, 3 species (7.0%) have a Siberian natural habitat [11].

All four arealogical groups of plants are represented in the five most common species in the landscaping of the city of Nur-Sultan. Plants of North American maple ash accounted for 24.0% of the total number of plants examined.

The occurrence of this species in the surveyed areas was 88%. Kazakhstani species, such as drooping birch and squat elm, accounted for 21.5% of the total number of plants examined. The occurrence of these species in model plots was 50-65%. Siberian berry apple tree (*Malus bakata*) has a share of 3.0%, but the incidence is 56%. European common lilac is characterized by a share of 1.2% and an occurrence of 38%. From these data it follows that Kazakhstan, North America, Europe and Siberia are deemed to be verified or reliably promising areas of donor introductions of arboreal plants for the botanical garden of Nur-Sultan.

Discussions. Forty three species of arboreal plants from 33 genera, having been Used in landscaping the capital in 2003 are the result of many years of painstaking work of landscapers without special support for introduction specialists. As far back as the end of the 20th century, 185 species of arboreal plants and 95 taxa of flower and ornamental plants were recommended for planting greenery in Almaty by introducers of the Main Botanical Garden of Kazakhstan [12].

In order to implement such broad recommendations, the botanical garden must conduct even wider introduction tests. The practice of the Main Botanical Garden of the RSE “Institute of Botany and Phytointroduction” of the Ministry of Education and Science of the Republic of Kazakhstan [13] shows that out of the 5 taxa that underwent introduction tests, only one is recommended in green construction practice.

The same broad introduction tests of plants will have to be performed by the State Botanical Garden in the city of Nur-Sultan. Their theoretical fundamentals and methodology are already being developed. Based on the system-arealogical approach to introduction prediction of cold tolerance of arboreal plants [14], 345 species of arboreal plants of Eurasia from 25 genuses were recommended for introduction tests in the capital.

They are divided into three groups of introduction prospects: A - conformity with the conditions of Nur-Sultan natural habitat of the species; B - conformity with the conditions of the city of Nur-Sultan of the species introduction habitat; B - potential conformity of the species with the conditions of the city of Nur-Sultan according to the mechanism of its settlement. The introduction of plants from each of these groups will require specific approaches to mobilizing plant reproduction material.

The forecast of prospects for the exposition of East Asia and North America was based on data on the average long-term annual minimums of air temperature in the natural and cultivated areas based on the data of Chekalin et al. [13] with a modern refinement according to adjustment et al. [15].

For the Nur-Sultan Botanical Garden, 80 taxa of North American plants are recommended, of which 20 are recommended according interpolation prediction methods, 3 are recommended according to prediction by cultivated area, and 57 are recommended according the traditional method of climatic identical plants. Also recommended are 147 taxa of East Asian plants, of which 35 species are recommended based on interpolation prediction, 14 by prediction by cultogenic habitat, and 86 by the traditional method of climatic similarities.

Currently, about 2,000 forms and varieties of decorative arboreal plants of foreign selection are entering the Kazakhstani market. For their effective use in the landscaping of the capital and of the northern region of Kazakhstan, introduction tests of cultivar diversity of arboreal plants must become one of the special objectives of the botanical garden in the city of Nur-Sultan.

The botanical garden established in the city of Nur-Sultan will have to represent a man-made specially protected natural territory, in which the "pros" and "cons" of its site should be taken into account.

Thus, in order to minimize risks and threats to preserve the objects of the botanical garden, the composition of expositions and of plant species included in their composition should be scientifically predicted by the level of stability in the conditions of the introduction nursery, taking into account the factors of cold resistance, heat resistance, and salt tolerance of plants.

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СОЛТҮСТІК ҚАЗАҚСТАН ЖАҒДАЙЫНДА ИНТРОДУКЦИЯЛАУҒА АҒАШ ӨСІМДІКТЕРІНІҢ БАСТАПҚЫ ТІЗІМДЕРІН ЖАСАУ

Аннотация. Қазіргі уақытқа дейін Солтүстік Қазақстанда және жалпы Республиканың дала экожүйелерінде жерсіндіру мен жасыл құрылыстың теориялық және қолданбалы мәселелерін құратын ғылыми-зерттеу мекемелері, бірінші кезекте өңірдің өсімдік әлемінің алуан түрлілігін сақтау және тұрақты пайдалану жөніндегі мақсатты мекемелер өңірде болған жоқ. Осы міндеттерді шешу үшін Нұр-Сұлтан қаласында мемлекеттік ботаникалық бақ құрылды. Ботаникалық бақтың қалыптасу кезеңінде интродукциялық сынақтар үшін ағаш өсімдіктерінің бастапқы тізімін әзірлеу бірінші кезектегі міндет болып табылады, бұл қауымдас-тықтардың әртүрлі типтері мен географиялық өңірлерден тұратын дендрологиялық экспозициялардың жоспарын жасауға, сондай-ақ біздің Республикамыздың астанасы мен жалпы өңірді көгалдандыру үшін ағаш өсімдіктерінің асортиментін ұсынуға мүмкіндік береді.

Ағаш өсімдіктерінің перспективті тізімін әзірлеу үшін жүйелі-ареалогиялық тәсілмен интерполяциялық болжау қолданылды. Интродукциялық жұмыстар дәстүрлі әдістемелер бойынша орындалды.

Зерттеу нәтижесінде интродукциялық сынақтарға арналған Қазақстанның Қызыл кітабына енген ағаш өсімдіктерінің 19 түрі, оның ішінде Шығыс Қазақстаннан алынған 10 түрі және республиканың оңтүстік-шығысынан алынған 4 түрінен тұратын перспективалы тізімі әзірленді.

Жүргізілген талдау жұмыстары, ботаникалық бақтың ашық топырағында тіршілікке қабілетті болатын Қазақстанның бореалдық (Солтүстік) қоғамдастығы – қайың, көктерек, қарағай шоқ ормандары, дала өсімдіктері, ішінара-Қазақстандық Алтайдың орман экожүйелері болатынын тұжырымдауға мүмкіндік береді. Осыған сәйкес, Қазақстанның табиғи өсімдіктері Нұр-Сұлтан ботаникалық бағында мынадай экспозициялармен ұсынылуы мүмкін: "Батыс Қазақстанның қайыңы бар еменді тоғай", "Қазақстандық Алтайдың ағаш өсімдіктері", "Қазақстанның шоқормандары".

Елордада ағаш өсімдіктерінің суыққа төзімділігін интродукциялық болжауға жүйелі-ареалогиялық тәсіл негізінде интродукциялық сынау үшін интродукциялық перспективаның үш тобына бөлінген 25 туысынан тұратын Еуразия ағаш өсімдіктерінің 345 түрі ұсынылды: А – түрлердің табиғи таралу аймағының Нұр-Сұлтан қаласының жағдайларына сәйкестігі; Б – түрлердің интродукциялық таралу аймағының Нұр-Сұлтан қаласының жағдайларына сәйкестігі; В – түрлердің таралуы бойынша Нұр-Сұлтан қаласының жағдайларына сәйкестігі. Осы топтардың әрқайсысының өсімдіктерін жерсіндіру, өсімдіктердің репродукциялық материалдарын жұмылдырудың арнайы тәсілдерді талап етеді.

Нұр-Сұлтан қаласында құрылатын ботаникалық бақты құру кезінде оны орналастыру аймағының "артықшылықтары" және "кемшіліктері" ескерілуі тиіс, қолдан жасалған ерекше қорғалатын табиғи аумақты білдіретін болады.

Түйін сөздер: ағаш өсімдіктері, ботаникалық бақ, экожүйелер, жасыл технологиялар, генетикалық қор, Солтүстік Қазақстан, флора аймағы, интродукция, интродуценттер, ағаш өсімдіктері.

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РАЗРАБОТКА ПЕРВИЧНЫХ СПИСКОВ ДРЕВЕСНЫХ РАСТЕНИЙ ДЛЯ ИНТРОДУКЦИИ В УСЛОВИЯХ СЕВЕРНОГО КАЗАХСТАНА

Аннотация. До настоящего времени в Северном Казахстане и в целом в степных экосистемах Республики отсутствовали научно-исследовательские учреждения, разрабатывающие теоретические и прикладные вопросы интродукции и зеленого строительства в регионе, в первую очередь, целевые учреждения по сохранению и устойчивому использованию разнообразия растительного мира региона. Для решения этих задач был создан государственный ботанический сад в городе Нур-Султан. В период становления ботанического сада первостепенной задачей является разработка первичных списков древесных растений для интродукционных испытаний, что позволит создать план дендрологических экспозиций, представляющих различные типы сообществ и географические регионы, а также рекомендовать ассортимент древесных растений для озеленения столицы нашей республики и региона в целом. Для разработки перспективных списков древесных растений использовался системно-ареалогический подход и интерполяционное прогнозирование. Интродукционные процедуры выполнялись по традиционным методикам.

В результате исследований разработан перспективный список краснокнижных древесных растений Казахстана для интродукционных испытаний, насчитывающий 19 видов, в том числе 10 видов, привлеченных из Восточного Казахстана, и 4 вида – из юго-востока республики.

Выполненный анализ позволяет утверждать, что потенциально жизнеспособными в открытом грунте ботанического сада будут сообщества Бореального (Северного) Казахстана – березовые, осиновые, сосновые колки, степная растительность, частично-лесные экосистемы Казахстанского Алтая. Согласно этому природная растительность Казахстана может быть представлена в ботаническом саду Нур-Султан следующими экспозициями: «Дубняки с березой Западного Казахстана», «Древесные растения Казахстанского Алтая», «Колки Казахстана».

На основании системно-ареалогического подхода к интродукционному прогнозированию холодоустойчивости древесных растений для интродукционных испытаний в столице рекомендовано 345 видов древесных растений Евразии из 25 родов, подразделенных на три группы интродукционной перспективности: А – соответствие условиям г. Нур-Султан природного ареала вида; Б – соответствие условиям г. Нур-Султан интродукционного ареала вида; В – потенциальное соответствие вида условиям г. Нур-Султан по механизму его расселения. Интродукция растений каждой из этих групп потребует специфических подходов к мобилизации репродукционного материала растений.

Ботанический сад, создаваемый в г. Нур-Султан будет представлять рукотворную особо охраняемую природную территорию, при создании которой должны быть учтены «плюсы» и «минусы» участка ее размещения.

Ключевые слова: древесные растения, Ботанический сад, экосистемы, зеленые технологии, генетический фонд, Северный Казахстан, флористический район, интродукция, интродуценты, древесные растения.

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REFERENCES

- [1] Rehder A. Manual of cultivated trees and shrubs hardy in North America. N.Y., 1949. 996 p.
- [2] Baitulin I.O., Proskuryakov M.A., Chekalin S.V. Systemic-ecological approach to plant introduction in Kazakhstan. Part 1. Alma-Ata, 1992. 198 p.
- [3] Chekalin S.V., Sitpayeva G.T. Analysis of climatic regimes in the natural-scientific substantiation of the botanical garden of Astana // International scientific and practical conference (07/01/2018). "Creation and development prospects of the Botanical Garden of Astana. Theory and practice. 2018. P. 11-15.
- [4] Rybin N.G., Yunusov G.R. Rivers of Kazakhstan // In: Essays on the Physical Geography of Kazakhstan. Alma-Ata, 1952. P. 197-243.
- [5] Water resources of Kazakhstan in the new millennium. Almaty, 2004. 131 p.
- [6] Flora of Kazakhstan. Alma-Ata, 1956-1966. Vol. 1-9.
- [7] Cherepanov N.K. SPb., 1995. 990 p.
- [8] The Red Book Of Kazakhstan. Astana, 2014. 451 p.
- [9] Sultangazina G.J., Kuprijanov O.A., Kuprijanov A.N., Beyshov R.S. Coenoflora *Pulsatilla patens* (L.) Mill. s.l. in Northern Kazakhstan // Bulletin of National academy of sciences of the Republic of Kazakhstan. ISSN 1991-3494. 2019. Vol. 4, N 380. P. 83-92. <https://doi.org/10.32014/2019.2518-1467.95>
- [10] Development of an inventory of green spaces and a comprehensive scheme of layered nature conservation of the city of Astana. Vol. 1. Methodology of a comprehensive inventory of green spaces of the city of Astana and its testing. Reporting document RSE "Institute of Botany and Phytointroduction" MES RK. Almaty, 2003. 63 p.
- [11] Sitpayeva G.T., Chekalin S.V., Veselova P.V., Mukhtubayeva S.K. Objects of introduction tests and collection funds of open ground plants of the Botanical Garden of Astana // International scientific and practical conference (07.01.2018). "Creation and development prospects of the Botanical Garden of Astana. Theory and practice. 2018. P. 15-19.
- [12] Assortment of ornamental plants for landscaping Almaty. Alma-Ata, 1979. 63 p.
- [13] Catalog of decorative woody plants of open ground // Proceedings of the Institute of Botany and Phytointroduction. Almaty, 2012. Vol. 18(5). 88 p.
- [14] Chekalin S.V., Sitpayeva G.T., Masalova V.A. Resettlement and cold tolerance of woody plants of Eurasia (subtropical, temperate and subpolar territories). Almaty: Luxe Media Group, 2012. Vol. 1. 184 p.; Vol. 2. 132 p.
- [15] Vstotskaya T.N., Koropochinsky I.Yu., Kiseleva T.I., Gorbunov A.B., Karakulov A.V., Lapteva N.P. Introduction of woody plants in Siberia. Novosibirsk, 2017. 716 p.

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BIRD BIOPOTENTIAL AGAINST THE CORRECTION OF NON-SPECIFIC RESISTANCE AND SPECIFIC IMMUNOGENESIS

Abstract. For the first time in the conditions of commercial poultry production of the Chuvash Republic, a system for realizing the bioresource potential of productive traits of meat and egg-laying chicken of Lohmann Brown variety was introduced, which provides for the activation of nonspecific resistance and specific immunogenesis of the body with the immunotropic drug PV-1, developed by scientists of the Chuvash State Agricultural Academy. It is scientifically grounded and experimentally proved that feeding chickens of the 1st, 2nd and 3rd experimental groups with the drug PV-1 at doses of 0.05 ml/kg, 0.10 ml/kg and 0.15 ml/kg of live weight, respectively, once a day for 10 days with a 10-day break, with the repetition of cycles up to their 111-day age, stimulates the growth and development of young birds. On the 110th day of scientific and economic tests, the young birds of the experimental groups exceeded in the live weight of peers in the control group by 5.4%, 7.1% and 10.1% ($P < 0.01-0.001$), respectively. The dynamics of changes in the absolute and average daily gain in live weight of tested young birds depended on the dose of the drug, and the maximum efficiency was established at a dose of 0.15 ml per 1 kg of live weight. It was found that the use of the PV-1 contributes to an increase in erythropoiesis, leukopoiesis and protein metabolism, as well as immunobiological indicators of the hematological profile of nonspecific resistance of the bird organism from 60 days of age ($P < 0.01-0.001$). An increase in the number of red blood cells and the concentration of hemoglobin in the blood of tested birds on the background of immunocorrection show an improvement in their hematopoiesis, and an increase in the number of leukocytes indicates the activation of cellular protective factors of the body. The total protein content in the experimental groups enhanced due to an increase in the number of albumin and gamma globulins. The activation of nonspecific resistance of the bird organism against the use of the PV-1 immunostimulating drug was established according to the parameters of phagocytic activity of leukocytes, phagocytic index, lysozyme and bactericidal activity of blood serum. Immunization of birds with the use of the immunotropic drug PV-1 is accompanied by immunity stress: at Gumboro disease vaccination of chickens, the titers of specific antibodies increases by 53.3%, at Newcastle disease vaccination - by 50.0%, and at egg drop syndrome (EDS -76) vaccination - by 26.5%. If the egg production of the initial laying hen for 68 weeks of life in the control group was 196, then in the first experimental group it was 9.2% more, in the second experimental group - 9.7% more, in the third experimental group - 17.8% more. Based on the average laying hen, egg production in the experimental groups was higher than in the control: in the 1st experimental - by 4.1%, in the 2nd experimental - by 5.4% and in the 3rd experimental - by 11.8%. Laying hens of the control group reached 50% egg-laying at the age of 158 days, in the 1st and 2nd experimental groups - at 152 days of age, in the 3rd experimental group - at 155 days of age. The climax of the egg-laying capacity of the laying hens of the tested groups was at the 6th month of egg-laying: in the control group at 199 days of age, the 1st experimental group at 192 days of age, in the 2nd experimental group at the age of 200 days, and in the 3rd experimental group at 183 days of age. Against the background of the intensification of immunogenesis and nonspecific resistance of the body to the pressure of environmental and technological stress factors of habitat, the safety of the bird increases. The safety for 4 weeks of growth was 98.3% in the control group, 98.3% in the 1st experimental group, and 100% in the 2nd and 3rd experimental groups. A study of the meat productivity of birds raised with the use of the PV-1 revealed an increase in slaughter yield by 1.7 - 5.0%, the yield

of edible parts increased by $62 \pm 3.20 - 155 \pm 3.40$ g ($P < 0.001$). To actualize productivity, to enhance non-specific resistance and ensure bird safety, we recommend using the PV-1 immunostimulating drug at a dose of 0.15 ml per 1 kg of live weight by feeding with fodder once a day for 10 days with a 10-day break. To increase immunity against Gumboro, Newcastle and SSN-76 diseases, we recommend using the PV-1 at a dose of 0.1-0.15 ml per 1 kg of live weight by feeding with fodder 10-12 days before immunization.

Keywords: chickens, young birds, laying hens, the immunotropic drug PV-1, nonspecific and specific resistance, egg-laying and meat productivity.

Introduction. In providing the population with quality foodstuff, a special place is given to poultry farming enabled to solve this problem in a short time and at the lowest cost. However, it should be remembered that further development and increasing the competitiveness of poultry farming is possible only with a large-scale introduction of innovative resource-saving technologies and equipment that maximize the genetic potential of bird productivity [1-6].

In conditions of industrial poultry farming, to achieve high productivity, preservation and obtaining biologically fully-featured and good products is sometimes very problematic due to the pressure of environmental and technological habitat factors, which negatively affects the physiological state of the body. Under the influence of these adverse factors, nonspecific resistance and immunological reactivity of a bird often decrease. Damage to the immune system leads to an immunodeficiency state and a weakening of the body's resistance to pathogens of infectious diseases [7, 8].

The use of antibiotics and chemotherapeutic agents for the prevention and treatment of bird diseases often results in disruption of normal microflora, the emergence of resistant strains of agents and a decrease in immune status. Creating healthy livestock through the introduction of scientific and technological achievements and best practices will further increase bird productivity [9-11].

In the context of the above-mentioned, the problem of restoration of immunological disorders using immunostimulants is currently relevant for modern science and practice, since most diseases are accompanied by secondary immunological deficiency [12].

The studies were carried out as part of the international cooperation of agrarian scientists from Kazakhstan and the Russian Federation for 2018-2020.

The aim of this work is to realize the bird's biopotential by correcting nonspecific resistance and specific immunogenesis of the body.

Material and methods of research. The experimental part of the research was carried out at one of the poultry plants of the Chuvash Republic, and the processing of materials was carried out in the laboratories of the Chuvash State Agricultural Academy. The objects of research were the clinically healthy egg-laying birds of the autosex cross "Lohmann brown." The research was conducted according to a proven research design [13].

Four groups of day-old chickens were formed, 60 birds each, according to the principle of groups-analogs. Chickens of the 1st experimental group were fed with an immunostimulant PV-1 at a dose of 0.05 ml/kg of live weight, of the 2nd experimental group - 0.10 ml/kg and of the 3rd experimental group - 0.15 ml/kg of body weight. The PV-1 preparation was given with food once a day for 10 days with a 10-day break repeatedly up to 111 days of bird's age. The control group of chickens did not receive the preparation. Young experimental birds up to 111 days of age were kept in the breeding workshop and then transferred to the keeping workshop for the maintenance of laying hens of the parent stock. The conditions for housing, feeding, and caring were the same for all groups of birds.

Research results and discussion. It was established that in day-old chickens of the experimental and control groups, the live weight parameters have had no significant differences. However, on the 30th day chickens of the experimental group exceeded peers in the control group in this parameter. So, the live weight of chickens of the 1st experimental group was higher by 1.5%, of the 2nd - by 2.5% and of the 3rd - by 4.5% ($P < 0.01$). Subsequently, the birds of the experimental groups grew and developed better than the young birds of the control group. On the 110th day, the live weight of young birds of the 1st, 2nd and 3rd experimental groups exceeded by 5.4%, 7.1%, and 10.1% compared with the control ($P < 0.01-0.001$) respectively.

Analyzing the average daily gains in live weight in birds, it is necessary to point out that they were the same weight gain dynamics (table 1).

Table 1 – Dynamics of the average daily gain in young birds

Bird's age, days	Control group	1 experimental	2 experimental	3 experimental
10	4.0±0.3	3.9±0.25	3.9±0.27	4.0±0.6
30	6.3±0.4	7.6±0.21**	7.7±0.35**	8.0±0.25***
60	11.8±0.5	12.8±0.6	13.2±0.4*	13.6±0.5**
90	14.0±0.3	15.1±0.5	15.2±0.6	15.7±0.4**
110	13.1±1.1	13.7±0.9	13.9±0.6	14.4±0.7

*P ≤ 0.05, **P ≤ 0.01, ***P ≤ 0.001.

The dynamics of changes in the absolute and average daily gain in live weight of young birds of the experimental groups depended on the dose of the preparation. Maximum efficiency was established when using this immunostimulant at a dose of 0.15 ml per 1 kg of live weight.

The hematological profile of birds is presented in table 2.

Table 2 – Hematological profile of birds

Bird's age, days	Control group	1 experimental	2 experimental	3 experimental
Red blood cell count, 10 ¹² /l				
30	2.94±0.14	3.22±0.51	3.36±0.4	3.42±0.2
60	2.89±0.15	3.20±0.34	3.29±0.29	3.39±0.41*
110	2.98±0.13	3.44±0.32	3.52±0.26	3.64±0.17**
150	3.39±0.16	3.47±0.24	3.47±0.23	3.49±0.19
Hemoglobin, mg/%				
30	8.2±1.3	9.27±1.6	9.49±1.4	9.85±1.3
60	8.58±1.6	9.40±1.2	9.52±1.2	9.67±1.5
110	9.94±0.9	10.14±1.1	10.49±0.9	11.09±1.0
150	10.1±0.8	10.5±0.9	10.82±1.0	10.9±0.9
White blood cell count, 10 ⁹ /l				
30	20.42±1.2	21.33±1.7	21.20±1.1	21.03±1.2
60	26.50±1.4	27.9±1.2	28.00±1.3	28.27±1.4
110	28.67±1.3	33.07±1.7*	33.87±1.6*	34.60±1.3**
150	33.43±2.1	34.00±2.1	34.10±2.3	34.35±2.5

*P ≤ 0.05, **P ≤ 0.01, ***P ≤ 0.001.

It was found that the application of the PV-1 immunostimulant contributed to an increase in the number of red blood cells in blood of birds of the 1st experimental group by 9.5-15.4% (P>0.05), of the 2nd - by 13.8-18.1% (P>0.05) and of the 3rd experimental group - by 16.3-22.1% (P<0.05-0.01) compared with the control. The hemoglobin content in the blood of the chickens of the experimental groups was also higher than in the control: in the first experimental group - by 2.0-13.1%, in the second group - by 5.5-15.7% and in the third group - by 7.9-20.1% (P<0.05). The number of leukocytes in birds increased with age, which is associated with the formation of the functional activity of the blood-forming organs and the immune system. In the birds of the experimental groups, the leukocyte content at 30-, 60- and 110-day-old age was higher than in the control: in the 1st experimental - by 4.5-15.3% (P<0.05), in the 2nd group - by 3.8-18.1% (P<0.05) and in the 3rd experimental group - by 3.0% (P>0.05) - 20.7% (P<0.01). An increase in the number of red blood cells and the hemoglobin content in the blood of birds of the experimental groups against the background of immunocorrection indicate an improvement in their hematopoiesis, and an increase in the number of leukocytes indicates the activation of cellular protective factors of the body.

Biochemical studies of blood serum revealed some fluctuations in protein metabolism (table 3).

Table 3 – Biochemical blood indicators of birds

Group	Age, days	Total protein, g/l	albumins, g/l	Gamma globulins, g/l
Control	60	49.6±1.2	16.8±0.22	17.8±0.26
	90	55.6±1.0	18.9±0.32	20.0±0.24
	110	55.2±0.9	18.8±0.21	19.8±0.32
	280	53.4±1.4	18.1±0.35	19.2±0.18
1 experimental	60	51.6±0.8	17.6±0.56	18.6±0.21
	90	57.5±1.3	19.8±0.52	20.6±0.24
	110	57.8±1.4	19.5±0.24	21.6±0.26
	280	55.6±1.0	18.4±0.25	20.6±0.27
2 experimental	60	51.8±1.0	18.5±0.25	18.1±0.26
	90	58.3±1.0*	19.4±0.41*	22.1±0.24**
	110	58.7±1.2*	20.4±0.52*	20.8±0.31**
	280	57.0±0.8*	19.2±0.22*	20.7±0.21*
3 experimental	60	52.3±1.1	17.6±0.35*	19.5±0.16**
	90	60.2±1.0*	20.3±0.36*	23.3±0.24***
	110	61.4±1.3**	20.4±0.41*	23.5±0.32***
	280	58.0±1.3*	19.8±0.33*	21.6±0.17***

*P ≤ 0.05, **P ≤ 0.01, ***P ≤ 0.001.

The highest level of total protein and its fractions was detected at 90 days of age. Apparently, at this age, the formation of protein metabolism in young animals occurs to the level of an adult bird, and in the future - stabilization of this metabolism. It should be noted that the total protein content in birds of the 1st experimental group was higher than in the control birds by 3.4-4.7% (P>0.05), of the 2nd - by 4.4-6.7% (P<0.05) and of the 3rd experimental - by 5.4-11.2% (P<0.05-0.01). The total protein content in the experimental groups increased due to an expansion in the number of albumin and gamma globulins.

The study of blood immunological indicators (table 4) showed that the phagocytic activity of leukocytes increases with the bird's age. In young experimental groups at 60 days of age, this indicator was higher compared to the control, in the 1st experimental group - higher by 9.8%, in the 2nd group - by 18.2% and in the 3rd group - by 20.4 % (P<0.05-0.01), at the age of 90 days - by 2.6%, 6.8 and 7.2% (P<0.05), at the age of 110 days - by 14.6%, 20.5%, 29.5% (P<0.05-0.001), respectively. The absorption capacity of pseudo-eosinophils varied. In the 2nd and 3rd experimental groups, the phagocytic index was 1.7–11.7% higher (P<0.05–0.01) than in the control.

Table 4 – Dynamics of immunological indicators of birds

Group	Age, days	Phagocytic activity, %	Phagocytic index	Lysozyme activity, %	Bactericidal activity, %
Control	60	22.5±1.2	1.62±0.08	25.3±1.0	49.8±1.1
	90	26.5±0.9	1.78±0.09	38.9±1.2	52.3±1.2
	110	34.2±1.6	1.79±0.05	42.9±1.0	54.7±1.1
1 experimental	60	24.7±1.0	1.72±0.06	32.8±2.2**	55.6±1.2**
	90	27.2±1.1	1.81±0.04	45.0±1.6**	56.3±1.1*
	110	39.2±1.3*	1.80±0.08	48.8±1.3**	58.0±0.9*
2 experimental	60	26.6±1.3*	1.78±0.1*	36.9±3.2**	57.7±1.85**
	90	28.3±1.4	1.86±0.12	51.4±0.5**	58.1±0.8**
	110	41.2±1.9**	1.82±0.09	53.1±2.3**	60.7±0.6**
3 experimental	60	27.1±1.4**	1.81±0.06*	37.2±1.8**	57.7±1.4**
	90	28.4±0.9*	1.82±0.1*	54.1±2.9***	58.8±1.1**
	110	44.3±1.3***	1.86±0.11*	57.9±2.4***	61.6±1.0**

*P ≤ 0.05, **P ≤ 0.01, ***P ≤ 0.001.

The lysozyme activity of the blood serum of birds in the 1st, 2nd and 3rd experimental groups throughout the entire study period was higher than in the control: at 60 days of age - by 29.6%, 45.8% and 47.0% , in the 90-day - by 15.7%, 32.1% and 39.0%, in the 110-day - by 13.7%, 23.8% and 35% ($P < 0.01-0.001$), respectively.

The bactericidal activity of the blood serum of birds in the 1st, 2nd and 3rd experimental group was also higher than in the control: at 60 days of age - by 11.6%, 15.9% and 15.8%, at 90 days of age - by 7.6%, 11.1% and 12.4%, at 110 days of age - by 6.0%, 11.0% and 12.6% ($P < 0.05-0.01$), respectively.

Thus, the use of the PV-1 immunostimulant in growing chickens contributed to the improvement in erythropoiesis, leukopoiesis and protein metabolism, as well as an increase in the immunological indicators of young birds.

We have studied the effect of the PV-1 on the characteristics of immune development at vaccination of birds against Gumboro disease, Newcastle disease, and Egg drop syndrome -76.

Immunization of chickens against Gumboro disease led to the maximum accumulation of titer of specific antibodies 30 days after the vaccination (table 5).

Table 5 – Accumulation of titer of antibodies against Gumboro disease

Group	The average titer of antibodies (in EIA units), after (days)					
	30		60		90	
	indicator	% to the control	indicator	% to the control	indicator	% to the control
Control	6306	100	3257	100	2257	100
1 experimental	6420	101.8	3171	97.3	3040	134.7
2 experimental	7205	114.2	4919	151.0	4822	212.7
3 experimental	9671	153.3	5395	165.6	5211	229.9

In the experimental groups, antibody titers were higher than in the control: in the 1st experimental group - by 1.8%, in the 2nd - by 14.2% and in the 3rd - by 53.3%. In the subsequent periods of studies, the titer of specific antibodies decreased in all experimental groups: on the 60th day after vaccination - lower by 31.7-50.6%, on the 120th day - by 33.1-64.2%. It should be noted that the antibodies titers against Gumboro disease with the use of the PV-1 immunostimulant in all experimental groups remained up to 120 days at the level of 47.4-66.9%, and in the control group, antibody titers decreased by 2.8 times.

The maximum accumulation of specific virus-neutralizing antibodies against Newcastle disease was observed 60 days after the vaccination of birds (table 6).

Table 6 – Dynamics of antibody titer against Newcastle disease

Days after vaccination	Groups of birds			
	Control	1 experimental	2 experimental	3 experimental
	the average antibody titer in Ig2			
30	4.5/100	5.0/111.1	6.0/133.3	6.75/150.0
60	5.4/100	7.1/131.5	7.5/138.9	8.1/150.0
90	5.0/100	6.0/120.0	6.5/130.0	7.4/148.0
120	4.6/100	5.8/126.1	6.4/139.1	6.7/145.6
160	3.4/100	5.0/147.0	5.5/161.8	5.4/158.8
190	3.2/100	4.0/125.0	4.5/140.6	4.7/146.9
250	3.2/100	3.3/103.1	3.9/121.9	4.3/134.4
360	4.7/100	4.8/102.1	5.8/123.4	5.6/119.1

A numerator is the average antibody titer in Ig2; a denominator is a percent compared to the control.

In the 1st experimental group, antibody titers were higher by 31.5% compared with the control, in the 2nd experimental - by 38.9%, in the 3rd experimental - by 50.0%. By the 90th day, the level of antibodies gradually decreased in all experimental groups. But in the experimental groups, antibody titers were higher than in the control: in the 1st experimental one - by 20.0%, in the 2nd one - by 30.0%, in the 3rd one - by 48.0%. The use of the PV-1 immunostimulant contributed to maintaining the titer of virus-neutralizing antibodies at a high level up to 160 days after immunization, while in birds of the control group it decreased markedly from the 90th day after the vaccination.

Immunization of young birds against EDS-76 disease with the use of the PV-1 led to an increase in antibody titer in the first experimental group by 17.8%, in the second one - by 24.3, in the third one - by 26.5% compared with the control group. On the 100th, 170th and 270th days after the vaccination, the titer of virus-neutralizing antibodies in the control group of birds gradually decreased. But in the experimental groups, it was high, especially when using the PV-1 at a dose of 0.15 ml per 1 kg of live weight of the bird.

Consequently, the use of the PV-1 immunostimulant promotes an increase in immunity during vaccination of birds against Gumboro, Newcastle and EDS-76 diseases. Moreover, the duration of preservation of specific virus-neutralizing antibodies increased compared with birds of the control group.

It was established that if the egg-laying capacity of housed egg-laying bird for 68 weeks of life in the control group amounted to 196 pieces, then in the first experimental group it was 9.2% more, in the second experimental group - 9.7% more, in the 3rd experimental - 17.8% more.

Based on the average laying bird, egg production in the control group was 220 pieces. In the experimental groups, it was higher than in the control: in the 1st experimental group - by 4.1%, in the 2nd - by 5.4% and in the 3rd - by 11.8%. Laying birds of the control group reached 50% oviposition at the age of 158 days, the 1st and 2nd experimental groups - at the age of 152 days, the 3rd experimental - at the age of 155 days. The highest egg-laying capacity of the laying hens of the experimental groups was on the 6th month of egg-laying: in the control group - at 199 days of age, in the 1st experimental group - at 192 days of age, in the 2nd experimental group - at 200 days of age, and the 3rd experimental group - at 183 days of age.

One of the important indicators in the practice of industrial poultry farming is the mass of eggs. The egg mass at the beginning of the productive period was low and amounted to 52.3 ± 0.2 g in birds of the control group. In the first experimental group, it was higher by 0.5%, in the second - by 1.3% ($P < 0.05$), in the 3rd - by 4.6% ($P < 0.01$) than in the control. At the height of oviposition, the egg mass was higher and amounted to 56.8 ± 0.13 g in the control group, 57.1 ± 0.2 g in the first experimental group, and 57.8 ± 0.2 g in the second group ($P < 0.05$), in the 3rd experimental one - 58.1 ± 0.21 g ($P < 0.01$). It was revealed that the eggs of young chickens contain more protein (58.5-59.6%) and less yolk (26.3-27.1%) than eggs in older chickens (57.6-58.1% and 28.3-28.5%, respectively). The use of the drug PV-1 influenced the egg protein mass in the initial period of egg production, i.e. it increased ($P < 0.01$). The mass of yolk in the context of experimental groups of birds did not differ significantly.

The preservation of bird for 4 weeks of growing was 98.3% in the control group, 98.3% in the 1st experimental group, and 100% in the 2nd and 3rd experimental groups. The preservation of birds from the 5th to the 16th week in the control group was 86.6%, in the 1st experimental group - 96.6%, in the 2nd and 3rd experimental groups - 99.8%. Apparently, this is because the PV-1 contributes to an increase in nonspecific resistance of the bird organism and resistance to the action of adverse environmental factors.

A study of the meat productivity of birds grown using the PV-1 immunostimulant showed an increase in slaughter yield of 1.7 - 5.0%, the yield of edible parts increased in the experimental groups from 62 ± 3.2 g to 155 ± 3.4 g ($P < 0.001$).

Conclusion. To increase the productivity, nonspecific resistance and safety of the bird, we recommend using the PV-1 immunostimulating drug at a dose of 0.15 ml per 1 kg of live weight by feeding with fodder once a day for 10 days with a 10-day break.

To enhance the antibody titer at vaccination of birds against diseases of Gumboro, Newcastle, and EDS-76, we recommend using the immunostimulant PV-1 at a dose of 0.1-0.15 ml per 1 kg of live weight by feeding with food 10-12 days before the immunization.

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СПЕЦИФИКАЛЫҚ ЕМЕС ТӨЗІМДІЛІКТІ ЖӘНЕ СПЕЦИФИКАЛЫҚ ИММУНОГЕНЕЗДІ ТҮЗЕТУ АЯСЫНДА ҚҰСТЫҢ БИОӘЛЕУЕТІ

Аннотация. Чуваш Республикасының өнеркәсіптік құс шаруашылығы жағдайында алғаш рет Чуваш мемлекеттік ауыл шаруашылығы академиясының ғалымдары әзірлеген PV-1 иммунотропиялық препараттымен тән емес резистенттілікті және организмнің спецификалық иммуногенезін жандандыруды көздейтін "Ломанн қоңыр" кроссының ет-жұмыртқа бағытындағы құстың өнімділік сапасының биоресурстық әлеуетін іске асыру жүйесі енгізілді. PV-1 препаратының 1-ші, 2-ші және 3-ші тәжірибелік топтарының балапандарын тиісінше 0,05 мл/кг, дене салмағының 0,10 және 0,15 мл/кг дозаларында 10 тәулік ішінде тәулігіне бір рет 10 тәуліктік үзіліспен, олардың 111 тәуліктік жасына дейінгі циклдерін қайталай отырып, қоректендіруі төлдің өсуі мен дамуын ынталандыратыны ғылыми негізделген және эксперименталды дәлелденген. Ғылыми-шаруашылық тәжірибенің 110-шы тәулігіне тәжірибелі топтардың жас құстарының тірі салмағы бойынша бақылауда тиісінше 5,4 %, 7,1 және 10,1 % ($P < 0,01-0,001$) асып түсті. Тәжірибелік топтағы құс төлдерінің тірі салмағының абсолюттік және орташа тәуліктік өсуінің өзгеру динамикасы препараттың дозасына байланысты және ең жоғары тиімділігі 1 кг тірі салмаққа 0,15 мл дозада белгіленген. PV-1 препаратын қолдану эритропоздін, лейкопоздін және ақуыз алмасуының көрсеткіштерін, сондай-ақ олардың 60 тәуліктік жасынан ($P < 0,01-0,001$) құс организмнің спецификалық емес резистенттілігінің гематологиялық бейінінің иммунобиологиялық көрсеткіштерін арттыруға ықпал ететіні анықталды. Иммунокоррекция аясында тәжірибелі топтардың құстардың қанындағы эритроциттер санының және гемоглобин концентрациясының артуы оларда гемопоэздің жақсарғанын, ал лейкоциттер санының артуы – организмнің жасушалық қорғаныш факторларының белсенділігін көрсетеді. Тәжірибелі топтарда жалпы ақуыз мөлшері альбуминдер мен гамма-глобулиндер санының артуы есебінен артты. PV-1 иммуностимуляторын қолдану аясында құстар ағзасының спецификалық емес резистенттілігін жандандыру көрсеткіштер бойынша белгіленген: лейкоциттердің фагоцитарлық белсенділігі, фагоцитарлық индекс, қан сарысуының лизоцимді және бактерицидті белсенділігі. PV-1 иммунотропиялық препаратын қолдану аясында құстарды иммундау иммунитет қауырттылығының жоғарылауымен бірге жүреді: балапандарды Гамборо ауруына қарсы вакцинациялау кезінде ерекше антиденелердің титрасы 53,3%-ға, Ньюкасл ауруына қарсы 50,0%-ға және ССК – 76 26,5%-ға көтеріледі. Егер бастапқы ұшаға жұмыртқалаушылық бақылау тобында 68 апта ішінде 196 дананы құраса, 1-ші тәжірибелі топта ол 9,2%-ға, 2-ші тәжірибелі топта – 9,7%-ға, 3-ші тәжірибелі топта-17,8%-ға артық болды. Тәжірибелі топтарда жұмыртқалағыштықтың орташа жұмыртқалағыш есебінде ол бақылауға қарағанда жоғары болды: 1-ші тәжірибелік кезеңде – 4,1%-ға, 2 – ші кезеңде – 5,4%-ға және 3-ші кезеңде-11,8%-ға өсті. Бақылау тобының тауықтар-мекиендері 158 күн, 1-ші және 2-ші тәжірибелі топтар – 152 күн, 3-ші тәжірибелі топтар – 155 күн жасында 50% жұмыртқалауға жетті. Тәжірибе асты топтарының тауықтың жұмыртқалау жоғарғы нүктесі жұмыртқалаудың 6 айында жетті: бақылау тобында-199 күндік, 1-ші тәжірибелі топта-192 күндік, 2-ші тәжірибелі топта – 200 күндік, 3-ші тәжірибелі топта-183 күндік жаста. Иммуногенездің белсенділігі және ағзаның экологиялық-технологиялық стресс-факторларының прессингіне тән емес резистенттілігі аясында құстың сақталуы артады. Өсірудің 4 аптасында құстың сақталуы бақылау тобында 98,3%, 1 тәжірибелік топта-98,3%, 2 және 3 Тәжірибелік топта – 100% құрады. PV-1 препаратын қолдану аясында өсірілген құстардың ет өнімділігін зерттеумен союдың 1,7–5,0%-ға көтерілуі анықталды, жеуге жарамды бөліктердің шығуы $62 \pm 3,20-155 \pm 3,40$ г ($P < 0,001$) ұлғайды. Өнімділікті іске асыру, спецификалық емес резистенттілікті жандандыру және құстың сақталуын қамтамасыз ету үшін 10 күндік үзіліспен 10 күн ішінде тәулігіне бір рет азықпен қоректендіру жолымен тірі салмағына 1 кг 0,15 мл дозада PV-1 иммуностимуляторын пайдалануды ұсынамыз. Иммунитет кернеулігін арттыру үшін құстарды Гамборо, Ньюкасл және Ся-76 ауруларына қарсы вакцинациялау кезінде иммуностимуляторды иммундауға дейін 10-12 күн бұрын азықпен қоректендіру жолымен тірі салмағына 1 кг 0,1-0,15 мл дозада пайдалану ұсынылады.

Түйін сөздер: балапандар, жас балапандар, мекиен тауықтар, PV-1 иммунотропды препараты, спецификалық емес және спецификалық төзімділігі, жұмыртқа және ет өнімділігі.

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БИОПОТЕНЦИАЛ ПТИЦЫ НА ФОНЕ КОРРЕКЦИИ НЕСПЕЦИФИЧЕСКОЙ РЕЗИСТЕНТНОСТИ И СПЕЦИФИЧЕСКОГО ИММУНОГЕНЕЗА

Аннотация. Впервые в условиях промышленного птицеводства Чувашской Республики внедрена система реализации биоресурсного потенциала продуктивных качеств птицы мясо-яичного направления кросса «Ломанн коричневый», предусматривающая активизацию неспецифической резистентности и специфического иммуногенеза организма иммуностропным препаратом PV-1, разработанным учеными Чувашской государственной сельскохозяйственной академии. Научно обосновано и экспериментально доказано, что скормливание цыплятам 1-й, 2-й и 3-й опытных групп препарата PV-1 в дозах соответственно по 0,05 мл/кг, 0,10 и 0,15 мл/кг массы тела один раз в сутки в течение 10 суток с 10-суточным перерывом, с повторением циклов до 111-суточного их возраста стимулирует рост и развитие молодняка. На 110-е сутки научно-хозяйственного опыта молодняк птиц опытных групп превосходил по живой массе сверстников в контроле на 5,4 %, 7,1 и 10,1 % ($P < 0,01-0,001$) соответственно. Динамика изменений абсолютного и среднесуточного прироста живой массы молодняка птиц опытных групп зависела от дозы препарата, и максимальная эффективность установлена в дозе 0,15 мл на 1 кг живой массы. Установлено, что применение препарата PV-1 способствует повышению показателей эритропоза, лейкопоза и белкового обмена, а также иммунобиологических показателей гематологического профиля неспецифической резистентности организма птиц с 60-суточного их возраста ($P < 0,01-0,001$). Увеличение количества эритроцитов и концентрации гемоглобина в крови птиц опытных групп на фоне иммунокоррекции свидетельствует об улучшении у них гемопоэза, а повышение числа лейкоцитов – об активизации клеточных защитных факторов организма. Содержание общего белка в опытных группах повышалось за счет увеличения количества альбуминов и гамма-глобулинов. Активизация неспецифической резистентности организма птиц на фоне применения иммуностимулятора PV-1 установлена по показателям: фагоцитарная активность лейкоцитов, фагоцитарный индекс, лизоцимная и бактерицидная активность сыворотки крови. Иммунизация птицы на фоне применения иммуностропного препарата PV-1 сопровождается повышением напряженности иммунитета: при вакцинации цыплят против болезни Гамборо повышаются титры специфических антител на 53,3 %, против болезни Ньюкасла – на 50,0 % и против ССЯ-76 – на 26,5 %. Если яйценоскость на начальную несушку за 68 недель жизни в контрольной группе составила 196 штук, то в 1-ой опытной группе она была больше на 9,2%, во 2-ой опытной – на 9,7%, в 3-й опытной – 17,8%. В расчете на среднюю несушку яйценоскость в опытных группах она была выше, чем в контроле: в 1-й опытной – на 4,1%, во 2-й – на 5,4% и в 3-й – на 11,8%. Куры-несушки контрольной группы достигли 50%-ной яйцекладки в возрасте 158 дней, 1-й и 2-й опытных групп – 152 дня, 3-й опытной – 155 дней. Пик яйценоскости куры-несушки подопытных групп достигли на 6-м месяце яйцекладки: контрольной группы – в 199-дневном возрасте, 1-й опытной группы – в 192-дневном, 2-й опытной – 200-дневном, 3-й опытной – в 183-дневном возрасте. На фоне активизации иммуногенеза и неспецифической резистентности организма к прессингу эколого-технологических стресс-факторов среды обитания повышается сохранность птицы. Сохранность птицы за 4 недели выращивания составила в контрольной группе 98,3%, 1-й опытной – 98,3%, во 2-й и 3-й опытных группах – 100%. Изучением мясной продуктивности птиц, выращенных на фоне применения препарата PV-1, установлено повышение убойного выхода на 1,7 – 5,0%, выход съедобных частей увеличился на $62 \pm 3,20 - 155 \pm 3,40$ г ($P < 0,001$). Для реализации продуктивности, активизации неспецифической резистентности и обеспечения сохранности птицы рекомендуем использовать иммуностимулятор PV-1 в дозе 0,15 мл на 1 кг живой массы путем скормливания с кормом один раз в сутки в течение 10 дней с 10-дневным перерывом. Для повышения напряженности иммунитета при вакцинации птицы против болезней Гамборо, Ньюкасла и ССЯ-76 рекомендуем использовать иммуностимулятор PV-1 в дозе 0,1-0,15 мл на 1 кг живой массы путем скормливания с кормом за 10-12 дней до иммунизации.

Ключевые слова: цыплята, молодняк, куры-несушки, иммуностропный препарат PV-1, неспецифическая и специфическая резистентность, яичная и мясная продуктивность.

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REFERENCES

- [1] Velichko O.A. (2018). Productivity and quality of eggs of hens of various crosses // World and Russian poultry development trends: realities and challenges of the future. Proc. XIX international conf. Sergiev Posad. P. 86-89 (in Russ.).
- [2] Egorova A.V., Shashina G.V., Lesik O.P. (2018). Productive qualities of hens of the ancestral and parent broiler beasts, depending on the mass of the hatching eggs // World and Russian poultry development trends: realities and challenges of the future. Proc. XIX international conf. Sergiev Posad. P. 86-89 (in Russ.).
- [3] Kozak S.S., Makoveev I.I., Dogadova N.L., Bragin V.S. (2017). The effect of dihydroquercetin on increasing the shelf life of broiler carcasses // Poultry and poultry products. Moscow. VNIIPP. N 4. P. 52-55 (in Russ.).
- [4] Fisinin V.I., Kavtarashvili A.Sh. (2016). Biological and economic aspects of the production of broiler meat in cages and on the floor // Poultry farming. Moscow. N 5. P. 25-31 (in Russ.).
- [5] Fisinin V.I., Egorov I.A., Egorova T.V., Portnov S.A. (2018). The efficiency of growing broilers depending on the energy and amino acid content in starter diets // World and Russian poultry development trends: realities and challenges of the future: Proc. XIX international conf.- Sergiev Posad: Federal Research Center of the All-Russian Scientific Research Institute for Scientific and Technical Information, RAS, 2018 (in Russ.).
- [6] Fisinin V.I. (2018). Strategic trends in the development of world and domestic poultry farming: status, challenges, prospects // World and Russian poultry development trends: realities and challenges of the future. Proc. XIX international conf. Sergiev Posad. P. 9-49 (in Russ.).
- [7] Kochish I.I., Azarnova T.O., Lugovaya I.S., Naydensky M.S., Zaitsev S.Yu., Antipov A.A. (2018). Features of the correction of general resistance in chicken embryos by some natural metabolites // World and Russian poultry development trends: realities and challenges of the future. Proc. XIX international conf. Sergiev Posad. P. 425-427 (in Russ.).
- [8] Petryankin F.P., Ivanov N.G. (2012). Infectious diseases of birds: Monograph. (ISBN). Cheboksary. New Time. 150 p. (in Russ.).
- [9] Kozak S.S., Mokshantseva I.V., Kozak Yu.A. (2018). Scientific aspects of ensuring microbiological safety in poultry farming and poultry processing // Veterinary and feeding. M.: Publishing House Mercury LLC. N 2. P. 55-58 (in Russ.).
- [10] Kochish I.I., Romanov M.N., Nikonov I.N., Ilyina L.A., Laptev G.Yu. (2018). Determination of intestinal microbiocenosis of hens of egg crosses // World and Russian poultry development trends: realities and challenges of the future. Proc. XIX international conf. Sergiev Posad. P. 240-243 (in Russ.).
- [11] Shchepetkina S.V. (2018). Organization of an antimicrobial control system in poultry farming // World and Russian poultry development trends: realities and challenges of the future. Pro. XIX international conf. Sergiev Posad. P. 703-706 (in Russ.).
- [12] Nikitin D.A. Embryotoxic and teratogenic properties of the immunocorrection drug PS-6 (2012) // Russian journal Problems of Veterinary Sanitation, Hygiene and Ecology. Moscow. N 1(7). P. 83-85 (in Russ.).
- [13] Alekseev I.A., Semenov V.G., Baimukanov D.A., Alekseev V.A., Evdokimov N.V., Yakimov A.V., Obukhova A.V. (2019). Basulifor probiotic supplement, its impact on body and productivity of young quails // Bulletin of national academy of sciences of the Republic of Kazakhstan. 2019. Vol. 4, N 380. P. 27-37. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print). <https://doi.org/10.32014/2019.2518-1467.89>

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ABOUT THE INFLUENCE OF RELIGION ON THE FORMATION OF TOLERATED CONSCIOUSNESS AND SOCIAL CONSENT

Abstract. The problem of tolerance demands the analysis of the nature of tolerance. Researchers connect emergence of the idea of tolerance with the period of the Reformation and the ideas of Education of the new European liberal political philosophy. The idea of tolerance, which has three hundred years old, arose for release of religions, proclaimed the liberal tradition. There are three main periods of the development: the first period is connected with the rationalistic doctrine of John Lock. At the heart of his views is the relation of belief and reason of understanding of the tolerance. The toleration, in accordance with Lock's rational need, means freedom. The second period is connected with the development of perspective of tolerance in the liberal theory of John Stuart Mill. He proclaimed the idea of freedom of the individual, which can be limited only the freedom of other person. Considering problems of justice, equality as bases of the society research scholar explained by the need of the contract. The tolerance is one of the justice conditions, when the person has to sacrifice own beliefs for the prevailing of the rights of other members. The tolerance is approved as life style of the western society, where the person has real rights and freedoms. Traditional society is proclaimed as fundamentalist society, where the individual cannot have culture and freedom.

Keywords: spiritual sphere, faiths, polyconfessional society, interfaith relations, consciousness, tolerance, cross-cultural dialogue, traditional religious, registration of the religion units, freedom of speech.

Introduction. The impact of globalization processes is felt by Kazakhstanis in all spheres of the society: the national economy adapts to the requirements of the global market and its main players, political reforms are carried out with the influence of international democratic institutions and organizations; the reforms in the higher education system are aimed to entry into the world educational space, etc. Religious problems acquire a special meaning in connection with the claims of Islamic fundamentalists, in order to establish new totalitarian political regime of religious nature. In the early of 21-st century a terrorist war is directed not only against Western civilization, but almost against all the Muslims.

Religion has the different spiritual and moral ideals and cultural traditions in the Republic of Kazakhstan. The power of religious ethics is actively used to form the moral and spiritual world of the young generation. Islam and Orthodoxy are one of the main cultural components in the life of the Kazakh and Russian people; moreover Kurban-Ait and Christmas are the official holidays in our country. Each religion, each language, each nation and ethnos have the universal values, establish the norms of the behavior in the society, spiritual values of the people.

There are 3 World religions: Islam, Christianity and Buddhism in the Republic of Kazakhstan, that's why our country calls the "crossroads of civilizations". Representatives of different people and ethnic groups have lived and worked together friendly for many years. There were strong cultural and economic ties, which contributed to mutual relations and prosperity. Therefore, the introduction of young people to the cultural heritage of religious experience will contribute to the expansion of their worldview and cultural education.

Indeed, Kazakhstan is the country of religious pluralism. In the structure of its confessional space the main part belongs to the associations of Muslims and Orthodox Christians. Among the population of the

republic we see the prestige of the religious organizations, new religious formations have appeared. Today our officials and society began to pay more and more attention to genuine spirituality, religious consciousness and religious culture.

Different religious confessions in Kazakhstan in the conditions of globalization represent the cultural identity of the country. But, in the secular state, the population of Kazakhstan has never been fanatic, but tolerance to other religion groups.

The state stimulates the development of dialogue between the different nations, nationalities, ethnoses groups, religion associations. The Republic of Kazakhstan has a rich, historically invaluable experience of peaceful coexistence of the different religions, cultures and civilizations, which contributed to the formation of similar value orientations of the majority of the country's population, the creation of a tolerant atmosphere of inter-religious harmony and mutual respect.

The reason, why we research the influence of religion on the formation of tolerated consciousness and social consensus to reveal sense and value of current sociocultural and spiritual processes in modern Kazakhstan's society, and also to define the influence of religion into the consciousness of youth of the country and to provide stable development of our state.

The aim of the paper is to apply and adapt the measures of the state, current laws, national legislation and also views of the leading scholars-specialists in the field of religion, theological scientific institutions, the monographs, devoted to the analysis of the spiritual processes and conditions of the tolerant relations in the Kazakhstan's society.

Literature Review. This subject is quite important, to our mind, because the ethnic and religious conflicts in the world, Kazakhstan's unique experience in the interfaith and interreligious dialogue has the significance in the global level. The beginning of identity is laid in the sphere of spirituality, its priorities and religious culture. At the same time the religious identification is often a component of the cultural identification.

According to the norms of International Law, the members of the United Nations Organization (UNO) are obliged to develop and promote the respect for human rights and fundamental freedoms for all the citizens, without any discrimination on race, sex, language, nationality, religion or health status, and to combat manifestations of intolerance (http://www.un.org/ru/documents/decl_conv/declarations/toleranc.shtml, accessed 27.07.2019) [1]. But at the same time, we must to understand the importance of the issue of the national security and sovereignty of the country.

On June 30, 2002, the Declaration on Tolerance and Non-Discrimination was adopted at the OSCE conference in Astana (<http://www.osce.org/ru/cio/68973>, accessed 27.07.2019) [2]. This Conference became the confirmation of Kazakhstan's commitment to the development of dialogue of civilizations and mutual understanding between the people and religions. These rights are fixed in the national laws. For instance, Article 1 of the Constitution of the Republic of Kazakhstan has determined: "Kazakhstan is a democratic, secular, legal and social state, the highest values of which is the person, his life, rights and freedom [3]. The State Program on Combating Terrorism and Extremism of the Republic of Kazakhstan "confirms the right of every person to the freedom of conscience, guarantees of the equality of everyone, in spite of his religious belief, recognizes the historical role of Islam and Orthodox Christianity in the development of the culture and spiritual life of the people, respects other religions, combined with the spiritual heritage of the people of Kazakhstan, recognizes the importance of inter-religious harmony, religious tolerance and respect for religious beliefs of citizens" http://www.tengrinews.kz/kazakhstan_news/gosprogramma-po-borbe-s-terrorizmom-i-ekstremizmom-utverjdjena-v-kazakhstane-242752/, accessed 27.07.2019).

Today the religious situation in the Central Asian region is quite different. Favorable soil for such currents is inexperience in religious dogmas, the lack of a clear position of life, as well as the credulity of Kazakhstan. Under the guidance of Islam, some people spread the extremist ideas: they organized groups, called for the struggle for "Islamic order", established the close contacts with other extremist groups. Religious intolerance represents the significant damage to the spiritual security of any society, the traditional religions of the state, including Islam.

We can not forget the peculiarities of the terrorism, especially in Internet era. The history of terrorist groups in cyberspace began not long ago, approximately in the beginning of 2000. Now it is a very dynamic phenomenon in the world. Websites with an extremist and terrorist context suddenly appear and often change their format, then disappear again. In many cases, it is the threat to the security of each country.

Internet now is an ideal field for the activities of the terrorist organizations. The small influence of censorship and other forms of state control, rapid movement of information, multimedia component, and the global network in the “capable hands” becomes a strong weapon of the destruction of mass consciousness.

According to the report of Prosecutor’s office, the main source of information and channels of the dissemination of the idea of religious extremism is the Internet. As a result of the audit, the activities of more than 150 Internet resources, providing information, promoted extremism and terrorism.

As the famous experts, specialists in the religion noted, extremism and terrorism in Kazakhstan have not ideological and criminal basis. The pseudo-religious rhetoric sometimes hides under the criminal activity. The Leader of the Nation N.A. Nazarbayev gave the task “to strictly suppress the activities of non-traditional sects and pseudo-religious movements”, to strengthen the prevention of religious extremism in the society, especially among young people, to use the advantages, offered by the Congress of Leaders of World and Traditional Religions, and on the basis of this dialogue platform to create a new platform for resolving the conflicts on religious grounds [4].

The main objective of the State Program on Combating Terrorism and Extremism of the Republic of Kazakhstan is to ensure the security of the individual, society and the state by preventing manifestations of the religious extremism and threats of the terrorism.

Taking into account the fact that religious consciousness often acquires the ethnic coloring, it is very important to use the authority of the leaders of different national diasporas, national and cultural associations in countering spread ideas of the religious radicalism. The leaders of the denominations and national Diasporas of the country can stop the confrontation and ethnic conflicts.

Today, the main influence of interreligious dialogue on interethnic relations, their humanization can go through the educational impact on the population. Such dialogue affects the consciousness of the people of different nationalities and faiths in the spirit of tolerance, non-violence and a culture of peace. Internationalism and ethno-tolerance, development and implementation of the concepts of education contribute to the consolidation of the society.

The unprecedented pressure of the cultural globalism reduces the opportunities for global culture as a dialogue and contributes to the growing resistance of the “periphery” to the “center”, which generates clashes and conflicts of the cultures. In the modern conditions the global culture becomes a source of instability, the fault lines of civilizations and religious values turn into sharp forms of quasi-religious fanaticism, when the person doesn’t understand the responsibility for his actions, the values and norms of traditional religion.

Kazakhstan’s policy of spirituality and tolerance seeks to initiate new, urgent priorities in the humanitarian, moral direction. One of the main prerequisites that our state adheres in its foreign policy sounds in a special way: in order to continue its history, humanity needs to learn to coordinate not only its local, but also global activities with its own capabilities [5].

Kazakhstan has managed to turn the vulnerability factor of the multi-ethnic society into a source of social and cultural wealth, dynamic development of inter-ethnic relations [6]. Religion in Kazakhstan does not act as a competing identity, opposing ethnic or political communities, but as a complementary element of the spiritual culture of Kazakhstan, gives the society the unique diversity, and at the same time the unique identity.

Methods. The methodology of this article is based on the dialectic method, exempted from materialistic or idealistic monism on the basis of pluralistic, interdependence of all sociocultural and spiritual processes in post-totalitarian and atheistic society. A method of the sociocultural analysis of the problems of confessional, ethno cultural features of the Kazakhstan society and its identity, features as successor of the Kazakh national culture, the general and special in the formation and development of the country in the modern conditions, dialectic interdependence and interaction of methods: theoretical and empirical, historical and logical, induction and deductions, etc.

Discussion. The study of the role and importance of religion among young people has not lost its relevance, and has recently intensified in the light of security threats from extremist organizations and destructive currents, both in the world and in the country, as well. Young people, who, according to the psychology of age, have not yet formed a civil position, are not able to critically comprehend the information. This is a niche for the propaganda work of destructive religious movements.

Today, the religiosity of young people is determined by many different factors, including the influence of secular culture, which is the main source of information [7].

Today our society is faced with a trend, where radical forces are gaining in their ranks healthy and strong youth, which is recognized as the “future nation”, “the main driving force of the state”. And if these young people with weapons in their hands will promote the radical extremist ideas, religious and ethnic advantage, intolerance to represent of other religions and confessions, the question of ensuring peace and harmony in our state is already becoming urgent [8].

The main task of the state and society is to prevent the religious extremism and terrorism in all its manifestations and promote among the young people the ideas of national and cultural unity, inter-religious and inter-ethnic tolerance and mutual respect, spiritual values. An important role is given to the identification of the causes of radical orientation in the minds of a separate part of the modern Kazakh youth.

In our opinion, the young people, who are inclined to maximalism and absolutism by their age, have no enough knowledge in the religion’s question, and as a result, quite easily fall under the influence of dangerous ideas of the visiting missionaries from the foreign countries.

It is quite important to understand that in the history of many countries and different religions, social and spiritual progress of the society is possible only through the innovation and new knowledge. Conservation, return to the past, stagnation and degradation are directed to the historical defeat of the nation.

Among the factors of the spread of extremist ideas, as well as the basis for supporting extremist activities among the young people, the following factors were fixed in the Law of the Republic of Kazakhstan “On Religious Activity and Religious Associations”:

- lack of adequate support for the institution of the family, as well as clear and effective youth policy of the state;
- religious illiteracy;
- increasing ethnic diversity and cultural differences among the population, mobility of the population and young people;
- lack of education, which does not lead to sufficient awareness of other ethnic groups and cultures;
- the influence of the mass media on the spread of extremist ideas, propaganda of xenophobia;
- changing of the system of values and ideals, associated with the policies of modern states (<http://online.zakon.kz/Document/accessed 27.07.2019>).

The basis of the worldview, the attitude of the emerging person to reality are laid in the childhood, adolescence and youth. Powerful educational effect for the Kazakh youth traditionally and indisputably had instructions, the line of behavior and wisdom of the representatives of the senior generation - grandfathers, grandmothers, fathers and mothers. Therefore, we must strongly support the institutions of family education [7].

Of course, the educational process in the educational sphere: in general, secondary special and higher educational institutions is quite important. In our country, secondary education is compulsory; higher education is mostly supported by the state. At the same time, the educational system is based on the secular principles and aimed to the formation of the comprehensively and harmoniously developed model of the society. Nowadays, the role and importance of the religion in the life of the modern society is significantly increasing. That means the improvement of the social, individual life and mental health. Recognizing the religious faith as the psychological phenomenon inherent from birth, many domestic and foreign scientists explain by the reality and value of the religious life of the person, the individual change and improvement of the society [8].

“Some young people in Russian Federation blindly accept the strange view of life, as the part of our society, which has weak immunity to the pseudo-religious influence. Our Constitution guarantees the

freedom of religion. However, as well known, there is no boundless freedom, it means chaos. Everything should be within the framework of the Constitution and Laws” [6]. Modern religious identifications of young people is the complex of identity of the design methods. Especially since the second half of the twentieth century and the beginning of the twenty-first century, when young people were surrounded by a variety of information and proposals, in the conditions of the systemic crisis in the socio-cultural sphere, both in the world and in their own country. In other words, “religious identity is the category of religious consciousness, the content of which is the awareness of the involvement of the ideas and values of the culture, religion and the religious groups”[7].

The study of the religiosity of young people is necessary in our days, because the young people have the “holographic” reflection of all the contradictions and opportunities of socio-historical and cultural dynamics of the society within the social reality (homeland, country, socio-cultural community). In this sense, youth is a kind of phenotypic code of the evolution of the society. Usually almost the young people choose the trajectory of the historical movement of the society.

Spiritual attacks of the radicals were directed against Islam. Their result is the altered consciousness of hundreds of young citizens of the country. The process of Islamization of the Kazakhs developed through the significant impact of the adherents of Sufi ideas and values, because they did not reject Kazakh customs, showed loyalty to them, supported by ancient institutions. Kazakh folk traditions and customs corresponded to Sharia, but were not accepted by Wahhabism. Wahhabis deny the baht (wish for wealth), commemoration (seven days, forty days, an anniversary, etc.), visits to the graves, the reading of the Quran before the dead, refuse the custom of “Salem take”. Also they deny the greeting of aksakals (elders) by standing up and giving both hands; they reject any music, dances, art, tumars (amulets) and alternative medicine. “Wahhabis want to build their ideology on the ruins of our spirituality. Moreover, they criticize Sufism and our traditions as not corresponding to Sharia” [8].

Many experts are inclined to see the reasons for the active spread of radical ideology in the weakness and inefficiency of the system of religious education in Russia and Kazakhstan. We would like to stress, that counteract extremist ideology in our multicultural country, non-confessional forms of world outlook, and traditions of folk culture and humanism were not used enough, unfortunately.

In modern Kazakhstan, for various reasons, the general line of ideological opposition to the religious extremism, including preventive work, aimed the creation of the consciousness, does not accept the ideas of extremism and terrorism, is carried out within the framework of religious and theological discourse, based on “enlightened clergy”. However, in our opinion, both religious and secular values should be used in the fight against the religious extremism”(<http://religiya.kostanaygov.kz/stati-i-publikatsii/>, accessed: 27.07.2019).

In the sphere of humanitarian education of the Republic of Kazakhstan, the task of forming free thinking has been replaced by: 1) the task of forming the culture of tolerance; 2) religious education.

1) World tolerance is an indispensable attribute of the culture of the civil society. However, the principle of the tolerance should not be absolute in the multicultural society. There is the foundation of morality, which should be given preference over both this pluralistic and ideological thesis and religiously founded the moral postulates. Accepting the dogmas of the religious faith, as well as affirming in an atheistic worldview, the person does not disclaim the responsibility for his actions, cannot shift the burden of guilt from himself to the values and norms of dogmas. Using the distinction, introduced by M. Weber, it should be emphasized, that the “ethics of belief” must be corrected without fail by the “ethics of responsibility”.

2) Religious education in the modern Kazakhstani conditions is becoming the necessary part of the system of humanitarian education, the formation of the desire and ability of free-thinking in young people. Religious education puts the barrier to the religious fanaticism, actualizing the humanistic potential of religious ideology, including the most important commandments of Islam and Christianity.

Questioning the legitimacy and effectiveness of the religious enlightenment as the way to consolidate Kazakhstani society and to combat the religious extremism and radicalism, it is necessary, to be aware the most destructive in the relation of the personal development and the tasks of social integration, to prohibit the extremist religious movements, such as Wahhabis. Now we see the dialogue between the denominations as the result of the escalation of intolerance, ideological and social disengagement. Religious and

ethnic affiliations are often identified in mass consciousness, this situation carries out the serious threat to the formation of new Kazakhstani identity (<http://www.liter.kz/index>, accessed: 27.07.2019). The danger of erosion of the spiritual and ontological foundations of the culture, mean the real threat to the national security of the country.

In order to increase the effectiveness of the measures of the consolidation of Kazakhstan's society and prevention the religious extremism in the Republic of Kazakhstan, it is necessary to shift the focus from opposing the normative value complex of the so-called "traditional religions" to fundamentalist, radical and "non-traditional" religious views clarification of the principles, spiritual and moral values of free-thinking; the development of the culture of tolerance between the confessional dialogue; to foster the culture of the critical-reflective thinking; the ideological, political and educational work with the population.

The civil, national-state and cultural-civilizational identity and the corresponding of the social and political practice in the modern world can be based not on the religious, ideological or ethnic monolith of the society, mobile synthesis and redefinition of diverse the cultural principles, the ability to the critical reflection, readiness for ideological dialogue, the creative perception of cultural "otherness".

This strategy of forming the field of intercultural interactions as the main direction of the policy of strengthening national consensus should be based not only on the formal freedom and arbitrariness of choice from equally possible alternatives, but on irrelevant criteria and absolute principles of choosing moral and decisions. These criteria should be formed not in the sphere of transcendental-theistic dogmas and particular norms of the confessional dogma, but in the sphere of universal moral imperatives.

Programs, concepts, strategy for the further consolidation of Kazakhstan's society should be based on the nationwide ideology of new Kazakhstani identity and patriotism, its concentrated expression: the national idea of "Mangilik El". The secular state and high spirituality, the dialogue of the religions and civilizations, the key positions of the national idea "Mangilik El" are quite necessary components of the ideology and unity of the civil and spiritual values becomes the social resource for countering the religious extremism in multicultural Kazakhstan's society.

Kazakhstan has chosen the path of the tolerant state, where the equality of the people, world religions, and religious associations were ensured. During the past 28 years, since independence, our independent state has demonstrated to the whole world the example of the modern, enlightened and tolerant state. In the Republic of Kazakhstan anyone can see the peace and harmony live of the representatives of all faiths.

We would like to remind, that at the same time, Islam plays an important role in Kazakhstan's society, because more than 70% of the populations of the country are Muslims, belonging to the different ethnic groups. Ethnic relations and the inter-ethnic peace and harmony have spread in the society. Today many countries around the world recognize new challenges and threats, the policy of tolerance and non-discrimination as the key aspect of successful development. Tolerance, mutual understanding and mutual respect, the search for the compromises, peace and harmony are the basic ideas, established as ideological ideals and the norms of daily life in Kazakhstani society. Adherence to these common human values allows carrying out the realistic course towards the gradual and consistent liberal reforms of the economy, democratization of the society (<http://strategy2050.kz/ru/news/39402>, accessed: 27.07.2019). Actually, talking about the dialogue of the religions, faiths and cultures, it is also necessary to emphasize the need to achieve mutual respect, understanding, harmony and unity. The process of transformation of public consciousness continues new potentials of creative, social activity of Kazakhstanis, focused on the creation of the civil society and a democratic law-abiding state, with the priorities of spirituality, morality, humanity, was revealed. In our country the secular state has really developed, there are no privileges to any of the traditional denominations. Also the culture and morality are always closely correlated with the religion.

According to the researchers, in the conditions of the spiritual crisis, experienced by the modern civilization, we see the growing interest in the religion sphere and increased attention to the philosophical interpretations of the religion among intellectuals, intelligentsia, which directed the problem of postmodern attitudes towards the religion in the modern Kazakhstani society. Indeed, at the present time, tolerance is the most urgent problem of both global and national scale [7]. On the global scale, tolerance is

the pursuit of universal human values, the willingness of the person to seek the achievement of consent by non-violent methods and ways. In accordance with the experts, the state of mass religious consciousness is rather unstable, contradictory and vague: there is an intolerant attitude towards manifestations of “otherness”. The facts of manipulation of the consciousness and behavior of young people by various religious organizations are clear. The number of young Kazakhstanis falling down under the influence of the religious organizations of various denominations. The main things are: unemployment, poverty, health diseases, etc.

Due to the susceptibility of young people to new ideas, their maximalism and categorical on the one hand, and the ideological, spiritual immaturity of insufficient stability on the other hand, they are the main object of propaganda, recruitment of radical religious movements, including destructive religious sects of Islam. The existing problems of religious extremism are closely related to fundamentalism and terrorism. So, fundamentalism means the return to the original pure religion. Terrorism is politically motivated violence against the civilians. Any religious extremism, regardless of the confessional affiliation, has socially disadvantaged fanatics. In our opinion, the religious extremism is the consequence of the collision of ideological values, resulting from the politicization of the religion, which is expressed in violence and other anti-human acts. All this can contribute to the outflow from the secular principles, which create the basis for the ideological values of the state.

It should be noted that at the beginning of the XXI century in the world happened many conflicts between the confessions. Confrontations, conflicts were based on real socio-economic and political factors, public speech, articles and books of the religious figures, politicians. At the same time, a long historical process of the development and interaction of main world civilizations, the spiritual and cultural traditions of many people formed a stable practice of the existence of multi-religious society.

Today many countries became the pluralistic societies; some part of young people refused from the religious values. This phenomenon has been researched by the religious studies during the objective analysis of the conceptual socio-political ideas of modern Islam. The manifestations of religious extremism will increase, primarily from non-traditional cults of Western origin and Eastern preachers under the slogan of Islam. According to some leaders of Islam and Orthodoxy, new confessions in our region can destroy not only interfaith harmony in Kazakhstan, but also erode the cultural identity of Kazakhstanis. In their opinion, modern international standards, including the freedom of conscience, are Western and liberal standards, and therefore are not always applicable to our society. But the majority of Kazakhstani people react to the activities of new confessions for the region.

If you look from the point of view of geography, the most religious regions are the Southern and Western regions of Kazakhstan, although Kazakhstan has traditionally strong position of Protestantism. Despite the massive departure of the German population from the country: Baptist, Lutheran, Adventist organizations, Protestant associations occupy a certain place among the confessions, distributed on the territory of Kazakhstan. Over the years, since independence, there have many different missions and communities, religious organizations of Methodism and neo-Protestantism, such communities and cults, as the Baha’i Faith, Scientology, the Church of Unification, Krishna consciousness, the Church of the Last Testament, the Church of Jesus Christ (Mormons), etc.

Ideological competition between the representatives of various Islamic movements calls for the return to the “purity of the original Islam”, to the model of the way of life of the prophet Muhammad, to the “truth”, “validity” of an Islamic model”.

The formation of public opinion in religious issues belongs not to the religious institutions, but to the private individuals- spiritual authorities. In combination with the inconsistency of the main sources of Islamic doctrine and law: Koran and Sunnah - this predetermined the difference in Islamic society, governed by the General Islamic “principles” or “norms”. The latter acted at the level of dogmatic theology and social practice. Different ideological standards and religious structures are joined by the unquered religious system - Islam.

Results. Results of this article demonstrate the spiritual development of polyconfessional society, stability. The problem of religious tolerance now is among the most relevant and actively discussed issues. The religious tolerance should be considered as the complex phenomenon of public consciousness in world outlook and social mental sets combine and allow legitimacy of multiple religious traditions. The

religious tolerance should be perceived as well as specific actions at all levels. The religious tolerance can be understood as the value and social norm of the civil society, protection of the rights of all individuals, and confessional identity, inter confessional tolerant relations. Mechanisms of formation of the religious tolerance are connected with all system of the public relations, realization of constitutional democratic rights and freedoms, level of spiritual culture of the personality and society. The problem of religious tolerance was actual in the great empires. For example, in Ancient times the territory of Kazakhstan, since the state of Karakhanids, was considered the periphery of the Muslim world. Islam has appeared in order to originate a Patriarchal Arab society, the religious system with a single source - Koran. With the social and spiritual development of the Arab tribes and their contact with well-educated people, was necessary to enrich this religious system in order to fulfill the demands of the time.

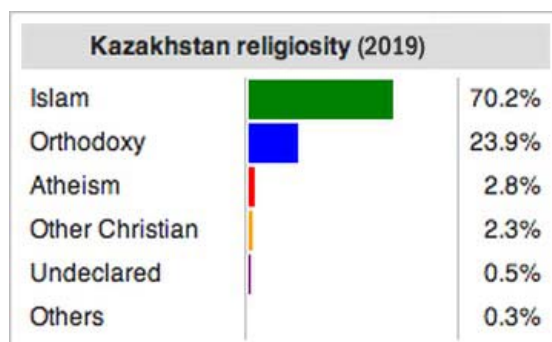
Conclusion. Traditions of religious tolerance found the special expression in its manifestations at all stages of the development of public philosophical thought of Kazakhstan. The religious tolerance became a decisive factor of providing the world, stability and economic progress in Kazakhstan today. For Kazakhstan citizens the principle of tolerance is not only standard of the political culture, but also one of the key principles of the state, which decisively supports and strengthens it.

Below there are the specific features of the Population of the Republic of Kazakhstan due to the different nationalities, in accordance with the statistic data base (table 1) and basic parameters of Kazakhstan religiosity (table 2).

Table 1 – Population of Kazakhstan according to ethnic group in 2019

Ethnic group	Islam	Christianity	Judaism	Buddhism	Other	Atheism	NA
Total	70.20%	26.32%	0.03%	0.09%	0.02%	2.82%	0.51%
Kazakhs	98.22%	0.39%	0.02%	0.01%	0.12%	0.98%	0.26%
Russians	0.43%	92.64%	0.04%	0.02%	0.03%	6.09%	0.75%
Uzbeks	99.05%	0.39%	0.01%	0.01%	0.02%	0.37%	0.16%
Ukrainians	0.94%	90.74%	0.03%	0.01%	0.02%	7.31%	0.94%
Uyghurs	98.35%	0.51%	0.02%	0.01%	0.03%	0.61%	0.47%
Tatars	79.57%	10.24%	0.02%	0.03%	0.06%	8.11%	1.97%
Germans	1.58%	81.59%	0.05%	0.04%	0.11%	13.96%	2.68%
Koreans	5.24%	49.35%	0.21%	11.40%	0.14%	28.51%	5.16%
Turks	99.13%	0.30%	0.01%	0.01%	0.02%	0.33%	0.21%
Azerbaijanis	94.81%	2.51%	0.02%	0.02%	0.03%	1.86%	0.76%
Belarusians	0.79%	90.16%	0.04%	0.01%	0.03%	7.82%	1.15%
Dungans	98.93%	0.37%	0.01%	0.03%	0.04%	0.34%	0.28%
Kurds	98.28%	0.53%	0.03%	0.02%	0.02%	0.74%	0.38%
Tajiks	97.78%	0.91%	0.01%	0.02%	0.08%	0.85%	0.35%
Poles	0.69%	90.07%	0.04%	0.01%	0.13%	7.30%	1.76%
Chechens	93.69%	2.99%	0.02%	0.01%	0.05%	2.08%	1.16%
Kirghiz	96.67%	0.89%	0.03%	0.03%	0.02%	1.51%	0.86%
Others	34.69%	52.32%	0.82%	0.91%	0.13%	8.44%	2.69%
http://www.stat.kz/p_perepis/Documents/							

Table 2 – Kazakhstan religiosity



“Central Asia: KAZAKHSTAN”. CIA The World Factbook.

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ДІННІҢ ТОЛЕРАНТТЫҚ САНА МЕН ҚОҒАМДЫҚ КЕЛІСІМ ҚАЛЫПТАСТЫРУҒА ТИГІЗЕТІН ӘСЕРЛЕРІ

Аннотация. Толеранттылық проблемасы оның табиғатын талдауды талап етеді. Зерттеушілер толеранттылық идеясын пайда болуы және дамуын ағарту жаңа Еуропалық идеялар аясында саяси философияның либералды кезеңімен сәйкес өзгеріске байланыстырып отыр. Толеранттылық идеясы негізінде, ол үш жүз жыл бұрын еркіндік беру мақсатында діндердің либералдылығын жариялаған. Оны үш негізгі даму кезеңіне бөледі. Бірінші кезең рационалистік пен байланысты Дж. Локк еңбектерінде көрсетілген. Оның негізінде сенім мен көзқарастарды сана ретінде дінге еріктілікке толеранттылық жөнінде түсінік берілген. Дінге еріктілік Дж. Локк бойынша ұтымды билеуге қажеттігі бар. Екінші кезең теориясы С. Милль толеранттықтың либералды проблематикасы дамуымен байланысты. Ол тек басқа бір адамның бостандығын жариялап, ол бас бостандығының идеясын, тұлғаның шектелуі мүмкіндігін қарастырған. Әділдік пен теңдікті қоғамның негізі ретінде қарастыра отырып ғалымдар шартқа қол жеткізу үшін қажет болған проблемалар туралы айтып отырады. Әділдік үшін басқа мүшелерінің құқығын қамтамасыз ету шарттарының бірі болып табылады, алайда өз сенімдеріне төзімділік керек. Батыс мәдениетінде төзімділік адам негізгі қасиет ретінде бекітеді, онда қоғамдағы адам баулық бостандыққа ие. Дәстүрлі қоғам мәдениеті де жеке адам бостандығын жариялап жатыр, онда фундаментализмнің жариялануы мүмкін емес.

Түйін сөздер: руханилық, конфессиялар, поликонфессиональдықоғам, конфессия аралыққатынас, сана, толеранттылық, мәдениетаралық, дәстүрлідіндер, дінибірлестіктердітіркеу, ар-ожданбостандығы.

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О ВЛИЯНИИ РЕЛИГИИ НА ФОРМИРОВАНИЕ ТОЛЕРАНТНОГО СОЗНАНИЯ И ОБЩЕСТВЕННОГО СОГЛАСИЯ

Аннотация. Проблема толерантности требует анализа природы толерантности. Исследователи связывают появление идеи толерантности с периодом Реформации и идеями Просвещения новоевропейской либеральной политической философии. Идея толерантности, которой уже триста лет, возникла в целях освобождения религий, провозглашенная либеральной традицией. В ней выделяют три основных периода развития. Первый период связан с рационалистическим учением Дж. Локка. В основе его взглядов на отно-

шении веры и разума есть понимание толерантности как веротерпимости. Веротерпимость есть по Локку рациональная необходимость в правлении. Второй период связан развитием проблематики толерантности в либеральной теории С. Милля. Он провозглашает идею свободы индивида, которая может быть ограничена только свободой другого человека. Рассматривая проблемы справедливости, равенства как основы общества ученые говорят о необходимости договора ради достижения их. Толерантность является одним из условий справедливости, однако человек должен жертвовать собственными убеждениями ради права других членов. Толерантность утверждается как черта западного общества, где человек обладает истинной свободой. Традиционное общество провозглашается фундаментализмом, где индивид не может обладать культурой и свободой.

Ключевые слова: духовная сфера, конфессии, поликонфессиональное общество, межконфессиональные отношения, сознание, толерантность, межкультурный диалог, традиционные религии, регистрация религиозных объединений, свобода совести.

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REFERENCES

- [1] UN Declaration of Principles on Tolerance [Electronic Resource]: http://www.un.org/en/documents/decl_conv/declarations/toleranc.shtml
Astana Declaration on Tolerance and Non-Discrimination <http://www.osce.org/ru/cio/68973> (in Russian).
- [2] Constitution of the Republic of Kazakhstan. 2007. P. 4 (in Russ.).
- [3] The State Program on Combating Terrorism and Extremism is approved in Kazakhstan [Electronic resource]: http://www.tengrinews.kz/kazakhstan_news/gosprogramma-po-borbe-s-terrorizmom-i-ekstremizmom-utverjdjena-v-kazahstane-242752/ (in Russ.).
- [4] N. A. Nazarbayev is the founder of the Kazakhstan model of interethnic and interconfessional consent / Sost.: A. N. Nisanbaev, A. G. Kosichenko. Almaty, 2010. 266 p. (in Russ.).
- [5] Burova E. Trends in new religiosity in Kazakhstan (the experience of the socio-humanitarian dimension): A monograph. Almaty: Institute of Philosophy, Political Science and Religion, KN MUN RK, 2014. 200 p. (in Russ.).
- [6] Shaukenova Z.K., Dunaev V.Yu. Ideological construction in the Republic of Kazakhstan: milestones of evolution and development path in the context of the strategy "Kazakhstan-2050": A monograph. Almaty: Institute of Philosophy, Political Science and Religious Studies, Ministry of Education and Science of the Republic of Kazakhstan, 2013. 438 p. (in Russ.).
- [7] Ayupova Z.K., Kussainov D.U., Bekbergenova A.K., Winston Nagan. Major Ideas and Main Values of the Universal UN Declaration on Human Rights: the 70-years Experience // Bulletin of the Academy of sciences of the Republic of Kazakhstan. 2019. Vol. 1. P. 68-74. <https://doi.org/10.32014/2019.2518-1467.8> (in Eng.).
- [8] Rasskazov L.P. Anglo-Saxon legal family: genesis, main features and main sources // Poly thematic net electronic scientific journal of Kuban State Agrarian University. 2015. Vol. 105(01). P. 17-25. <https://doi.org/10.32014/2018.2518-1467.35> (in Russ.).

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FINANCIAL AND LEGAL ASPECTS OF THE ORGANIZATION OF THE AGRICULTURALLY USED AREAS MARKET

Abstract. The article deals with the mechanism of functioning of the market of agriculturally used areas in Ukraine. The economic conditions of the formation of the land market that have developed in Ukraine determine the priority directions of economic contradictions in the formation of the land market. In addition, the article focuses on the regulatory and legal regulation of the agricultural land regime for the conducting farm-market agriculture, the farm and private farming, the analysis of changes envisaged by the Law of Ukraine “On Amendments to Certain Legislative Acts of Ukraine regarding the Solution of the Issue of Collective Land Ownership, Improvement of Land Tenure Rules of Agriculturally Used Areas, Prevention of Raiding and Stimulating the Irrigation in Ukraine” dated July 10, 2018, No. 2498-VIII.

Key words: ownership, agriculturally used areas, landed servitude, land use, land lease agreement.

Articulation of issue. The current state of development of the Ukrainian agrarian sector is characterized by the reduction of agriculturally used areas, crop areas, which leads to a decrease in crop yield and gross production, worsening of the food situation in the country due to the world trends in the market situation of farm production.

In modern conditions, the agricultural sector of the country is experiencing a severe shortage of working capital, which makes it impossible to implement the process of expanded reproduction in production. The inaccessibility of long-term credit resources is due to the insufficiency of mortgaged property, which causes the use of short-term loans that are characterized by high rates. Given the situation prevailing in the market of credit resources and in order to create access to long-term credit resources, it is necessary to consider land as a source of mortgage property. However, there are a number of problems related to the state and development of the land market in Ukraine, which need to be solved in order to achieve the optimal balance of land use and volume of credit resources to ensure the production process in agriculture.

Land has always been one of the ways to invest in profit making. The land of Ukraine, taking into account the value of black earth, is one of the most attractive objects for investing. That is why the land of Ukraine is the main national wealth that is under the special protection of the state [1, art. 1].

In accordance with Articles 18–20 of the Land Code of Ukraine, each land plot, regardless of the form of ownership or use, has a specific purpose, according to which the land plot is an object of civil rights [1, art. 79]. Currently, the problem of establishing an effective legal mechanism for the usage of agriculturally used areas to prevent raiding and stimulating irrigation, as well as solving the problem of using lands of collective land ownership, is also acute.

The problem of the land resources priority usage was a part of scientific researches of a great number of scientists – agrarians. Highly appreciating their efforts and contribution to the understanding the relationship between the problems of land development in the agrarian sector and the obtaining of long-term credit resources on the mortgage of land, it can be noted that the current outline of the agrarian sector in terms of land relations and financial and credit relations, as well as the presence of tangible gaps and

unsettled tasks require the implementation of scientific researches into the refinement problems of land relations of the agrarian sector and the search for effective practical measures for their solution.

Actual scientific researches analysis. The issue of legal regulation of agriculturally used areas has always been of scientific interest to scholars. Such scientists as L. O. Bondar, A. P. Hetman, V. H. Honcharenko, I. I. Karakash, T. O. Kovalenko, P. F. Kulynych, A. M. Miroshnychenko, O. O. Pohribnyi, V. I. Semchyk, N. I. Tytova and others devoted their scientific work to the studies of this problem.

The purpose of the article is to analyze the most important changes in the legal regime for using agriculturally used areas for commercial farming, farm and private farming, as well as to determine the state of the development of the land market of agriculturally used areas and to consider the main issues associated with the formation of the land market and its functioning under current conditions.

Statement of basic materials. One of the specific markets is the land market, which has many features that distinguish it from other markets. So far, the land market in Ukraine has been clearly differentiated depending on its usage. Because of the natural resource potential Ukraine is one of the wealthiest countries in the world.

Basis of formation of effectively functioning of agricultural production is improvement of the land relations and formation of system of land use, “adequate to the market economy”. Society is in great need in transition to essentially new type of economic growth: to the intensive growth of resource-saving type, based on careful use of natural resources, on achievement of ecological equilibrium. The dependant relation to the nature has put the habitat of activity on a degradation side. As a result we see the surrounding environment, which being a source of factors of production and means of life, loses the qualities of self-restoration, and the economy faces with unforeseen and often acute contradictions, unpredictable on the consequences, between the nature and society. [8]

The most valuable natural resource and the main component of the national wealth of any country is the land. About 27% of the world’s black earths are located in Ukraine. Ukraine occupies 5.7% of the territory of Europe, its agriculturally used areas – 18.9% and arable land accounts for 26.9% [2]. Unlike industrial means of production, prone to physical and moral depreciation, the correct use of land not only does not reduce its productive capacity, but also increases it, determining the market price of land in the presence of rental income and market demand. All land within the country regardless of the ownership forms is a nationwide wealth. The state must take care of the rational land distribution and effective land usage, since it is a non-reproducible and indispensable means of production. The main task of efficient land use is to preserve and increase the soil fertility, as well as to create conditions for the most complete usage of agriculturally used areas for seeding and increase of their crop productivity. The main means of improving the soil fertility are the best possible treatment, the application of mineral fertilizers, the correct selection of crops and varieties, as well as the order of their placement in crop rotation.

Recently, a number of changes have taken place in the sphere of regulation of relations concerning agriculturally used areas. Thus, the Law of Ukraine “On Amendments to Certain Legislative Acts of Ukraine regarding the Solution of the Issue of Collective Land Ownership, Improvement of Land Tenure Rules of Agriculturally Used Areas, Prevention of Raiding and Stimulating the Irrigation in Ukraine” dated July 10, 2018, No. 2498-VIII [3] introduced a number of amendments to the Land Code of Ukraine, the Law of Ukraine “On the Lease of Land” dated October 6, 1998, No. 161-XIV and other laws with the purpose of optimizing the use and disposal of agriculturally used areas. This act substantially changes the legal regime of leased lands, establishes the peculiarities of the use and disposal of land plots located in the territory of agriculturally used areas, as well as field-protective forest strips that restrict such a territory. The above-mentioned changes do not apply to all agriculturally used areas, but only to the land plots for commercial farming, farm enterprises and private peasant farming. It should be noted that the changes envisaged by the above-noted act, entered into force on January 1, 2019.

According to the Land Code of Ukraine Article 21 determines the agriculturally used areas as lands for farm production, the implementation of agricultural scientific and research and educational activities, the placement of the corresponding production infrastructure, including the infrastructure of the wholesale markets for agricultural products, or intended for these goals [1].

Land plots of agriculturally used areas intended for private peasant farming, farming, horticulture, gardening, haymaking and cattle grazing, commercial farming; located in the territory of agriculturally used areas, can be used by their owner or land user also for commercial farming without changing the purpose of such land plots [1, p. 3 art. 22].

After making legislative changes, the norm of the Land Code, namely, Article 37-1 “Features of the Use and Disposal of Land Plots Located in the Territory of Agriculturally Used Areas, as well as Field-Protective Forest Strips that Restrict such a Territory”, aimed at the optimization of the use of land plots and the formation of integral land masses is positive. Thus, Paragraph 2 of Article 37-1 defines the powers of the owner of land plots of all forms of ownership, located in the territory of agriculturally used areas, who may exchange such land plots.

Currently, almost the only income for many peasants – owners of land shares is receiving land rent from the assignment of them to rent at unreasonably low rates. The total amount of payments for the lease of land shares in 2016 actually amounted to 12.9 billion UAH, which is calculated on 1 hectare is 862 UAH [6, p. 7]. This is a very small income, even in Ukraine. While “in developed countries with an open land market, not only the cost of acquisition, but also the lease of land plots, which amounts to 250–700 dollars per hectare, is increasing” [6, p. 45]. As a rule, open-market countries are the most successful ones, they have higher GDP per capita and higher added value in the agricultural sector.

The exchange (swap) of a land plot of state or communal property located in the territory of agriculturally used areas, to another land plot located in the same territory, is carried out only if both land plots have the same regulatory monetary value or the difference between the regulatory monetary values is not more than 10 percent [1].

Moreover, such agreements are not subject to the prohibition (moratorium) on the alienation of land for commercial farming, as well as the in-kind allocated through the realization of the right to a land parcel (share) of land for the conduct of a private farm, provided for Paragraph 15 Section X «Transitional Provisions» of the Land Code of Ukraine [1].

Analyzing Article 37-1, attention is paid to Paragraph 3 which states that the owners and tenants of land plots of agriculturally used areas located in the territory of agriculturally used areas for the period of validity of the lease agreement can exchange their rights to use land plots by means of the mutual conclusion of lease agreements, sublease of the respective sections [1]. This rule essentially optimizes the process of land use within integral land areas.

Features of acquiring and realization of the right to lease land, located in the territory of agriculturally used areas, are determined in Article 8-2 of the Law of Ukraine “On the Lease of Land”. The first feature is the possibility to conclude a sublease agreement that does not require the consent of the landlord, while the tenant remains responsible to the landlord for the execution of the lease agreement. Moreover, the termination of one of the lease agreements, sublease of the land plot, concluded in the order of exchange of rights of use, terminates the operation of another lease contract, sublease, concluded in return, which is necessarily indicated in such contracts [7].

The next thing to note is that tenants of land plots are required to inform the landlord in writing about the exchange of their rights to use land plots within five days from the date of the state registration of the right of sublease. The written notification shall indicate the cadastral number of the land plot (if any), the term for which the sublease contract has been concluded, and the person to whom the land plot has been subleased. A written notification shall be sent to the landlord by a registered letter with return receipt or handed him personally against of acknowledgement of receipt.

It is also positive that the owner or user of a land plot whose land is transferred to a lease (sublease) to a person who has the right to use an essential part of the territory of agriculturally used areas, shall have the right to indemnify the property damage suffered by him as a result of such transferring completely [7].

The extent of property damage is determined by conducting an assessment in accordance with the legislation on land valuation and property valuation legislation, property rights and professional appraisal activities. The subject of evaluation activities is determined by the initiator of the exchange of the rights of use. The cost of the services of the subject of valuation is paid by the initiator of the exchange of the rights of land plots use. If the owner, the user of the land plot does not agree with the assessment of the amount of property damage carried out by a valuation subject designated by the initiator of the exchange of the rights of use, it may involve another entity of valuation activity for a new assessment or to review the report from the previous expert monetary evaluation of land plots. In this case, the cost of such services is born by their customer.

The analysis of amendments to some legislative acts of Ukraine regarding the solution of the issue of collective land ownership and land possession shows that Article 37-1 of the Land Code of Ukraine defines the right of the person who owns the right to use an essential part of the territory of agriculturally

used areas, to lease other agriculturally used areas, located in such a territory, and in the case if other land plots are leased, to receive them in sublease, subject to the transfer to their owner (tenant) of the use (lease, sublease) of another land plot located in the same territory for the same term and under the same conditions, if, because of the strip farming the nonuse of such lands impedes the rational usage of land plots that are used by that person. Such a person is a land-user who owns the right of use (lease, emphyteusis) of land plots located in the territory of agriculturally used areas, with a total area of not less than 75% of all lands of the territory [1].

In this case, the right to lease land is acquired in accordance with the procedure established in Article 8-2 of the Law of Ukraine “On the Lease of Land”. Thus, if another person proposes to conclude a lease agreement for the same land plot, the person (except for the person who has the preferential right to renew the lease agreement in accordance with Article 33 of the Law of Ukraine “On the Lease of Land”), who owns the right to use a substantial part of the territory of agriculturally used areas, has the preferential right to conclude a lease agreement on terms not worse than the conditions for the specified person. At the same time, in the presence of a proposal of a person who has a preferential right to renew the lease, the preferential right to conclude a lease agreement for the same land is not applicable.

In accordance with Paragraph 5 of Article 8-2 of the Law of Ukraine “On the Lease of Land” the right to lease (sublease) land plots acquired by a person who owns the right to use an essential part of the territory of agriculturally used areas with the transfer in exchange for the right to use another land plot, acquires and implements with the following features:

- the term of the lease (sublease) must not exceed the term of use of the land plot under an agreement to be concluded in return;

- the size of the rent (payment for sublease) must correspond to the rent (payment for sublease) under an agreement to be concluded in return;

- the tenant does not have a preferential right to purchase a leased land plot in case of sale;

- the tenant (sub-tenant) has no right to compensation by the other party to the contract of expenses for improvement of the leased land, for renewal of the lease contract (sublease) for a new term in case of objections of the other party to the contract;

- in case if the land to which the right to transfer is transferred in the absence of access from the edge of the territory of the agriculturally used areas, the person who owns the right to use a substantial part of the territory of agriculturally used areas, is obliged to provide the land-user the right to pass and drive to such a land plot on the terms of a free land easement;

- in case if a person who owns the right to use an essential part of the territory of agriculturally used areas leases (subleases) several land plots belonging to one person the land plots, the right of use of which are transferred in return, shall be connected by common borders.

It should be noted that when making conditions which are different from the above-mentioned in the lease (sublease) contract of a land plot, the right to which is transferred in exchange, is allowed only with the consent of the other party to the contract.

From January 1, 2019, in accordance with the analyzed amendments to certain legislative acts of Ukraine regarding the solution of the issue of collective land ownership and land use, a special procedure for leasing land owned by the state or communal property under the field roads is also introduced. Thus, land plots of the state or communal property under the field roads designed for the access to land plots located in the territory of agriculturally used areas (except for field roads limiting the territory) are leased without carrying out land auction to owners and/or users of land plots, adjacent to the land plots under such field roads. The term of lease of such land plots is 7 years [1, para. 5 art. 37-1].

At the same time, it should be noted that the lease of land plots of the state or communal property under the field roads designed for the access to the land plots is carried out provided the free access of all landowners and land-users to their land plots to use them for their intended function.

It should be paid attention to the fact that, in accordance with the legislative changes, land plots under the field roads, located in the territory of agriculturally used areas (except for the field roads that restrict the territory), can be used by the landowner (land-user) as a passage (driveway) to other land plots located in such a territory, and for the cultivation of agricultural products.

Moreover, in accordance with the legislative changes to the Land Code of Ukraine, from January 1, 2019, the term of use of land plots of the state, communal and private property for agricultural purposes (emphyteusis), as well as the term of use of the land of the public or communal property for building construction (superficies) cannot exceed 50 years (Art. 102).

Article 98 of the Land Code defines the content of the right of land servitude, the changes of which also occurred on January 1, 2019. Thus, the term of validity of the land servitude established by the agreement between the person who requires it and the land-user cannot be longer than the term for which such a land plot has been transferred for use to the land-user.

The Land Code of Ukraine (Art. 37-1) establishes the specifics of the use of land under the field-protective forest strips. Such plots, if they limit the territory of agriculturally used areas, are transferred to the permanent use of the state or municipal specialized enterprises or leased to the physical and legal persons with the obligatory inclusion to the lease of land the conditions for the maintenance and preservation of such strips and ensuring the fulfillment of their functions of agro-forestry land reclamation. A lease agreement for a land plot under the field-protective forest strips should also contain conditions for the maintenance and preservation of such strips and ensure that they perform the functions of agro-forestry land reclamation. The rules for the maintenance and conservation of the field-protective forest strips located on the agriculturally used areas should be approved by the Cabinet of Ministers of Ukraine.

The land market is an important segment of the market economy and ensures the implementation of relations between its parties. The land is considered in the economics as an operational or exhaustive resource. The special status of land in the country's economics and its properties determine a number of specific features of this market:

- the magnitude and nature of the demand and supply of land plots due to the political system of the society, geographical and historical factors, the state of infrastructure and the level of the development of the region as a whole, as well as the irrationality of its value;

- lands are differentiated by quality and positioning. Additional investments of labor and capital allow economically to improve fertility and to obtain a great return from the land, which is practically possible in all areas;

- limited supply of land resources is enhanced by private property relations. Under market conditions, landowners prefer not to sell their land plots, but to lease them for having a stable income. Therefore, even a small part of the land fund is offered for sale, which is not an adequate response to the growing demand;

- legal registration of transactions in the land market requires mandatory state registration and complicated, expensive legal registration. This requires the presence of the state in the processes of market regulation [5].

At the present stage it can be stated that the land relations formed in Ukraine do not encourage but impede the effective use of land-resource potential. Therefore, the land has always been, is and will remain a special object of social relations, which is characterized by spatial constraints, irreplaceability, constant location, etc. The value of land as a leading resource of human development in rural areas, where it is not only a spatial basis, but also a main means of production, cannot be overestimated [6].

Conclusions. The most important place in the development of land relations is the system-institutional transformations. Their main goal is to create an effective infrastructure of the land market – a set of systems, services, enterprises and organizations serving the market and providing a normal mode of operation. A prerequisite for a successful land reform is the formation of new economic institutions: the state and regional regulation, legal support, registration of rights and transactions, financial support, organizational development. The purposeful integrated land policy of the state will strengthen the market relations in Ukraine, the stability of economic development, and increase the competitiveness of the economy.

The analyzed legislative changes provided for in the Law of Ukraine “On Amendments to Certain Legislative Acts of Ukraine regarding the Solution of the Issue of Collective Land Ownership, Improvement of Land Tenure Rules of Agriculturally Used Areas, Prevention of Raiding and Stimulating the Irrigation in Ukraine” dated July 10, 2018, No. 2498-VIII and introduced after January 1, 2019, are one of the attempts to improve the legal regulation of the agricultural land regime for commercial farming, farm enterprise and private peasant farming. The proposed changes will help solve most of the existing land use issues in the agriculturally used areas and will help prevent violations of rights and protected by the law interests of landowners and land-users. It should also be noted that the trends observed in the agrarian sector of the country's economy indicate that, even after the possible lifting of the moratorium on the alienation of agricultural land, the lease of land will continue to remain the basis of agrarian land tenure in Ukraine for a long time. Therefore, these measures will be useful in the future market circulation of agricultural land.

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АУЫЛ ШАРУАШЫЛЫҒЫ МАҚСАТЫНДАҒЫ ЖЕР НАРЫҒЫН ҰЙЫМДАСТЫРУДЫҢ
ҚАРЖЫЛЫҚ-ҚҰҚЫҚТЫҚ АСПЕКТІЛЕРІ

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ФИНАНСОВО-ПРАВОВЫЕ АСПЕКТЫ ОРГАНИЗАЦИИ РЫНКА ЗЕМЕЛЬ
СЕЛЬСКОХОЗЯЙСТВЕННОГО НАЗНАЧЕНИЯ

Аннотация. В статье рассмотрен механизм функционирования рынка земель сельскохозяйственного назначения в Украине. Хозяйственные условия формирования рынка земли, которые сложились в Украине, определяют приоритетные направления экономических противоречий формирования рынка земли. Кроме того, в статье уделено внимание вопросам нормативно-правового регулирования режима земель сельскохозяйственного назначения для ведения товарного сельскохозяйственного производства, фермерского хозяйства и личного крестьянского хозяйства, анализа изменений, предусмотренных Законом Украины «О внесении изменений в некоторые законодательные акты Украины относительно решения вопроса коллективной собственности на землю, совершенствование правил землепользования в массивах земель сельскохозяйственного назначения, предотвращения рейдерства и стимулирования орошения в Украине» от 10 июля 2018 № 2498-VIII.

Ключевые слова: право собственности, земель сельскохозяйственного назначения, земельный сервитут, землепользования, договор аренды земельного участка.

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REFERENCES

[1] Landed Code of Ukraine. (2001, October 25). URL: <https://zakon.rada.gov.ua/laws/show/2768-14#n299> (accessed 25 May, 2019) (in Ukr.).

[2] Tytova N.I. (Ed.). (2005). Earth of the agricultural setting: rights for the citizens of Ukraine. Lviv: PAIS (in Ukr.).

[3] About making alteration to some legislative acts of Ukraine in relation to the decision of question of collective property on earth, improvement of rules of land-tenure in the arrays of earth of the agricultural setting, prevention of corporate raid and stimulation of irrigation in Ukraine: Law of Ukraine from July 10 2018, № 2498-VIII. URL: <https://zakon.rada.gov.ua/laws/show/2498-19> (accessed 25 May, 2019) (in Ukr.).

[4] Hmyria V.P., Vlasiuk S.A. (2013). Market of earth of the agricultural setting in Ukraine: the modern state and problems of development // *Economist*. 3, 34-35 (in Ukr.).

[5] Avramenko T.P. (2006). Resource potential of earth of the agricultural setting and his rational use // *Agrarian science and education*. 5-6, 125-128 (in Ukr.).

[6] Martyn A.H. (2011). Adjusting of market of earth is in Ukraine. Kyiv: Ahrar Media Hrup (in Ukr.).

[7] About the lease of earth: Law of Ukraine October 6 1998, № 161-XIV. URL: <https://zakon.rada.gov.ua/laws/show/161-14#n33>. (accessed 28 May 2019) (in Ukr.).

[8] Dazova A.M., Dyrka S. (2018) The innovative possibilities in the agro-industrial complex in terms of economic security // 2018. Vol. 6, N 376. P. 67-73. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print). <https://doi.org/10.32014/2018.2518-1467.21>

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**SOCIAL ADAPTATION OF JUVENILE PRISONERS
IN THE POST-PRISON PERIOD:
THEORY AND PRACTICE**

Abstract. The article has developed mechanisms for post-prison adaptation of juvenile offenders. The problems of successful post-prison adaptation of a minor released were identified.

Keywords: post-prison adaptation of convicts, resocialization, post-prison adaptation measures for juvenile offenders, the penal system of Russia, educational colony of the Federal Penitentiary Service of Russia, fundamental rights and freedoms of convicted persons, principles of humanism in penitentiary institutions of the Federal Penitentiary Service of Russia.

At present, from the point of view of achieving the goals of punishment, the issue of ensuring the post-prison adaptation of juvenile convicts and preventing recidivism in this environment is of significant importance. This is especially important due to the fact that there is no proper system for individual prevention of relapse, as well as a special pre-trial study of the identity of a minor offender.

Work out today, clear recommendations have not been formulated to the court of general jurisdiction regarding the election of a measure of punishment for him in the form of real imprisonment of a minor defendant in Russia, juvenile courts do not fully work as an independent judicial body. There are no regulated standards for juvenile technology. There is only the legislative base of international practice (experience) of friendly justice in the relations of the child.

In addition, at present, the relevant state bodies do not properly monitor and supervise the behavior of minors, conditionally convicted, released on parole from serving a criminal sentence, and there is no mechanism for providing social assistance to convicts in the post-prison period after serving their sentence. Convicted adolescents are left to their fate again.

The result of the lack of rehabilitation activities, vocational guidance (real employment), post-prison adaptation of convicts, as well as systematic preventive work with them is often their socio-psychological degradation, the spread of criminal subculture and the growth of recidivism in modern Russian society. We believe that the process of introducing people who have been released from the FSU “Educational Colonies” of the Federal Penitentiary Service of Russia into the social environment should be not only voluntary, but also forced (total) in nature (control, supervision, etc.). No matter how the juvenile convict spent this day, it is important what and how he learned from it¹.

International experience indicates the advisability of creating a special public probation service to solve the problems. The main goal, which is to facilitate the post-prison adaptation of juvenile convicts who have served their sentences, whether or not connected with isolation from society (assistance in restoring socially useful ties, social, domestic, employment, providing psychological support, establishing relationships with relatives and relatives), as well as preventing them from committing new recidivism.

¹Nesterov A. Actual issues of the rights and freedoms of juvenile convicts serving sentences of imprisonment: sociological aspect // Power. 2016. N 1. P.88–94.

Such an approach generally reduces the level of crime (including recidivism) in society, prevents the criminalization of the individual, reduces the burden on the Russian penitentiary system and contributes to the achievement of the goals of punishment (correction and formation of the individual on the right path).

The probation service should be authorized to interact with various interested bodies, organizations, as well as with the families of juvenile prisoners and the public in order to involve them in the process of effective correction, post-prison adaptation and social rehabilitation, especially of juvenile prisoners. In this regard, it is also necessary to develop a set of measures to prepare juvenile convicts for release from places of deprivation of liberty, including by creating special adaptation sections with semi-free conditions in institutions of the Federal Penitentiary Service of Russia. That will facilitate the process of post-prison adaptation of juvenile prisoners¹. For juvenile prisoners, lectures should be organized on social and political changes in modern Russian society, legal culture, aimed at correcting their behavior.

And some categories of juvenile convicts can be given the opportunity to transfer to lighter conditions of serving their sentences with the permission of short-term trips to the place of intended residence. In addition, under the auspices of the probation service, it is necessary to create social centers for the post-prison adaptation of convicts, aimed at social and rehabilitation assistance, the re-socialization of persons released from prison, and the prevention of recidivism.

We also note that from the point of view of preventing recidivism and improving the functioning of the penal system, it is imperative that the country's penitentiary institutions, with the assistance of the probation service and internal affairs agencies, monitor the level of post-prison relapse among released minors within three years after their release.

Based on the foregoing, it is necessary to adopt at the federal level and at the level of the constituent entities of the Russian Federation legislative acts aimed at regulating the problem of post-prison adaptation of minors released from prison.

In particular, it is necessary to create a legislative and legal base to ensure the activities of the probation service in the Russian Federation for juvenile offenders (following the example of the foreign experience of "Friendly Justice for the Child").

The legal basis for the activities of the probation service in Russia may be the Federal Law "On the Federal Probation Service", the Regulation on the Federal Probation Service, as well as the introduction of appropriate amendments to the Criminal Code of the Russian Federation, the Criminal Procedure Code of the Russian Federation and the Criminal Executive Code of the Russian Federation and other regulatory legal acts juvenile technology in Russia.

The problem of post-prison adaptation of a minor released to conditions in a normal social environment at large is connected with the fact that for some time they have been torn out of the process of social development. Teenagers were deprived of their liberty, limited in independence of decision-making, and during this period they formed executive discipline (in the Russian penitentiary system), and such quality as self-organization was lost by 80% - 97%.

It is also important that many of the offenders were deprived of normal conditions of upbringing (they were brought up in boarding schools for orphans or in a "dysfunctional family"). So, the deformed value system was the result of various negative deviations in the process (primary or secondary) of socialization and became one of the reasons for their crime². Namely, the solution of the problems of socialization, the process of becoming an individual (convicted) socially active person through training and familiarization with those cultural, social and legal values and relationships that form the basis of citizenship and social life in a modern legal state, should become the main activity of specialists working with this category of minors.

The process of post-penitentiary adaptation of a convicted juvenile can be considered successful if socially useful contacts in the main areas of life are restored at the prisoner who has returned from places of detention, and ties with the criminal environment are broken.

¹Nesterov A. The essence and basic principles of social work in prisons for juvenile convicts // Human capital. 2015. N 4(76). P. 160-168.

²Nesterov A. The essence of institutional socialization of children and adolescents without parental care // Human capital. 2011. N 3(27). P. 134-138.

The characteristic features of the post-prison adaptation of juvenile offenders are the following:

1) the process of successful post-prison adaptation, which is as follows: normal relations in the family, housing, a permanent place of work, useful leisure activities are provided;

2) this socio-psychological process begins with the release of juvenile offenders from punishment and ends with the achievement of a correspondence between expectations - the requirements of society (individual social groups) and the appropriate behavior of a previously convicted teenager in society;

3) the task of post-prison adaptation in this category of people is to introduce them to life without the right restrictions associated with punishment in a new or changed, previous social environment, implying their free and voluntary submission to the regulatory requirements of this environment and criminal law norms;

4) the post-prison adaptation of those released from punishment also depends on the adaptation skills and abilities inherent in the individual initially and brought up in the conditions of the execution of the sentence (in the penitentiary institution of the Federal Penitentiary Service of Russia);

5) the success of the post-prison adaptation of those released from serving their sentences largely depends on the correlation of the system of personal settings of the released person and the requirements of the environment (the collective in the educational environment (comprehensive school, vocational school), the labor collective, the closest domestic environment, family);

6) the post-penitentiary adaptation of those released from punishment can be ensured only if there is a positive interdependent social orientation of the microenvironment and the personality of the convict, compatibility of social expectations of the environment and moral positions, value orientations of the individual [1, 2, 6, 9, 11].

Work with a minor preparing to be released from prison may be carried out in the following areas:

1) Diagnosis of the current level of development in order to determine the degree of development, personal resources of the minor convicted to successful post-prison adaptation in non-custodial settings;

2) Educational work in the field of resources of the territory where the minor is going to live at large, in the field of education and employment, in the field of a healthy lifestyle (help in solving medical problems, if any?);

3) Work with psychological problems of a minor convict (including sexual orientation);

4) Work to solve legal, social problems;

5) Work with the family and social environment of the minor convict;

6) Assistance to a minor convict in employment and professional education in a non-prison system.

Educational work can be carried out in the form of interactive lectures and trainings. Also, booklets and posters can be issued in each of its directions. Since research data and practical training experience show that for the most part juvenile offenders are better able to perceive vivid information and difficult to master texts and lectures, it is desirable that the classes take place interactively, including elements of training and role-playing games.

Educational work should occur adequately to the interests and situation of the colony inmates for whom it is carried out. For example, a convicted person who still has to serve a long term of punishment is not interested and meaningless to organize classes on education in the field of employment. Interactive educational trainings are well accepted by adolescents if the number of participants in them is limited to 10-12 people.

Educational work can be carried out in the following areas:

1) Education on the resources of the territory in which the minor lives "free".

The list of organizations about which the inmates of the colony will be informed should include:- healthcare organizations;- organization of employment;- educational organizations; - psychological and social centers;- leisure centers;- organizations within the municipality.

2) Education in the field of rights and obligations in labor relations, in the field of employment.

Most teenagers have very little idea of where and how they will get a job. Moreover, they believe that getting a job is simple enough that they can easily cope with this task as soon as they are free. The convicts do not have clear plans for where they will go, what they will do first.

At the same time, they understand that the fact that they were serving a sentence in a colony can greatly interfere with their employment, because for employers they will appear in an unfavorable light. These two conflicting opinions prevent teens from thinking in advance about their future employment,

identifying for themselves the steps that they will take immediately after release, and studying their rights and obligations in detail.

There are a number of things that they would need to know. In addition to employment for a number of posts for which one of the requirements indicates the absence of a criminal record (Ministry of Internal Affairs, Federal Security Service, Ministry of Emergencies, Federal Security Service), refusals to hire on the basis of a criminal record in other cases constitute a violation of human rights and labor law (Article 2 and 3 of the Labor Code of the Russian Federation).

3) Education in the field of education. Convicted juveniles need to gain knowledge about what methods exist to acquire additional education or to continue what they started, how and where to study, what forms of education exist, and so on [2, 4, 8, 14-16].

4) Education in the field of a healthy lifestyle.

The peculiarity of this direction of educational work is that it should not cause or increase the interest of the adolescent in what it is directed against. Sometimes, for example, a lecture on the dangers of drugs can cause interest in trying these drugs.

It is very effective when lectures and trainings are not built in the form of a ban, but allow the teenager to get more information about the mechanisms and consequences of various kinds of addictions, so that, with this information, he can make the right choice. The main work with a freed minor must be systematic, properly planned, carried out by all specialists in a single algorithm.

Work with a minor must necessarily begin with establishing contact with a specialist so that the teenager learns to receive help from him. Measures to prepare juvenile convicts for release must pursue a common goal and be surely interconnected.

An indispensable condition for the success of the rehabilitation process is the interest of adolescents themselves in the results, as well as their families, the state as a whole. The main goal of preparing minors for release is to help them successfully integrate into society, to realize their place in life. Thus, the post-prison adaptation of juvenile offenders should be preventive, rehabilitative and restorative in nature and should be aimed at their socio-economic, cultural, moral, psychological and legal well-being.

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**КӘМЕЛЕТКЕ ТОЛМАҒАН СОТТАЛҒАНДАРДЫ ӘЛЕУМЕТТІК БЕЙІМДЕУ
ПОСТПЕНИТЕНЦИАРЛЫҚ КЕЗЕНДЕ: ТЕОРИЯ ЖӘНЕ ПРАКТИКА**

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**СОЦИАЛЬНАЯ АДАПТАЦИЯ НЕСОВЕРШЕННОЛЕТНИХ ОСУЖДЁННЫХ
В ПОСТПЕНИТЕНЦИАРНЫЙ ПЕРИОД: ТЕОРИЯ И ПРАКТИКА**

Аннотация. В статье выработаны механизмы постпениitenciарной адаптации несовершеннолетних осуждённых. Дается полная характеристика постпениitenciарной адаптации. Выявлены проблемы успешной постпениitenciарной адаптации несовершеннолетнего освобождённого.

Ключевые слова: постпениitenciарная адаптация осуждённых, ресоциализация, меры постпениitenciарной адаптации несовершеннолетних осуждённых, уголовно-исполнительная система России, воспитательная колония ФСИН России, основные права и свободы осуждённых, принципы гуманизма в пениitenciарных учреждениях ФСИН России.

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REFERENCES

- [1] Bakaev A. Juvenile Delinquency Prevention System. M., 2004. 211 p.
- [2] Zakharov M., Tuchkova E.G. Social Security Law of Russia. M.: Publishing House BEK, 2002. 560 p.
- [3] Zainysheva I. Technology of social work: Textbook. allowance for students. Higher educational institutions / Ed. I. Zainysheva. M.: Humanity. ed. VLADOS Center, 2002. 240 p.
- [4] Ivanov P. Legal consequences of a criminal record for minors // Issues of juvenile justice // 2009. N 1.
- [5] Instruction on the provision of assistance in labor and domestic services, as well as the provision of assistance to juvenile convicts released from serving sentences in educational institutions of the penal system of January 13, 2006. N 2 // Consultant Plus: (Higher School CD-ROM).
- [6] Kleiberg Yu. Psychology of deviant behavior: Textbook for high schools. M., 2001. 160 p.
- [7] Lobova E.N. Juvenile delinquency and their release from criminal liability // Russian investigator. 2009. N 7.
- [8] Nesterov A. Actual issues of the rights and freedoms of juvenile convicts serving sentences of imprisonment: sociological aspect // Power. 2016. N 1. P. 88-94.
- [9] Nesterov A. Social adaptation of juvenile prisoners in the penal system of Russia: correctional and post-prison practice: Dis. ... Doctors of Sociology: 22.00.04: RSL OD 71 19-22/5[Electronic resource] / access mode: <https://search.rsl.ru/ru/record/01008584904> // M., 2019. 551 p.
- [10] Nesterov A. Prospects for the socialization of juvenile prisoners serving sentences in the penitentiary system (theory and practice) // Human capital. 2015. N 9(69). P. 107-111.
- [11] Nesterov A. Doctrinal features of friendly justice for the child in national and international law (theory and practice) // Human capital. 2015. N 7(79). P. 50-61.
- [12] Nesterov A. The essence and basic principles of social work in prisons for juvenile prisoners // Human capital. 2015. N 4(76). P. 160-168.
- [13] Nesterov A. The essence of institutional socialization of children and adolescents left without parental care // Human capital. 2011. N 3(27). P. 134-138.
- [14] Nizovets E., Tretyak E. Socio-psychological competence of juvenile offenders as part of the process of re-socialization // Bulletin of the Institute: crime, punishment, correction. Scientific and Practical Journal of the Vologda Institute of Law and Economics of the Federal Penitentiary Service. 2012. N 3(19). P. 62-65.
- [15] Nikitin V. Social work: problems of theory and training: Textbook The allowance. M., 2002. 236 p.
- [16] Firsov M., Shapiro B. Psychology of social work: Contents and methods of psychosocial practice: A textbook for university students. M., 2002. 192 p.
- [17] Shilovskaya A. Preparation of convicted minors for release from educational colonies as an element of the prevention of recidivism / Under. total ed. Yu. Kalinina. M.: All-Russian Research Institute of the Ministry of Internal Affairs of Russia, 2006. P. 293-299.

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THE FINANCIAL MECHANISM FOR PROVIDING INVESTMENT LENDING TO THE ECONOMY OF UKRAINE WITH THE PARTICIPATION OF INTERNATIONAL FINANCIAL INSTITUTIONS

Abstract. In the article, based on the analysis of investment and credit activity of Ukraine in quantitative and qualitative indicators during 1993-2018, the main tendencies have been identified, and an estimation of the efficiency of investment lending to the economy of Ukraine with the participation of international financial institutions has been made; the conceptual basis, to which in its essential relationship the concepts of "investment", "credit", "investment credit", "investment lending" are included, has been clearly defined; the author's position on understanding the concepts of "investment lending with the participation of international financial institutions" and "a financial mechanism of investment lending with the participation of international financial institutions" has been shown; the financial mechanism of investment lending with the participation of international financial institutions has been developed, its principles have been substantiated, its functional structure and characteristic features have been determined; risk management, improving the efficiency of state target programs implementation, and development of institutional infrastructure have been highlighted; practical recommendations aimed at increasing investment activity and investment efficiency of projects implemented by international financial institutions have been developed.

Keywords: economic growth, investments, foreign investments, investment lending, international financial institutions, financial mechanism of investment lending.

Introduction. The sign of the beginning of the new millennium, besides the other, can be seen in the adoption of development strategies aimed at overcoming global challenges and ensuring sustainable economic growth by many countries, where socially-oriented goals for the development of human capital as the main driving force of dynamic transformations in all spheres of public life have become priorities. In accordance with this, the world's policy of reforming, defining main branches and directions of modernization is changing [1]. At the same time, achieving success in implementing such strategies requires a clear understanding of the problems that have long been of a chronic nature, or the emergence of new challenges, the need to mobilize the full potential of the country and attract significant financial resources. The latter is determined by the resilience of the financial sector, which has been weakened by crises and/or has not recently acquired due quality due to the processes of "purification", as well as by the ability to attract and effectively use long-term external investment for development. The latter are mainly provided by International Financial Institutions (IFIs) – trusted specialized financial institutions that can develop international cooperation, meet financial needs, support policies, standards, and projects for solving problems at the national and global levels.

Methods of research. The problem of studying external financial assistance in the context of current economic problems and historical experience is quite broad and is the subject of scientific pursuit by many researchers. In this aspect, the theoretical and methodological basis are formed by works of S. Black, M. Busse, R. Campbell, J.H. Dunning, J. Emerson, L.A. Hahn, D.W. Jorgenson, J.M. Keynes, C.P. Kindleberger, A. Marshall, R. Merton, F. Modigliani, J.D. Sachs, W.F. Sharpe, R.M. Solow, S. Vernon, etc.

However, the theoretical and applied aspects of investment lending with the participation of IFIs require a more in-depth study. Researchers confirm the undeniable role and contribution of the IFIs to

solving problems of developing international financial architecture, supporting the accelerated economic growth of developing countries, taking into account the impact of global economic phenomena and peculiarities of national economies (J. Bitzer [2], D. Vintila [3], J. Carbajo [4], M. Carkovic et al. [5], R. Cezar [6], A. Gel [7], S. Guris et al. [8], Y. Prekazi, A. Pasjaqa et al. [9], E. Ruziyeva, A. Nurgaliyeva et al. [10], J. Toskovic and J. Kisin [11], etc.).

Among others, the consideration of the issue of poverty alleviation by attracting foreign investment in accordance with the Millennium Declaration is worth noting (N. Stern [12], M. Klein, S. Aaron and B. Hadjimichael [13], MT Musakwa and NM Odhiambo [14], E. van der Sluis and O. Durowah [15], etc.). However, foreign investment is treated ambiguously in countries with significant natural deposits, when foreign exchange inflows excessively increase exchange rates, investment projects are mainly aimed at the extractive industry, which leads to the loss of others, in the end – there is no economic growth and poverty reduction, however fraud and corruption for easy enrichment of particular groups of people of the countries are stimulated. Therefore, to prevent such imbalances, along with investments, a weighted macroeconomic policy is needed.

One cannot ignore the study of Ukrainian scientific schools, which is devoted to attracting foreign investment, investment management, investment lending and project financing, in particular the works by O. Baranovsky [16], Y. Berezhny [17], O. Vovchak [18], B. Danylyshyn [19], V. Gayets [20], Y. Zhalilo, O. Lapko [21], T. Mayorova [22], A. Peresada [23], A. Chukhno [24], and others. At the same time, paying tribute to the scientists' scientific progress, it is worth noting that the issue of improving the financial mechanism of investment lending with the participation of international financial institutions is still not well-studied.

The purpose of the article is to identify trends and assess the effectiveness of investment lending to the economy of Ukraine, to develop a financial mechanism for investment lending with the participation of international financial institutions with justification of its principles, definition of functional structure and characteristic features, development of practical recommendations aimed at increasing investment activity and investment efficiency of investment projects funded by international financial institutions. –

Results.

1. Main tendencies and efficiency estimation of investment lending of the economy of Ukraine with the participation of international financial institutions. Since 1993 and to date, IFIs have implemented more than 500 projects in Ukraine, with financial investments totaling about \$ 21 billion and € 7 billion. Among all the IFIs, EBRD provided the greatest levels of financing the economy of Ukraine during 1993-2018 – € 7.376 billion and € 5.053 billion, which is 43% of the total amount of loans received from the IFIs. In second place is the volume of loans from IBRD – \$ 11.746 billion (39%), and in third place are loans from the EIB – € 2.524 billion, and in fourth one is IFC, which provided \$ 2.283 billion. The lowest funding to the Ukrainian economy came from BSTDB – \$ 397 million and € 68.4 million.

The active involvement of financial resources of IFIs began in 2003, as a result of an increase in the number of projects implemented in Ukraine with the participation of EBRD, IFC, EIB, BSTDB and IBRD. Thus, in 2006, 32 projects were implemented, which is the maximum value for the analyzed period, for comparison in 2017 and 2018 their number was 24 projects per year. During 1998-2018, 253 projects were completed, 84 projects are currently active, 37 projects have been approved and signed by the Verkhovna Rada. IFIs pay out 26 projects, and repayment of loans is made according to 48 projects; IFIs have canceled 36 projects. It should be noted that the dynamics of attraction of IFIs financial resources is rather heterogeneous and not characterized by constant growth. Despite the fact that about 73% of projects are implemented in the private sector, the largest amount of funding comes directly to projects in the public sector of the country. Over the past twenty years, the public sector has attracted \$ 12.29 billion and € 4.36 billion, while the private sector – \$ 9.46 billion and € 3.29 billion. In 2017-2018, 34 projects were implemented in the private sector (\$ 532.85 million and € 1093.7 million), while in the public sector there were 14 projects, totaling \$ 150 million and € 854.5 million.

The main industries supported by IFIs are agribusiness, the financial sector, industry and infrastructure.

IFIs operate a wide range of financial instruments, ranging from loans and guarantees for investors and enterprises to equity participation in companies or investment funds. In Ukraine, the main instruments in the implementation of projects involving the financing by IFIs, according to the degree of activity, is the provision of loans, equity investments, guarantees and participation in the allocation of risk.

Understanding the situation concerning investment lending to the economy of Ukraine with the participation of IFIs will not be complete without analyzing the state of using funds in relation to the planned and actual volume, and assessing the effectiveness of supervision and control by the responsible executor. Thus, during 2014-2016, the percentage of using IFIs funds for projects under implementation and the final stage of implementation amounted to 49.43% in 2016 compared with 93%, 78% and 69% in 2011, 2012, and 2013 respectively (figure 1). In other words, there is a tendency for systematic non-fulfillment of planned financing volumes, as a result, an unsatisfactory level of efficiency of using IFIs funds. In particular, the housing sector (housing and utilities sector) is the worst, almost critical one.

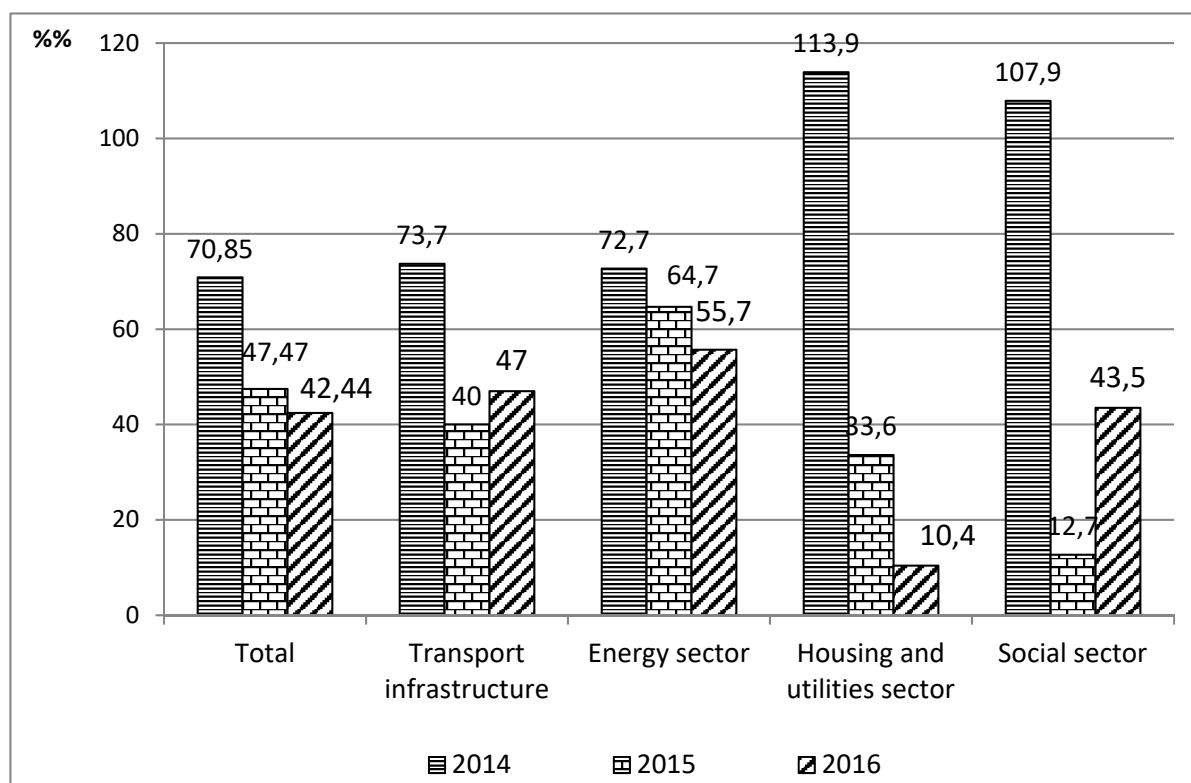


Figure 1 – Use of IFI funds by sectors of the economy, 2014-2016.

Source: compiled by the author on the basis of processing [25].

Among the reasons for this situation, let us note the following ones: the Ministry of Finance of Ukraine did not ensure the effectiveness of monitoring and control over the activities of responsible executors, did not develop the necessary regulations and guidance materials on the maintenance of a single register of investment projects that are of priority importance for the economic development of the country and financed by IFIs, moreover it did not conduct their expertise, which, in turn, provokes the risk of corruption; regarding the portfolio of IFIs active investment projects priority, the funds are given to the development of energy, transport and utilities sectors; there are violations of the established requirements, preparation not in full, delays in terms of preparation of projects (sometimes almost three times) on the part of their initiators and responsible executors; unsatisfactory work of responsible executors – 1) unsatisfactory sampling of funds for all sectors (it did not even begin for some projects, including for SMEs, because responsible executives were not identified); 2) cancellation of \$ 103.1 million (more than 2.5 billion UAH), as a consequence of non-use of cheap long-term resources, ineffective use of budget funds, failure to achieve the goal of a project.

Thus, the analysis has shown that current investment and credit mechanisms and tools did not become systematic, integrated, perfect and effective, it has confirmed the necessity and importance of the formation and implementation of a financial mechanism of providing investment lending with the participation of IFIs as one of the priorities of investment policy within the framework of realization of the economic policy of the state.

2. The financial mechanism of investment lending with the participation of international financial institutions. The development of conceptual approaches to building a financial mechanism for investment lending with the participation of IFIs requires a clear definition of the conceptual basis, which includes the concepts of "investment", "credit", "investment loan", "investment lending" in their essential relationship. Without going into the scientific discussion, but taking into account different points of view of their interpretation, we express our own position on understanding:

First, the concept of "investment lending by international financial institutions" as a process of providing loan capital in the framework of multilateral interaction of participants in the international assistance program (project) aiming at realizing purposes of the long-term development on the principles of harmonization and unification of procedures and rules, coherence with national priorities, partnership, focus on the result of management. This approach allows to emphasize the peculiarities of subject-object communications of the multilateral interaction of the participants of the investment process, to emphasize the target benchmarks and principles, and to take into account the obligation to manage the process of investment lending.

Secondly, the concept of "financial mechanism of providing investment lending with the participation of IFIs" as a tool for building financial policy and the formation of financial relations, respectively, interconnected and interdependent financial methods and tools for the implementation of investment projects in all phases of their life cycle, based on regulatory and legal, informational, infrastructural and technological support, takes into account the features of financial regulation and the influence of financial instruments on the achievement of purposeful changes in the results of investment and credit activities in order to obtain socio-economic effects of sustainable economic growth.

The purpose of the financial mechanism of providing investment lending with the participation of IFIs is to harmonize the interests and coordinate the actions of all involved entities for further obtaining socio-economic effects from the implementation of investment projects.

The implementation of the mechanism is based on a combination of general and special principles, which can be conditionally divided into three categories: investment-lending oriented, strategically oriented and socially-oriented.

Investment-lending oriented principles include the principles of urgency, payment, security, payback, which are conditioned by the very essence of the loan and the credit process. In our opinion, investment activity should be based not only on the general principles of lending but also on the basis of the following:

- *balance of interests and risk*, that is, selection of the most optimal investment decisions, based on the determination of an acceptable level of risk and the probability of achieving the desired socio-economic effects;

- *protection of the rights and interests of the participants*, namely the provision and implementation of a mechanism of legislation that promotes protection of fundamental rights, equal opportunities for access to resources from investors, provision of guarantees, compensation and restitution;

- *effectiveness and target use of funds* – directing received financial resources to clearly defined project goals;

- *transparency* – availability and openness of information on planning, implementation and evaluation of investment projects.

Strategically-oriented principles are defined as the special principles of the proposed mechanism, which specify its characteristic features in terms of complexity, consistency, coherence, integration, taking into account the innovation potential, strategic correlation, adaptability, variability, use of technological progress, strategic partnership.

Socially-oriented principles are important, because the implementation of any investment project must take into account the obligation to achieve a social effect, namely:

- *The principle of social responsibility* is manifested through the emergence of investors' responsibility for the consequences of their investment activities (choice of methods and criteria) for society (consumers, employees, partners).

- *The principle of social effectiveness* is realized through obtaining not only economic, but also social benefits from the implementation of investment projects through increasing the number of jobs, ensuring decent working conditions, improving social infrastructure and the environment as a whole.

– *The principle of environmental efficiency* of investment and credit activities includes taking into account the environmental factor at all stages of investment, giving priority to environmentally-oriented projects for improving the environment and ensuring environmentally balanced production and provision of services.

In practice, the indicated principles of the financial mechanism will promote the search and effective use of financial resources in order to increase financial stability, profitability, profitability and innovative activity of business entities on the one hand, and the growth of investment activity, social efficiency and responsibility of all other participants in investment lending, on the other hand.

The financial mechanism for providing investment lending to the economy with the participation of IFIs can be considered in the system-targeted approach, where its input is determined by a set of approaches, methods, forms and tools for attracting financial resources of IFIs; in the future, during the implementation of an investment project by the life cycle phases, transformation of financial resources is carried out, and at the end the goal of the investment project and socio-economic effects are achieved.

According to the organizational-economic approach, it combines interconnected organizational-economic and financial subsystems (figure 2).

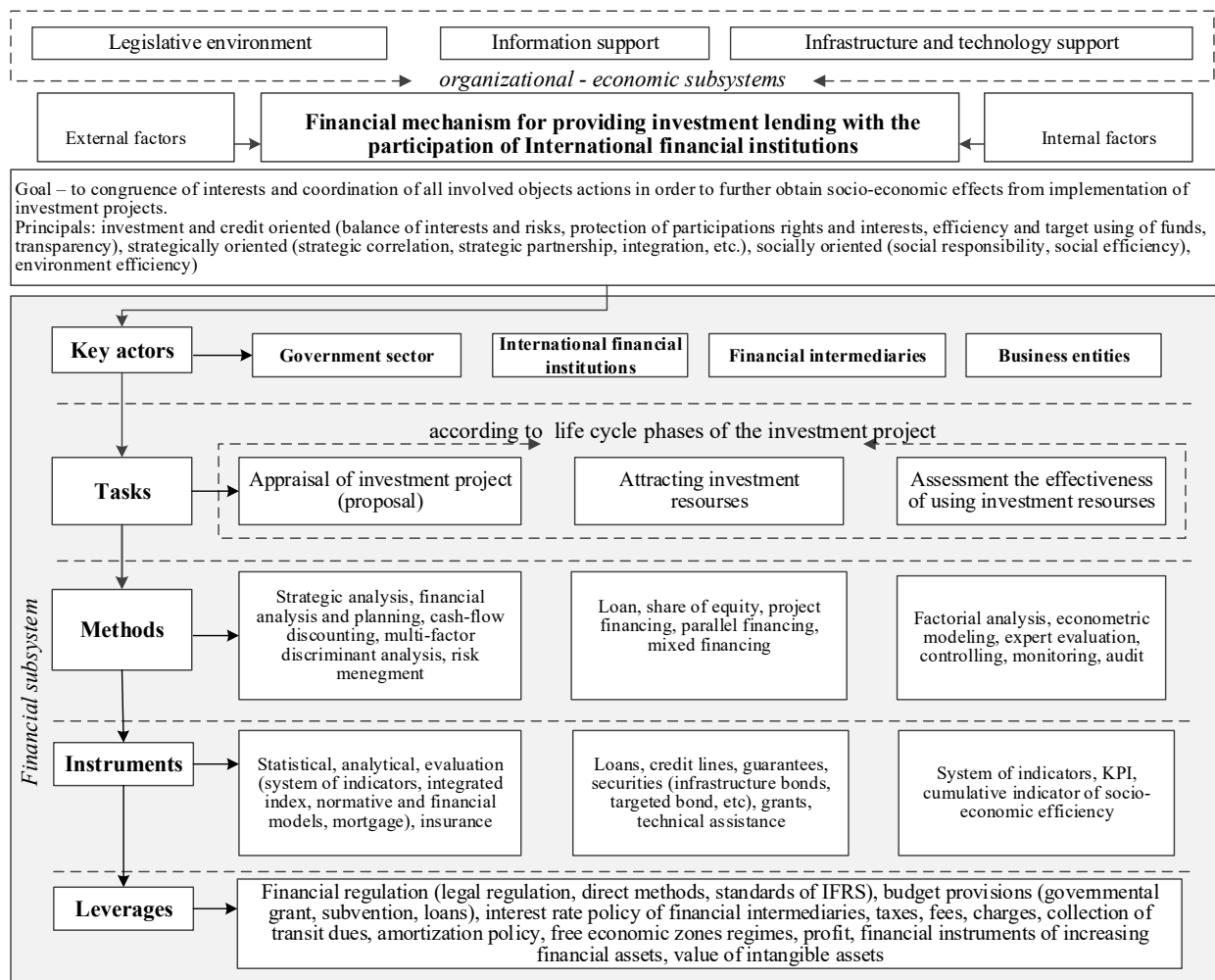


Figure 2 – The financial mechanism for providing investment lending with the participation of IFIs.

Source: the author’s own development.

Successful implementation and functioning of the financial mechanism for providing investment lending with the participation of IFIs depends on a number of financial instruments that affect the investment climate, investment activity and investment and lending business. In particular, such instrument as financial regulation (direct regulatory methods) allows to create conditions for financial actors, respec-

tively, to achieve the planned socio-economic effect of an investment project / program through the instruments of budget, fiscal and tax policy. Direct regulatory methods are implemented by the state through adequate legislative framework for implementation of the system of public-private partnership, concession agreements, transparency of licensing processes and granting of permissions, elimination of difficulties with land use, etc., that is, they eliminate possible obstacles during the preparation of an investment project.

Taking into account the specificity of investment lending, it is possible to distinguish financial leverages in the pre-investment, investment and operational phases according to the life cycle of the project.

Thus, financial leverages of the first group include budget allocations (grants, subsidies, subventions, loans), interest rate policy of financial intermediaries; the second group includes taxes, charges, fees, depreciation policies, free economic zones; the third group includes profits, financial instruments of increasing financial assets, the value of intangible assets.

Effectiveness of financial leverages is directly related and / or depends on financial and political stability, direct regulatory methods, developed institutional infrastructure, favorable investment climate and investment activity. In particular, financial and political stability contributes to the reduction of the probability of occurrence of risks (political, currency, inflation) during the implementation of projects. The existence of a favorable investment climate increases the possibility of attracting more investment resources not only from the outside but also within the country, indicating a reduction in bureaucratic pressure on the project, which in turn accelerates its implementation (life cycle) and increases its investment returns.

The organizational and economic subsystem of the financial mechanism is implemented through a set of types of security, namely, regulatory, informational, institutional, technological, and the other one (financial subsystem) allows to provide integrated investment lending through systematization of the process of realization of investment projects by the life cycle phases (pre-investment, investment and operational), compliance with a consistent algorithm of relationships between key actors (IFIs, public authorities, business entities and other financial intermediaries) to achieve the main determined objectives, use methods and tools, taking into account the effect of the leverage, effectively use the attracted amounts of financing, optimize risks and get guaranteed future effects.

The implementation of investment projects with the participation of IFIs requires an integrated approach to risk management at all stages of the project life cycle (table 1).

Thus, it is important for the pre-investment phase to identify and take into account internal risks associated with errors in the calculation of the business plan of the project. They include, in particular, mistakes in the borrower's cash flow projections and forecast calendars for servicing and repayment of debts, discount rates, and others, as well as inaccuracies and incompleteness of information, and lack of credit security. The investment phase combines managing both internal risks (excess of established budgets, procurement problems, technological problems and delays in the production / construction process, etc.), and external ones (currency, market, inflation risks). At the operational phase of the life cycle of the project, certain risks may remain, for example, technological, insolvency risk, the risk of non-fulfillment of counterparty obligations, but the external risks of the macro environment have the greatest influence at this stage.

However, in our opinion, when implementing the system of risk management of investment lending with the participation of IFIs, it is necessary to take into account, along with other, the specifics of each individual investment project, namely its sphere of implementation, strategic importance, participants, investor category, scope and volume of the project. The latter affects both the definition of the investment project category (small project, large project or megaproject), and the overall complexity of the management system for the implementation of investment projects, including the risk management system.

Modern practice, including domestic one, has shown that improving the efficiency of implementation of investment projects allows merging projects into target programs, megaprojects at national and regional levels in order to implement the priority areas of state policy. This approach involves the formation of a single center of financial responsibility, which is assigned the functions of strategic management, monitoring the implementation management system and prompt response to emerging risks at each stage of the implementation of megaprojects. A characteristic feature of megaprojects is their target orientation for the development of the economy, the creation of infrastructure facilities, and the improvement of the quality of life of the population through the implementation of interconnected projects in one or related

Table 1 – Types of risks that arise at different life cycle phases of an investment project

Life cycle phase of a project	Risks by spheres of manifestation	Risk relative to the financial mechanism
Pre-investment	Informational risk (incompleteness, inaccuracy, false information about the parameters of the investment project)	Internal
	Marketing risk (low market research)	Internal
	Environmental risk (insufficient assessment of the natural and climatic conditions of the project implementation and the impact of its implementation on the environment)	Internal
	Political risk (lack of support or even impediment to the implementation of projects by the authorities)	External
Investment	Financial risk (non-fulfillment of established budgets of the project, insufficient solvency of the borrower)	Internal
	Non-payment risk (breakdown of contractual obligations both between project participants and between suppliers, contractors)	Internal
	Market risk (changes in market prices, market conditions)	External
	Currency risk (fluctuations in exchange rate)	External
	Inflationary risk (the rate of inflation will be higher than it was taken into account in the project)	External
	Production and technical risk (insufficiently reliable technologies, supply disruptions, technical problems)	internal
Operational	Economic risk (instability of the current economic situation, increase of tax rates)	External
	Credit risk (risk of non-repayment of interest and project loan)	Internal
	Environmental risk (harmful effects to the environment from the project implementation)	Internal
	Political risk (uncertainty of the political situation, change of the foreign policy orientation of the country, instability of the legislative framework)	External
	Production and technical risk (supply disruptions, technical problems)	Internal
	Social risk (poor working conditions, negative impact on the local community)	External
	Risk of bankruptcy (impossibility to continue the activity of any of the project participants)	Internal

Source: developed by the author on the basis of [26, 27].

industries / territories for a certain period of time and within the defined funding. In particular, in Ukraine, megaprojects are implemented by the state in the form of state and regional targeted programs with the attraction of resources of IFIs under state guarantees in the transport, infrastructure, energy, industrial and extractive industries, noting the significance of the results obtained at the state level. The analysis of the results of the state target programs in Ukraine during 2016-2018 has shown the existence of systemic problems in their implementation (table 2). This both confirms the imperfection of the existing organizational and economic system of the formation and implementation management of state target programs, and causes changes in the legal framework and the methodology for evaluating the effectiveness of the implementation of state target programs (STP).

To overcome unresolved problems and increase the efficiency of STP, we propose compulsory adherence to the principle of priority by establishing the priority of the implementation of measures on the basis of identifying the index of investment priority for each subproject, in particular:

$$I = G_s^{w_s} \cdot G_e^{w_e} \cdot G_b^{w_b} \cdot G_{ec}^{w_{ec}}, \quad (1)$$

where $G_s^{n_s}$, $G_e^{n_e}$, $G_b^{n_b}$, $G_{ec}^{n_{ec}}$ are aggregate indicators characterizing the social, economic, budget and environmental effectiveness of the investment project; w_k is the factor weight; n_s, n_e, n_b, n_{ec} is the number of indicators of social, budget and environmental economic efficiency of the investment project.

Calculation of the multiplicative index of investment priority will enable to improve the quality of the system of making management decisions and the success rates of the program as a whole (table 3).

Table 2 – The main problems of implementation of state target programs in Ukraine during 2016-2018

Problems of implementation of state target programs	Year					
	2016		2017		2018	
	Number of STP	% of the total number of STP (29)	Number of STP	% of the total number of STP (24)	Number of STP	% of the total number of STP (14)
Lack of funding	6	20.7	3	12.5	1	0.7
The lack of financial reporting on the implementation of the budget program passport	7	24.1	3	12.5	4	28.6
Inconsistency of the amounts of funds used with the indicators of financial statements	3	10.3	4	16.7	3	21.4
Violation of reporting deadlines	6	20.7	5	20.8	3	21.4
Inconsistency with the requirements of the current legislation in the field of development and implementation	9	31	6	25	12	85.7
Lack of analysis of the effectiveness of the program	24	82.7	20	83.3	12	85.7
<i>Source:</i> compiled by the author on the basis of processing [28].						

An important condition for investment lending with the participation of IFIs in Ukraine is the development of institutional infrastructure, which entails not only the involvement of active participants in the parbank sector – insurance and leasing companies, pension funds (state and non-state), financial companies, etc., but also the introduction of new participants (for example, development funds), improvement of schemes of interaction between existing participants (public-private partnership (PPP), technology parks, specialized clusters) and expanding tools for “indirect” financing of projects (infrastructure bonds).

Discussion of results and conclusion. To develop investment lending to the Ukrainian economy with the participation of IFIs, we offer the following:

1) *Creation of a development bank* as a state specialized financial institution, since the existing Ukrainian Bank for Reconstruction and Development (UBRD), due to incorrect organization of the mechanism of activity and uncertainty of its place in the banking system, does not fulfill its main assigned task of financing domestic enterprises that carry out innovation activity. The development bank must, among other things, monitor the implementation of projects and evaluate their effectiveness. In our opinion, the regional level of the development of investment lending, will be enhanced by creating regional specialized investment funds, as well as a regional mortgage fund with the rights of a guarantor for investment projects loans.

2) *Improvement of the guarantee mechanism of investment lending* through the development of cluster structures, that will create a synergistic effect for the state, enterprises, as subjects of investment and credit relations, territorial communities. Within the framework of the financial mechanism for providing investment lending with the participation of IFIs, the role of clusters is seen in the ability to provide guarantees for lending by IFIs, which are involved by companies participating in cluster. A guarantee mechanism involving clusters has a number advantages both for IFIs (loan guarantees, risk reduction for project failure, taking into account the relationship between the borrowing entrepreneur and other cluster participants), and for the borrowing enterprise (the possibility of reducing the amount of payment for the provision of guarantees compared to the local and bank guarantees), as well as for the cluster itself (attraction of financial resources, technical assistance, which will speed up the project implementation and its effectiveness). Among the priorities, we consider it expedient to carry out the following actions: development of the legislative framework with the definition of the concept of “cluster”, its types, sources of financing, support mechanisms (combining various instruments of state support); formation of a management system for the development of clusters in accordance with international standards, in particular, the European Secretariat for Cluster Analysis [29]; adoption of

Table 3 – Formalization of the calculation of the project investment priority index

Calculation of the discounted payback period (DPB)	$DPB = \min n \left(\sum_{t=0}^n \frac{CF_t}{(1+r)^t} \right) \geq \left(\sum_{t=0}^n \frac{IC_t}{(1+r)^t} \right)$
Calculation of the net present value (NPV)	$NPV = \sum_{t=0}^n \frac{CF_t}{(1+r)^t}$
Defining the internal rate of return (IRR)	$\sum_{t=1}^r \frac{CF}{(1+IRR)^t} = INV$
Defining the modified internal rate of return (MIRR)	$MIRR = \sqrt[r]{\frac{\sum_{t=1}^T \frac{CF_t^+}{(1+WACC)^{T-t}}}{\sum_{t=1}^T \frac{CF_t^-}{(1+r)^t}}}$
Calculation of return on investment (ROI)	$PI = \frac{\sum_{t=0}^n \frac{S_t^n}{(1+r)^t}}{S^n}$
Defining the budget efficiency index	$G_b^{n_b} = \frac{\sum_{t=1}^T \frac{BFC_t}{(1+r)^t}}{\sum_{t=1}^T \frac{Inv_t^F}{(1+r)^t}};$ $BFC_t = TFC^{direct} + TFC^{indirect} + NTR$
Defining the social efficiency index of the project	$G_s^{n_s} = \prod_{k=1}^{n_s} s_k^{w_k}$
Defining the environmental effectiveness index of the project	$G_{ec}^{n_{ec}} = \prod_{k=1}^{n_{ec}} ec_k^{w_k}$
Defining the economic efficiency index of the project	$G_e^{n_e} = \prod_{k=1}^{n_e} e_k^{w_k}$
Calculation of the investment priority index of the project	$I = G_s^{w_s} \cdot G_e^{w_e} \cdot G_b^{w_b} \cdot G_{ec}^{w_{ec}}$
<p><i>Note:</i> CF - net cash flow per year t; IC - amount of investment in the project for t years; r - the value of the capital attracted for the investment project (discount rate); t – project duration; INV – the investment value, presented as a positive number; CF_t^+ - income of the investment project in period t; CF_t^- - costs of investment project in period t; $WACC$ - weighted average cost of capital; w_i - weight of value; Inv_t – value; I - index of investment priority of the project; G – an indicator characterizing the effect of the project as a whole (social, economic, environmental, budget); w_s, w_e – weight of the group of indicators (defined by the expert method); Inv_t^F – the volume of state support of the project in year t; BFC_t- budget cash flow generated by the project in period t; TFC^{direct} – direct tax cash flow of period t (tax revenues from project implementation); $TFC^{indirect}$ – indirect tax flow of the period t (tax revenues from non-investors); NTR – revenues from the value (property) created during the project implementation.</p> <p><i>Source:</i> enhanced by the author.</p>	

sectoral / regional cluster support programs as part of cluster policy implementation at the state level. This, in our opinion, will help facilitate cooperation and development of partnership between state and business institutions for increasing competitiveness and sustainable economic growth in Ukraine

In addition, we consider it useful to introduce an investment ombudsman institute as an instrument for protecting the rights of investors and the advisory body of the Cabinet of Ministers of Ukraine, basing on good practices of various countries of the world with the further development of a relevant provision, the definition of the purpose, tasks and powers of an investment ombudsman.

3) *Recommendations for the introduction of new financial instruments.* Among the factors contributing to the unresolved problem of long-term resources and the limited availability of long-term bank

lending to investment projects, it is worth noting the strengthening of bank capital and liquidity requirements, in particular the new Basel III, CRR / CRD IV standards, which, in addition to raising the minimum level of capital, its quality and transparency, are to include the introduction of different buffers of capital and a leverage ratio (a limit on the debt that a bank can assume) [30]. Taking into account the aforementioned, the implementation of such an instrument of financing as infrastructure bonds becomes relevant. The participation of IFIs in the implementation of an investment project affects the confidence of private investors in infrastructure bonds due to the reliability and stability of financial support for its implementation, carrying out a perfect project evaluation procedure before its implementation, and reduction in the risk of non-fulfillment of the project. All this increases the rating of infrastructure bonds as an instrument of financial support of the project among other bonds in the market. In addition to providing credit support, IFIs may separately issue infrastructure bonds both under the project, and in a provided financing package, as well as their purchase and guarantee, attracting other investors' attention to them. Under current legislation and procedure established by the National Securities and Stock Market Commission, IFIs may issue interest or discount bonds, including by way of a public offer. The practice of IFIs shows that having high credit ratings, they are actively engaged in the issuance of a wide range of bonds – global and corporate bonds, green, social and forest bonds and others in various currencies [31-33]. The implementation of this experience will allow the development of investment lending in Ukraine at a new level.

Along with the introduction of new financial instruments, it is important to expand the system of investment incentives.

At the same time, the availability of financial resources and investment activity of financial intermediaries can be improved by opening of refinancing from the National Bank under special programs of support of specific strategic and priority investment projects with the determination of the term of its provision for at least three years against 90 or 360 days at a reduced rate, and also by inclusion of lending under the security of claims for inter-bank loans, loans for financing investment projects, loans secured by insurance contracts.

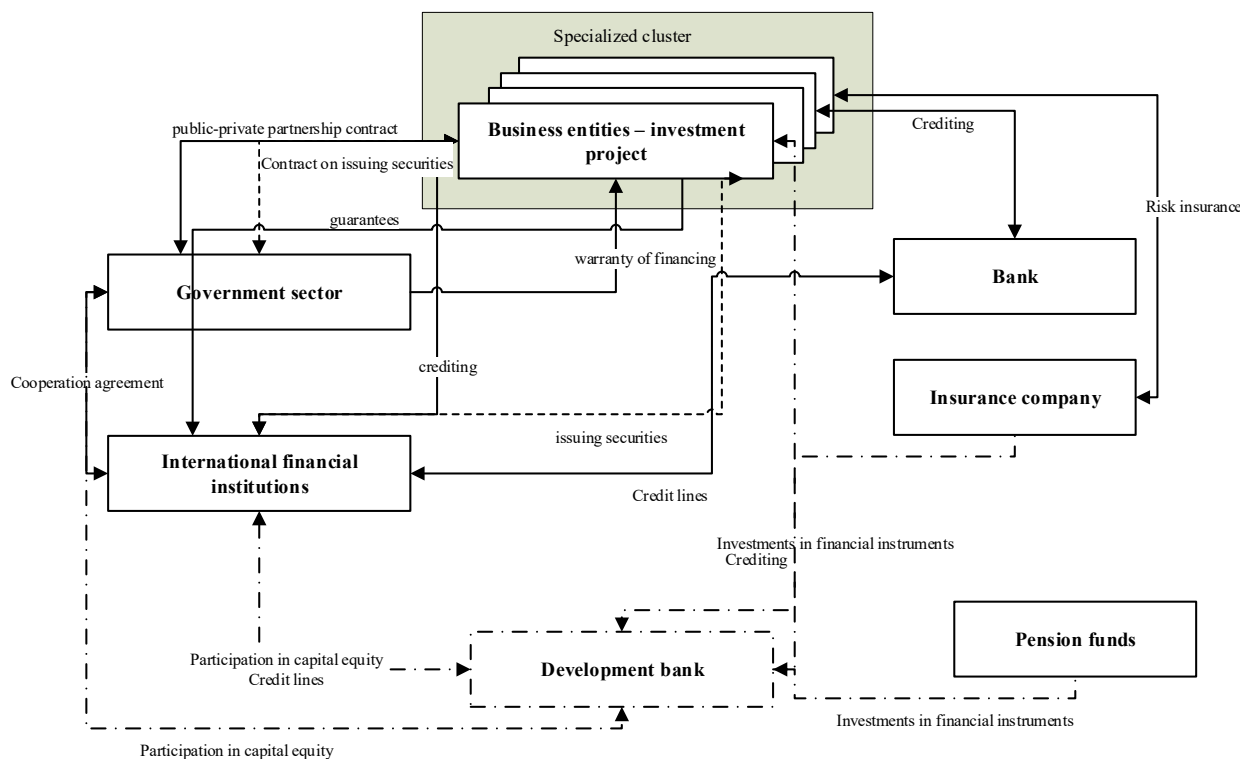


Figure 3 – The model of functional interaction in the investment project implementing process according to the institutional approach.

Source: the author's own development.

4) *Development and strengthening of public-private partnership.* Taking into account the need for additional financial resources for the implementation of investment projects, an effective mechanism for attracting private capital is cooperation between private and public sectors in the form of public-private partnership (PPP), implemented in the form of concessions, joint venture agreements, property management and mixed contracts.

To improve the efficiency of the existing IFIs investment lending management system, we propose an improvement of the model of functional interaction in the process of implementing the investment project according to the institutional approach (figure 3).

The proposed model provides for such improvement measures: firstly, introduction of a mechanism of public-private partnership to the interaction scheme; secondly, improvement of the institutional infrastructure through the creation of a development bank; thirdly, expansion of financial instruments for financing investment projects by issuing securities (bonds) by both state and international issuers to attract long-term financial resources from the parbank sector; fourthly, the use of cluster structures to increase the reliability of the guarantee mechanism of investment lending in obtaining loans from both IFIs and the development bank.

Involvement of IFIs in the PPP not only allows technical assistance, and development of feasibility studies of projects and other documentation at a high professional level, but also guarantees the holding of transparent contests and attracting private and international investors.

Thus, the improvement of the financial mechanism of providing investment lending with the participation of IFIs and the proposed practical recommendations create a reliable precondition for the continuity of investment processes, making them systemic, comprehensive, and consistent with the objectives of sustainable economic development in Ukraine.

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**ҚАРЖЫ ЖЕТКІЗУ МЕХАНИЗМІ
УКРАИНА ЭКОНОМИКАСЫНДАҒЫ ИНВЕСТИЦИЯЛЫҚ НЕСИЕ
ХАЛЫҚАРАЛЫҚ ҚАРЖЫ ИНСТИТУТТАРЫНЫҢ ҚАТЫСУЫМЕН**

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**ФИНАНСОВЫЙ МЕХАНИЗМ ПРЕДОСТАВЛЕНИЯ
ИНВЕСТИЦИОННОГО КРЕДИТОВАНИЯ В ЭКОНОМИКЕ УКРАИНЫ
С УЧАСТИЕМ МЕЖДУНАРОДНЫХ ФИНАНСОВЫХ ИНСТИТУТОВ**

Аннотация. В статье на основе анализа инвестиционно-кредитной деятельности Украины по количественным и качественным показателям за период 1993-2018 гг. выявлены основные тенденции и дана оценка эффективности инвестиционного кредитования экономики Украины с участием международных финансовых институтов; четко определена концептуальная основа, к которой в своей сущностной взаимосвязи отнесены понятия "инвестиционное кредитование", "кредит", "инвестиционный кредит", "инвестиционное кредитование"; сформулирована авторская позиция по пониманию понятий "инвестиционное кредитование с участием международных финансовых институтов" и "финансовый механизм инвестиционного кредитования с участием международных финансовых институтов". показано участие международных финансовых институтов, разработан финансовый механизм инвестиционного кредитования с участием международных финансовых институтов. Разработаны практические рекомендации, направленные на повышение инвестиционной активности и инвестиционной эффективности проектов, реализуемых международными финансовыми институтами.

Ключевые слова: экономический рост, инвестиции, иностранные инвестиции, инвестиционное кредитование, международные финансовые институты, финансовый механизм инвестиционного кредитования.

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REFERENCES

[1] [1] Sutbayeva R.O., Zhadigerova O.Y., Amaniyazova G.D., Omarova A.I., Tasbolatova A.A., Asainov A.Zh., Kul'baeva Zh.T. (2018) Formation of the social economy in Kazakhstan: theory, methodology, mechanism of formation // *Bulletin of National academy of sciences of the Republic of Kazakhstan*. 2018. Vol. 6, N 376. P. 153-157. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print) <https://doi.org/10.32014/2018.2518-1467.39> (in Eng.).

[2] [2] Bitzer J., Görg H. (2005) The Impact of FDI on industry performance (2005) [Online]. Available: <http://www.nottingham.ac.uk/gep/documents/papers/2005/05-09.pdf> (in Eng.).

[3] [3] Vintila D. (2010) Foreign Direct Investment Theories: An Overview of the Main FDI Theories // *European Journal of Interdisciplinary Studies*. 2010. Vol. 2. Issue 2. P. 104-110 (in Eng.).

[4] [4] Carbajo J. Assessing the contribution of investment projects to building a market economy: beyond cost-benefit analysis? (2006) [Online]. Available: http://wp.demm.unimi.it/files/wp/2006/DEMM-2006_039wp.pdf (in Eng)

[5] [5] Carkovic M.V., Levine R.E. Does Foreign Direct Investment Accelerate Economic Growth? (2002) [Online]. Available: <https://ssrn.com/abstract=314924> or <http://dx.doi.org/10.2139/ssrn.314924> (in Eng.).

[6] [6] Cezar R. (2013) The effects of Financial & Institutional Systems on International Trade, Specialization and Foreign Direct Investment, Economics Thesis from University Paris Dauphine [Online]. Available: <https://ideas.repec.org/b/dau/thesis/123456789-12894.html> (in Eng.).

[7] [7] Lupu A.G., Lupu F.A. (2011) Foreign direct investment – a key to economic growth for Romania // *Proceedings of the International Conference Investments and Economic Recovery*. 2011. Vol. 10. P. 232-237 (in Eng.).

[8] [8] Guris S., Sacakli Sacild I., Guneren Genc E. (2015) Determining the Effects of Factors on FDI in Global Crisis Period International // *Journal of Economics and Financial*. 2015. Vol. 5, N 1. P. 1-10 (in Eng.).

[9] [9] Prekazi Y., Pasjaqa A., Dumi A.R., Celo E. (2015) The Impact of International Financial Institutions Investments in the Countries of the Region, with Particular Emphasis on Kosovo, *Œconomica*, Vol. 11, N 5. PP. 121-128. (in Eng.).

[10] [10] Ruziyeva E.A., Nurgaliyeva A.M. Duisenbayeva B.B., Assanova A.B., Shtiller M.V. (2019) Analysis of investments role in the economic development // *Bulletin of National academy of sciences of the Republic of Kazakhstan*. 2019. Vol. 2, N 378. P. 189-198. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print) <https://doi.org/10.32014/2019.2518-1467.55> (in Eng.).

[11] [11] Toskovic J., Kisin J. (2018) Review of effects of economic reforms on economic development of the countries in transition // *Theoretical and Applied Economics*. 2018. Vol. XXV. PP. 7-14. (in Eng.).

[12] [12] Stern N. Investment and poverty: The role of the International Financial Institutions: The Jacques de Larosière Lecture, Economics of Transition and Institutional Change (2003) [Online]. Available: <https://onlinelibrary.wiley.com/doi/abs/10.1111/1468-0351.00076> (in Eng.).

[13] [13] Klein M., Aaron C., Hadjimichael B. Foreign direct investment and poverty reduction (2001) [Online]. Available: <http://documents.worldbank.org/curated/en/715711468766466832/pdf/multi0page.pdf> (in Eng.).

[14] [14] Musakwa M.T., Odhiambo N.M. (2019) Foreign Direct Investment Dynamics in South Africa: Reforms, Trends and Challenges, Additional contact information *Studia Universitatis „Vasile Goldis” Arad – Economics Series*. 2019. Vol. 29, issue 2. P. 33-53 (in Eng.).

[15] [15] Van Der Sluis E., Durowah O. Aid for Trade and Foreign Direct Investment: Effects on Poverty Reduction (2018) [Online]. Available: <http://ageconsearch.umn.edu/record/277307/files/1615.pdf> (in Eng.).

[16] [16] Baranovskyi O.I., Moroz M.O. (2017) Investment components of financial security. Vol 1, N 22. P. 46-59. DOI: <https://doi.org/10.18371/fcaptive.v1i22.109926> (in Ukr.).

[17] [17] Berezhnyj Ja.V., Zhalilo Ja.A., Pavljuk A.P. (2013) Shhodo naprjamiv udoskonalennja polityky zaprovadzhenja nacional'nyh proektiv v Ukraini: analitychna zapyska, Nacional'nyj instytut strategichnyh doslidzhen'. 2013. 9 p. (in Ukr.).

[18] [18] Vovchak O., Rudevskva V. (2016). Banking crediting of enterprises' innovation activity in Ukraine // *Banks and Bank Systems*. 2016. Vol. 11(4). P. 97-101. doi:10.21511/bbs.11(4).2016.10 (in Eng.).

[19] [19] Danylyshyn B.M., Korec'kyj M.H., Dacij O.I. (2006) Investycijna polityka v Ukraini: Monografija. Jugo-Vostok, Ltd. 2006. 292 p. ISBN 966-374-157-0 (in Ukr.).

- [20][20] Heyets V. (2017) Corporatization and technological modernization of the economy of Ukraine // *Koz-Gazdasag*. 2017. N 5. P. 19-37 (in Eng.).
- [21][21] Lapko O. (2017) Proektne finansuvannja jak innovacijnyj mehanizm realizacii' investycijnyh proektiv // *Naukovi zapysky Nacional'nogo universytetu "Ostroz'ka akademija"*. Serija Ekonomika. 2017. Vyp. 4. P. 165-170 (in Ukr.).
- [22][22] Mayorova T. (2014) Synergetic approach to a modern paradigm developing of the investment process financial & credit mechanism activating // *Economic annals-XXI*. 2014. Vol. 3-4 (1). P. 66-69 (in Ukr.).
- [23][23] Peresada A. (1998) Investycijnyj proces v Ukrai'ni: monografija. Libra, 1998. 389 p. ISBN 966-7035-04-2 (in Ukr.).
- [24][24] Chuhno A. (2001) Cyvilizacijni zasady ekonomichnoi' polityky v Ukrai'ni // *Visnyk Nacional'noi' akademii' nauk Ukrai'ny*. 2001. N 3. P. 25-29 (in Ukr.).
- [25][25] Zvit pro rezultaty analizu stanu zaluchennja ta vykorystannja pozyk mizhnarodnyh finansovyh organizacij: zatv. rishennjam Rahunkovoi' palaty vid 27.09.2017 r. N 19-7. Rahunkova palata Ukrai'ny. 2017. 47 p. (in Ukr.).
- [26][26] Golubjev D.I. (2015) Osoblyvosti ryzyku ta nevyznachenosti pry ocinci efektyvnosti upravlinnja investycijnyh proektiv // *Visnyk Zaporiz'kogo nacional'nogo universytetu*. 2015. N 2(26). P. 17-26 (in Ukr.).
- [27][27] Saplina D.S. (2013) Identyfikacija ekonomichnyh ryzykiv na riznyh zhyttjevyh stadijah proektu // *Ekonomichnyj visnyk Zaporiz'koi' derzhavnoi' inzhenernoi' akademii'*. 2013. Vyp. 4. P. 108-113 (in Ukr.).
- [28][28] Stan vykonannja derzhavnyh cil'ovyh program u 2016, 2017 ta 2018 rr. Derzhavni cil'ovi programy, Ministerstvo ekonomichnogo rozvytku i torgivli. (2019) [Online]. Available: <http://www.me.gov.ua/Documents/List?lang=uk-UA&tag=DerzhavniTsiloviProgrami>
- [29][29] The European Secretariat for Cluster Analysis (ESCA). (2019) [Online]. Available: <https://www.cluster-analysis.org/> (in Eng.).
- [30][30] Vprovadzhennja novyh vymog do kapitalu vidpovidno do norm Bazelja ta zakonodavstva JeS. (2017) [Online]. Available: <https://bank.gov.ua/doccatalog/document?id=47725151>.
- [31][31] Debt products. IFC. (2019) [Online]. Available: https://www.ifc.org/wps/wcm/connect/CORP_EXT_Content/IFC_External_Corporate_Site/About+IFC_New/Investor%20Relations/ir-products (in Eng.).
- [32][32] BSTDB issues its forth local currency bond in Georgia, Black Sea Trade & Development Bank. (2018) [Online]. Available: https://www.bstdb.org/news-and-events/news/news_4463.htm (in Eng.).
- [33][33] BSTDB Acts as Anchor Investor in the First Corporate Bond Issue in Moldova, Black Sea Trade & Development Bank. (2019) [Online]. Available: https://www.bstdb.org/news-and-media/press-releases/press-releases_5341 (in Eng.).

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MOLECULAR GENETIC PROFILE OF KAZAKHSTAN POPULATIONS OF CATTLE BREEDS

Abstract. Modern methods of cattle breeding provide for active use of new breeding programs. The introduction of molecular-genetic studies predetermines the prospects for the use of DNA microsatellites (STR-loci). These microsatellites are widely used for studying the allele pool of farm animals. Based on the above-mentioned, the aim of the research was to study the genetic structure and analysis of the degree of genetic differentiation of cattle breeds in the Republic of Kazakhstan, based on molecular genetic information. As a biological material for research, the semen of bulls was used. The paper presents research materials of DNA profiles on 11 microsatellite loci of dairy (Holstein, Black-and-white, Aulie-Ata), combined (Alatau) and meat (Auliekol, Kazakh whiteheaded) breeds.

The microsatellite profile of animals was represented by the following loci: BM1824, ETH225, INRA23, BM2113, SPS115, ETH10, TGLA122, TGLA126, TGLA227, ETH3, TGLA53, included in the recommended panel ICAR and ISAG. The genetic pattern of populations was analyzed according to F-statistics. Genetic identity indicators were calculated according to Nei. Populations' heterozygosity was determined according to the Wright's fixation index. The differences in breeds in the direction of productivity were analyzed by the share of variations of microsatellite loci. As a result of research, it was found that the implementation of molecular genetic methods in the selection of farm animals will significantly increase the development potential of cattle breeding resources available in the Republic of Kazakhstan.

Keywords: genetic potential, genetic progress, breeding value, genomic assessment, microsatellites, DNA profile.

Introduction. At breeding farm animals, it is important not only to obtain high productive livestock, but also continuous advance, improvement of the genetic potential of their productive qualities and acceleration of genetic progress in breeds [1]. It is known that cattle breeding methods provide for active use of modern breeding programs [2].

Currently, animal identification methods are based on the analysis of two main types of genetic markers - single nucleotide polymorphism (SNP) and microsatellites (Short tandem repeat, STR) [3, 4].

Undoubtedly, the analysis of a large number of genetic markers (SNP and STR) allows to solve a number of acute issues regarding the population of animals, as well as the "purity" of the genotype of the analyzed individual, which is important from the point of view of conservation of animal genetic diversity.

It is known that microsatellite DNA loci, consisted of STR - Short Tandem Repeats, are widely used in animal husbandry as genetic markers. The use of such highly polymorphic loci gives information about the genome of animals, determines their individuality and genetic uniqueness, which should be taken into account in breeding programs when improving livestock [5-7].

According to research by a number of scientists such as Gautier et al., 2007, Li et al., 2007, Zhang et al., 2007, Flury et al., 2009, Sodhi et al., 2011, microsatellite markers are the most common tool for characterizing and differentiating population structures. Over the past 15 years, the relevance of using microsatellite markers in assessing the genetic diversity of cattle breeds has been documented in numerous studies [8-12].

Single nucleotide polymorphisms (SNPs) play an important role in programs for genetic assessment of livestock, as they can help improve the accuracy of animal genome predictions and genome selection of economically important traits. Additionally, SNP markers can help identify genes affecting economic traits [13].

The results of full genomic research by a team of scientists: Hayes B., Goddard M., Meuwissen T. proved that the effect of individual quantitative trait loci (QTL) on the productivity of animals is small. The marker-assisted selection (MAS) takes into account a small number of DNA markers, therefore, it is more difficult to explain the genetic variability of traits. In this regard, there was a developed technology using information of single nucleotide polymorphisms (SNP), resulting in genomic assessment of animal. The development of genomic assessment methods significantly intensifies the breeding process of the entire population [14, 15]. High information value of SNP - genetic markers associated with the desired combination of manifestations of economic traits was proved.

Currently, genomic selection is widely used in dairy cattle breeding. According to numerous studies, in theory, the inclusion of information about the markers increases the effectiveness of breeding programs compared to traditional selection. However, previously only a few genes were reported associated with changes in dairy productivity, and they explained only a small part of the hereditary variation of cattle [16-20].

Genomic selection is based on the genomic estimated breeding value (GEBV) of animals. GEBV is calculated as the sum of the effects of genetic markers or haplotypes of these markers over the entire genome, thus potentially capturing all QTLs that contribute to the variability of the trait. The reliability of GEBV has been proven more than once in the world. For example, scientists from the United States, New Zealand, Australia and the Netherlands used in their research the population of Holstein-Friesian bulls, tested for the quality of their offspring, having offspring from 650-4500 animals. The studied bulls have been genotyped by 50,000 full-genome markers. As a result, it was found that the reliability of GEBV of the population ranged from 20 to 67%, without taking into account the producers' estimation of the quality of the offspring. However, one should not lose sight of the fact that the reliability of the assessment also depends on the studied trait [16]. For example, in the works of many scientists, it was found that for milk productivity traits with heritability $h^2=0.281-0.401$, the accuracy of GEBV for young bulls was in the range from $r^2=0.180$ to $r^2=0.347$, and for fertility rates with $h^2=0.035-0.068$ GEBV reliability was higher and amounted to $r^2=0.428-0.515$, the genomic assessment allowed to increase the accuracy of the prediction of the genotype by an average of 30.5%, which is equivalent to the presence of indicators of ≈ 10 daughters [21].

Studies by a number of scientists such as N. Zinovyeva, N. Strekozov, I. Yanchukov, A. Ermilov, G. Eskin proved that the genomic assessment system plays an important role in ensuring the competitiveness of breeding material, its creation is one of the priorities of the development of livestock breeding [22].

In the opinion of scientists Guarini A.R., Lourenco D.A.L., Brito L.F., Sargolzaei M., Baes C.F., Miglior F., Misztal I., Schenkel F.S., the success and sustainability of a breeding program that includes genomic information, depends largely on the prediction accuracy. To achieve high accuracy of GEBV, large training populations with low heritability traits are required. By means of simultaneously including genotyped and non-genotyped animals in the assessment, the BLUP's step-by-step genomic approach (ssGBLUP) can provide more accurate and less biased genomic estimates [23].

After obtaining the results of the genomic assessment in the United States, some countries, such as Canada, Australia, New Zealand, France, the Netherlands, Germany, Denmark, Israel, Poland, China, also began to use genomic assessment in practical selection and today they have a lot of positive results [24]. In this connection, a need arises to study the prospects of using the results of molecular-genetic research in Kazakhstan.

Within the Republic of Kazakhstan, there are over 20 cattle breeds of different directions of productivity. To date, the gene pool of these animals at the molecular genetic level is not fully explored. In this regard, the use of the DNA information of the animal genotype will make it possible to introduce into the selection practice a number of advantages over traditional methods of selection. DNA diagnostics of animal genotypes can be performed at an early age. It should be noted that pre-selection of animals is a prospective source of bias in international animal assessments, if not properly taken into account in

national assessments. However, pre-selection does not create bias in the traditional assessment of breeding value, if it includes data from all animals.

The country has accumulated a lot of data that allow to conduct an effective selective and breeding work with animals of dairy cattle breeds. Based on modern conditions for the breeding of highly productive herds, a new methodological basis is essential, which takes into account genetic factors. The application of genetic markers is especially important for the assessment of traits, the phenotypic manifestation of which occurs relatively late or is limited by sex, also for traits that are strongly influenced by non-genetic factors (e.g., environmental factors). Currently, the only effective way to control the reliability of the origin and identification of livestock is genetic testing based on the use of the phenomenon of genetic polymorphism [25].

Unfortunately, in our country, genomic evaluation is practically not used to assess the breeding value of animals at pedigree levels of management. However, it is applicable solely to assess the breeding values of servicing bulls.

At the moment, about 60% of countries participating in international assessments of servicing bulls have already adopted genomic selection in their animal breeding programs. Thus, the data sent for multiple international assessments can be quite diversified, and to ensure a fair comparison of the estimates of animals included in international genetic assessments, an appropriate test method is required for all countries [26].

Thus, molecular-genetic methods enable to select among animals of very early ages, which significantly increases the efficiency. From this, it follows that the introduction of molecular genetic methods in the selection of animals is crucial.

Based on the above-mentioned, the aim of the research was to study the genetic structure and analysis of the degree of genetic differentiation of cattle breeds in Kazakhstan based on molecular genetic information.

The novelty of the research lies in the fact that for the first time the study of allelic polymorphism on 11 microsatellites of dairy, combined and meat productivity breeds related to the breeding resources of Kazakhstan was conducted. Reliably determined the importance of the use of molecular genetic markers in breeding work.

Methods of research. Biological material for research was semen of bulls. Samples of biological material (sperm) of servicing bulls were used to create a database of reference samples. The studies were carried out in the Laboratory of Molecular Bases of Breeding of the Department of Biotechnology and Molecular Diagnostics of Animals at the Federal Science Center for Animal Husbandry named after L.K. Ernst.

DNA extraction from semen samples was performed using the DNA-EXTRAN-2 reagent kit (SYNTHOL EX-511-100, Russia). DNA extraction was carried out using the protocol in accordance with the recommendations of the manufacturers.

In the course of the research, DNA profiles on 11 microsatellite loci of bulls of dairy (Holstein breed - 34 animals, Black-and-white - 18 animals, Aulie-Ata - 5 animals), combined (Alatau - 18 animals) and meat breeds (Auliekol - 5 animals, Kazakh whiteheaded - 14 animals), belonging to the Asyltulik JSC. The microsatellite profile of animals was determined by DNA analyzer with a laser detector ABI3130xl by the following loci: *BM1824*, *ETH225*, *INRA23*, *BM2113*, *SPS115*, *ETH10*, *TGLA122*, *TGLA126*, *TGLA227*, *ETH3*, *TGLA53*, included in the recommended panel ICAR and ISAG. *GenAIEx 6.501* and *structure 2.3* programs were used for the analysis of the results, *Microsoft Excel 2013* software was used for data visualization.

Research results and their discussion. In order to define the community of populations origin, the F_{st} (fixation index) coefficients were calculated. In the course of the work, pairwise analysis of the genetic structure of the studied populations was made. The obtained F_{st} data allowed to establish the degree of divergence between populations according to the direction of their productivity. The research results are summarized in table 1.

According to the data given in table 1, above the diagonal, the smallest genetic distances were observed between the Black-and-white and Holstein (0.016) breeds that indicates a high degree of divergence. However, one should not forget that this coefficient also testifies to the general origin of the above-mentioned breeds. The genetic distances between the dairy breeds of the European and Kazakh breeding were: on the one hand, in the Black-and-white, Aulie-Ata and Alatau - 0.064 and 0.107 respectively, on

the other hand, in Holstein - 0.078 and 0.119, respectively. The coefficients between the Black-and-white and Aulie-Ata, Black-and-white and Alatau, Holstein and Aulie-Ata breeds show the average degree of divergence, i.e. they confirm the common origin and direction of productivity. Between the Holstein and Alatau breeds, a large degree of divergence was observed. For meat breeds, the F_{st} index between Auliekol and Kazakh whiteheaded breeds was less than 0.058, which indicates a weak degree of divergence. This fact confirms the history of the creation of the Auliekol breed, as it is known, this breed was created using the Kazakh whiteheaded cows and the Charolais and Aberdeen Angus bulls.

Table 1 – Above the diagonal - the degree of divergence (F_{st}) in populations, below the diagonal - analysis of genetic identity according to Nei

	Black-and-white	Holstein	Aulie-Ata	Alatau	Auliekol	Kazakh whiteheaded
Black-and-white	–	0.016	0.064	0.107	0.122	0.098
Holstein	0.910	–	0.078	0.119	0.133	0.104
Aulie-Ata	0.556	0.500	–	0.054	0.074	0.061
Alatau	0.214	0.207	0.600	–	0.052	0.043
Auliekol	0.203	0.195	0.512	0.667	–	0.058
Kazakh whiteheaded	0.295	0.323	0.555	0.678	0.627	–

According to the results of the analysis of genetic distances, indicators of genetic identity ($n = 94$) were calculated according to Nei [7]. Calculations of the analysis of genetic identity are shown in Table 1 below the diagonal.

The calculation of the genetic distances between the studied breeds, carried out according to Nei, showed that the Black-and-white and Holstein breeds were characterized by the greatest affinity in the genetic structure due to the common origin - 91%. For Black-and-white and Aulie-Ata cattle, affinity was 56%. For the Kazakh whiteheaded and Auliekol breeds, the identity coefficient was 63%. The greatest differences, as one would expect, were between the populations of dairy, combined and meat breeds from 20.3% to 32.3%, i.e. populations are characterized by a high degree of differentiation. This fact explains the breeding pressure by the traits of breed productivity.

Polymorphism of loci, estimated by the number of alleles per locus, diversity of alleles, average value of the total number of alleles, heterozygosity, and the informational content of polymorphism are described in table 2.

For 11 loci of three populations, 253 alleles were found in our study. The number of alleles per locus for dairy breeds ranged from 4 (TGLA126A) to 8 (TGLA122A, TGLA53A) with an average value of 6, for mixed breeds - from 3 (TGLA126A) to 14 alleles (BM2113A, TGLA227A) with an average value of 9, and for meat breeds - from 4 (BM1824A, TGLA126A) to 11 alleles (BM2113A, TGLA227A) with an average value 8.

The observed heterozygosity (H_o) in the dairy cattle population varied from 0.563 (SPS115A) to 0.867 (BM2113A), in the combined cattle population from 0.667 (BM1824A) to 1.000 (TGLA227A), in beef cattle - from 0.684 (BM1824A) to 0.902 (BM1824A).

The expected heterozygosity (H_e) in the dairy cattle population varied from 0.627 (SPS115A) to 0.810 (TGLA122A), in the combined cattle population from 0.554 (TGLA126A) to 0.898 (TGLA127A), and for meat cattle from 0.601 (TGLA126A) to 0.859 (BM2113A).

Unbiased expected heterozygosity (uH_e) for dairy cattle ranged between 0.663 (SPS115A) and 0.852 (BM2113A), for cattle of the combined productivity direction - from 0.570 (TGLA126A) to 0.924, (TGLA227A), for beef direction - from 0.626 (TGLA126A) to 0.894 (BM2113A).

Of 11 loci, 7 loci of the dairy population had negative inbreeding coefficients (F_{is}). Negative F_{is} in the population of the combined productivity direction was in 6 loci, and in the beef cattle population - 7 loci.

The calculation of the analysis of the genetic diversity of the studied breeds (F_{it}) at the molecular level showed that the variance among populations is 13%, among breeds - 2%, and among individuals (or intra-breed variations) - 85%. The results of the analysis are shown in figure 1.

Table 2 – Polymorphism of 11 loci in three populations

Pop		BM 1824A	ETH 225A	INRA 023A	BM 2113A	SPS 115A	ETH 10A	TGLA 122A	TGLA 126A	TGLA 227A	ETH 3A	TGLA 53A
Dairy	<i>N</i>	19	19	18	19	19	19	19	19	14	19	19
	<i>Na</i>	5	6	7	7	5	7	8	4	7	5	8
	<i>Ne</i>	4	4	4	6	3	5	5	3	5	4	5
	<i>Ho</i>	0.701	0.793	0.840	0.867	0.563	0.829	0.688	0.564	0.804	0.829	0.809
	<i>He</i>	0.707	0.743	0.771	0.808	0.627	0.803	0.810	0.648	0.797	0.738	0.805
	<i>uHe</i>	0.743	0.784	0.811	0.852	0.663	0.846	0.851	0.681	0.841	0.778	0.847
	<i>Fis</i>	0.021	-0.062	-0.091	-0.075	0.059	-0.029	0.153	0.128	-0.009	-0.122	-0.006
Combined	<i>N</i>	18	18	18	18	18	18	18	18	18	18	18
	<i>Na</i>	4	10	10	14	8	8	14	3	14	5	9
	<i>Ne</i>	3	7	6	11	4	6	10	2	10	2	5
	<i>Ho</i>	0.667	0.833	0.833	0.778	0.833	0.722	0.889	0.889	1.000	0.889	0.833
	<i>He</i>	0.693	0.856	0.824	0.910	0.750	0.836	0.897	0.554	0.898	0.591	0.793
	<i>uHe</i>	0.713	0.881	0.848	0.937	0.771	0.860	0.922	0.570	0.924	0.608	0.816
	<i>Fis</i>	0.038	0.027	-0.011	0.146	-0.111	0.137	0.009	-0.604	-0.113	-0.504	-0.051
Meat	<i>N</i>	19	19	18	19	19	19	19	19	16	19	19
	<i>Na</i>	4	8	8	11	7	8	11	4	11	5	9
	<i>Ne</i>	3	6	5	9	3	6	7	3	7	3	5
	<i>Ho</i>	0.684	0.813	0.837	0.822	0.698	0.776	0.788	0.726	0.902	0.859	0.821
	<i>He</i>	0.700	0.800	0.798	0.859	0.688	0.820	0.853	0.601	0.847	0.665	0.799
	<i>uHe</i>	0.728	0.833	0.829	0.894	0.717	0.853	0.887	0.626	0.883	0.693	0.831
	<i>Fis</i>	0.029	-0.017	-0.051	0.036	-0.026	0.054	0.081	-0.238	-0.061	-0.313	-0.028

N = number of alleles; *Na* = number of alleles per locus; *Ne* = number of effective alleles = $1 / (\sum p_i^2)$; *Ho* = observed heterozygosity = No. ofHets / *N*; *He* = expected heterozygosity = $1 - \sum p_i^2$; *uHe* = Unbiased expected heterozygosity = $(2N / (2N-1)) * He$; *Fis* = inbreeding coefficient = $(\text{Mean He} - \text{Mean Ho}) / \text{Mean He}$.

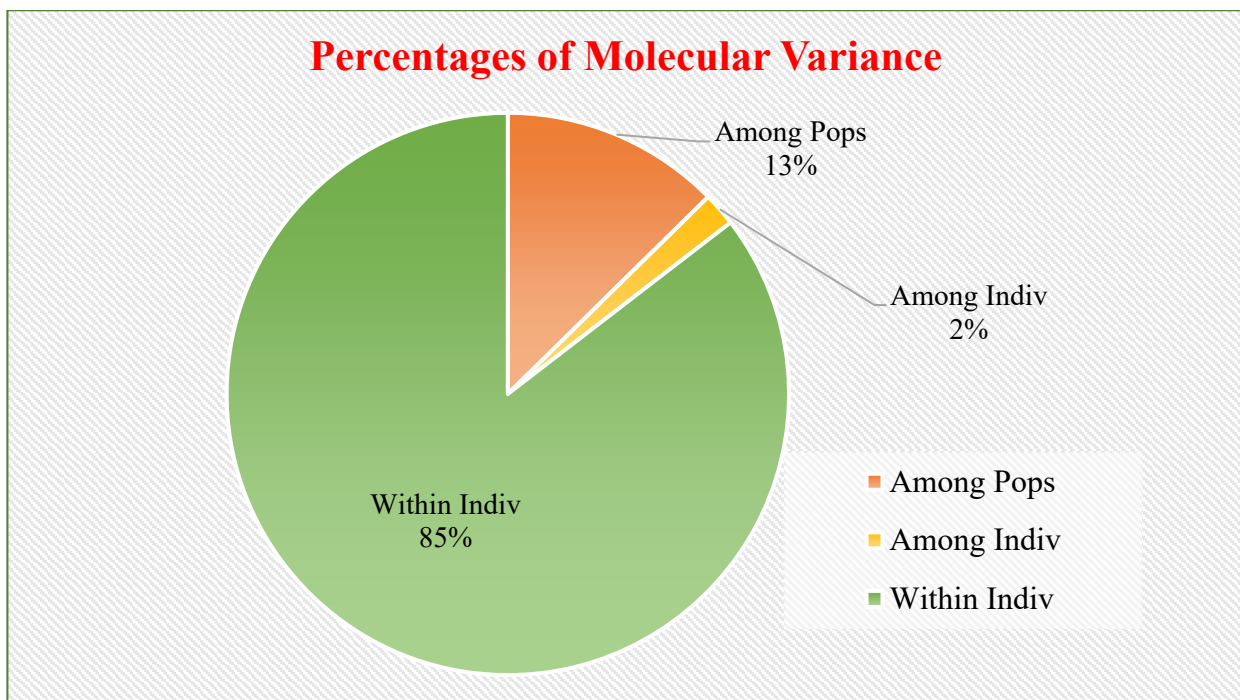


Figure 1 – Genetic diversity of the population

The spatial distribution of breeds in the coordinates of genetic variability is shown in figure 2. The Black-and-white, Holstein and Aulie-Ata breeds are grouped distinctly from the other three breeds. In turn, the Kazakh whiteheaded, Auliekol, and Alatau breeds formed their own separate cluster.

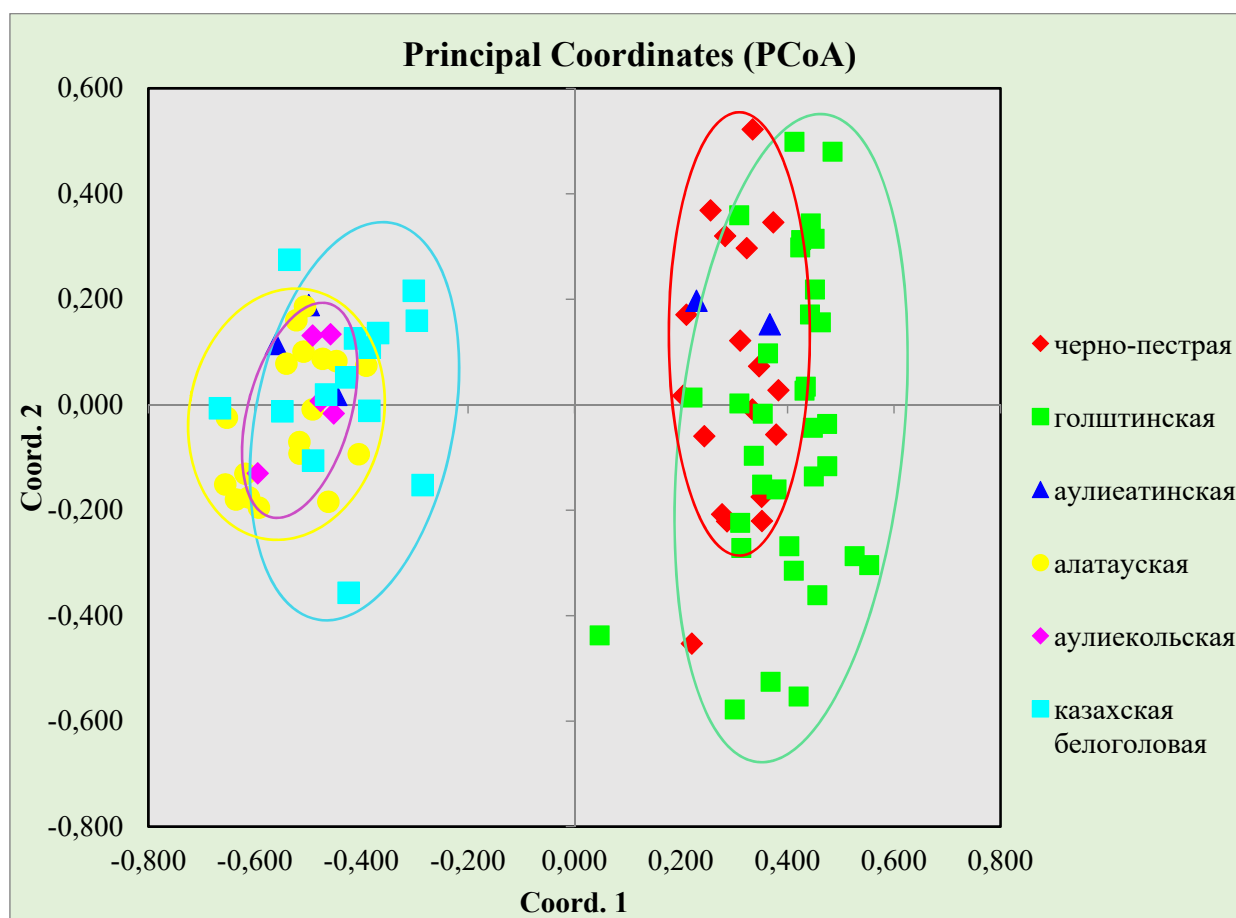


Figure 2 – Spatial distribution of breeds in the coordinates of genetic variability

The analysis based on microsatellite markers seems to indicate that the breeds within the clusters have a similar gene pool. This underscores the need for additional microsatellite markers to more accurately identify the aforementioned clusters.

The share of variation in microsatellite loci explaining the diversity of breeds in the direction of productivity for the first component (PC1) reached 17.4%, for the second (PC2) - 4.9%.

Thus, studies based on microsatellite markers, as well as single nucleotide polymorphisms (SNPs), have shown genetic variation between related breeds, as a result of which there is a fairly clear division into clusters.

Conclusions. The introduction of molecular genetic methods in breeding will significantly increase the development potential of breeding resources available on the territory of the Republic of Kazakhstan due to own reproduction of livestock of various breeds of different productivity direction [29]. These methods will create a basis for the implementation of such approaches as genomic selection, which in turn will provide an increase in the intensity of the breeding process.

Overall, the progress in the field of applied research and the active implementation of their results in practice will further deepen research and empower genetic investigations in Kazakhstan.

Concluding the above-mentioned data, it is important to note that the present study provides valuable information on the genetic diversity of cattle in Kazakhstan and lays the foundation for future more in-depth research.

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ІРІ ҚАРА МАЛ ТҰҚЫМДАРЫНЫҢ ҚАЗАҚСТАНДЫҚ ПОПУЛЯЦИЯСЫНЫҢ МОЛЕКУЛЯРЛЫ-ГЕНЕТИКАЛЫҚ ПРОФИЛІ

Аннотация. Ірі қара мал өсірудің заманауи әдістері селекциялық бағдарламалардың жаңа тәсілдерін кеңінен пайдалануға негізделген. Молекулярлы-генетикалық зерттеулерді енгізу – келешекте ДНК микросателлиттерін (STR-локустар) пайдалануды көздейді. Қазіргі таңда аталмыш микросателлиттер ауыл шаруашылығы малдарының аллелофондын зерттеу барысында кеңінен пайдаланылуда. Осы орайда, молекулярлы-генетикалық ақпарат негізінде Қазақстан республикасында өсірілетін ірі қара мал тұқымдарының генетикалық құрылымы мен генетикалық дифференциясының дәрежесін талдау – зерттеу жұмыстарының мақсаты болып табылды. Биологиялық материал ретінде асыл тұқымды бұқалардың ұрығы алынды. Аталмыш жұмыста сүт бағытындағы (голштин, қара-ала, әулиеата), қос бағыттағы (алатау) және ет бағытындағы (әулиекөл, қазақтың ақбас) тұқымдардың 11 микросателлитті локустары бойынша ДНК-профильдерін зерттеу мәліметтері келтірілген.

Жануарлардың микросателлитті профилі, ICAR және ISAG мекемелерімен ұсынылған панельге кіретін, BM1824, ETH225, INRA23, BM2113, SPS115, ETH10, TGLA122, TGLA126, TGLA227, ETH3, TGLA53 локустарымен көрсетілді. Популяциялардың генетикалық құрылымы F-статистикасына сәйкес талданды. Генетикалық ұқсастық көрсеткіштері Ней бойынша есептелінді. Популяциялардың гетерозиготалығы Райттың фиксация индексіне сәйкес анықталынды. Тұқымдардың өнімділік бағыты бойынша ажырауы микросателлитті локустардың вариация үлесінің негізінде талданды. Зерттеу жұмыстарының нәтижесінде ауыл шаруашылығы малының селекциясына молекулярлы-генетикалық әдістерді енгізу – Қазақстан Республикасындағы асыл тұқымды мал қорларының даму әлеуетін едәуір жоғарылататыны айқындалды.

Түйін сөздер: генетикалық әлеует, генетикалық прогресс, асыл тұқымдық құндылық, геномдық бағалау, микросателлиттер, ДНК-пішін.

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МОЛЕКУЛЯРНО-ГЕНЕТИЧЕСКИЙ ПРОФИЛЬ КАЗАХСТАНСКОЙ ПОПУЛЯЦИИ ПОРОД КРУПНОГО РОГАТОГО СКОТА

Аннотация. Современные методы разведения крупного рогатого скота предусматривают активное использование новых селекционных программ. Внедрение молекулярно-генетических исследований предопределяет перспективы использования микросателлитов ДНК (STR-локусов). Данные микросателлиты получили широкое применение для изучения аллелофонда сельскохозяйственных животных. Исходя из вышесказанного, целью исследований явилось изучение генетической структуры и анализ степени генетической дифференциации пород крупного рогатого скота, разводимых в Республике Казахстан, на основе молекулярно-генетической информации. В качестве биологического материала для исследований использовалось семя быков-производителей. В работе приведены материалы исследований ДНК-профилей по 11 микросателлитным локусам молочных (голштинская, черно-пестрая, аулиеатинская), комбинированных (алатауская) и мясных (аулиекольская, казахская белоголовая) пород.

Микросателлитный профиль животных был представлен локусами: BM1824, ETH225, INRA23, BM2113, SPS115, ETH10, TGLA122, TGLA126, TGLA227, ETH3, TGLA53, входящими в рекомендованную панель ICAR и ISAG. Генетическую структуру популяций анализировали согласно F-статистики. Показатели генетической идентичности вычислены по Нею. Герерозиготность популяций определена согласно индексу фиксации Райта. Расхождение пород по направлению продуктивности было проанализировано по доле вариаций микросателлитных локусов. В результате исследований было установлено, что внедрение молекулярно-генетических методов в селекцию сельскохозяйственных животных существенно повысит имеющийся на территории Республики Казахстан потенциал развития племенных ресурсов крупного рогатого скота.

Ключевые слова: генетический потенциал, генетический прогресс, племенная ценность, геномная оценка, микросателлиты, ДНК-профиль.

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REFERENCES

- [1] Tulinova O.V., Vasilyeva E.N. (2015). Prospective developments in the field of breeding work with dairy cattle breeds. *Genetics and breeding animals* №3. p.9-16. (in Russ.).
- [2] Zinoviyeva N.A., Sermyagin A.A., Dotsev A.V., Deniskova T.E., Wimmers K., Reier H., Brehm G.G. (2017) Estimation of the current state of the allele pool of animal breeds using full genomic analysis: Russian breeds of cattle. *Genetics of populations: progress and prospects. Proceedings of the International Scientific Conference dedicated to the 80th birthday of academician Yu.P. Altukhov (1936-2006) and the 45th anniversary of the founding of the Yu.P. Altukhov Laboratory of Population Genetics, Institute of General Genetics RAS. Federal Agency of Scientific Organizations, Russian Academy of Sciences, N.I. Vavilov Institute of General Genetics RAS, Scientific Council on Genetics and Breeding RAS.* Pp. 102-104.(in Russ.).
- [3] Koychubekov, B.K., Sorokina M.A., Mkhitarian K.E. Determining the sample size when planning a research study. (2014). *International journals of applied and fundamental researches - 2014. - № 4. - p. 71-74.*(in Russ.).
- [4] Kipen V.N., Verchuk A.N., Kotova S.A. (2017). The main tactical issues in the development of a kit for genotyping animals using STR and/or SNP loci. *Questions of criminology, criminalistics, and forensics.* 2017. №2 (42). P.104-111. (in Russ.).
- [5] Kalashnikova L.A., Khabibrakhmanova A.Ya., Gancheikova T.B., Pavlova Yu.I., Yaluga V.L. (2008). Genetic characterization using microsatellites. *Zootechnics.* №8. p.9-11. (in Russ.).
- [6] CarolinoI., ConceicaoO.Sousa, FerreiraS., CarolinoN., FátimaS.Silva, LuisT.(2009). Gama. Implementation of a parentage control system in Portuguese beef-cattle with a panel of microsatellite markers. *Genetics and Molecular Biology.* 32(2). P.306-311
- [7] Radko A., Rychlik T. (2009). Use of blood group tests and microsatellite DNA markers for parentage verification in a population of Polish Red-and-White cattle // *Annals of Animal Science.* 9(2). P.221.
- [8] Gautier M., Faraut T., Moazami-Goudarzi K., Navratil V., Foglio M., Grohs C., Boland A., Garnier J.G., Boichard D., Lathrop G.M., Gut I.G., Eggen A. (2007) Genetic and haplotypic structure in 14 European and African cattle breeds. *Genetics.* 177.P.1059-1070.
- [9] Li M.H., Tapio I., Vilkki J., Ivanova Z., Kiselyova T., Marzanov N., Cinkulov M., Stojanovic S., Ammosov I., Popov R., Kantanen J. (2007). The genetic structure of cattle populations (*Bos taurus*) in northern Eurasia and the neighbouring Near Eastern regions: implications for breeding strategies and conservation. *Mol. Ecol.* 16.P.3839-3853.
- [10] Zhang G.X., Wang Z.G., Chen W.S., Wu C.X., Han X., Chang H., Zan L.S., Li R.L., Wang J.H., Song W.T., Xu G.F., Yang H.J., Luo Y.F. (2007). Genetic diversity and population structure of indigenous yellow cattle breeds of China using 30 microsatellite markers. *Anim. Genet.* 38. P.550-559.
- [11] Flury C., Ngandolo B.N.R., Müller B., Zinsstag J., Kadarmideen H.N. (2009). Molecular characterization of two common Chadian cattle breeds. *Anim. Genet. Resour. Inf.* 44.P. 67-76.
- [12] Sodhi M., Mukesh M., Mishra B.P., Ahlawat S.P., Prakash B., Sobti R.C. (2011). Microsatellite analysis of genetic population structure of zebu cattle (*Bos indicus*) breeds from north-western region of India. *Anim. Biotechnol.* 22.P.16-29.
- [13] Zhang Z., Ober U., Erbe M., Zhang H., Gao N., He J., Li J., Simianer H.(2014). Improving the accuracy of whole genome prediction for complex traits using the results of genome wide association studies. *PLoS One* 9. e93017.

- [14] Hayes B., Goddard M. (2010). Genome-wide association and genomic selection in animal breeding. *Genome* Vol. 53. P.876-883
- [15] Meuwissen T., Goddard M. (2010). Accurate prediction of genetic values for complex traits by whole-genome resequencing. *Genetics*, June 1. vol. 185. no. 2. P. 623-631
- [16] Hayes B.J., Bowman P.J., Chamberlain A.J., Goddard M.E. (2009). Invited review: Genomic selection in dairy cattle: Progress and challenges. *Journal of Dairy Science*, February. Volume 92. Issue 2. P. 433-443
- [17] VanRaden P. M., Van Tassell C. P., Wiggans G. R., Sonstegard T. S., Schnabel R. D., Taylor R. D., Schenkel F. S. (2009). Reliability of genomic predictions for North American dairy bulls. *J. Dairy Sci.* 92:2009. P.16-24
- [18] Harris B. L., Johnson D. L. (2010). Genomic predictions for New Zealand dairy bulls and integration with national genetic evaluation. *J. Dairy Sci.* 93: 2010. P.1243-1252.
- [19] Su G., Gulbrandsen B., Gregersen V.R., Lund M.S. (2010). Preliminary investigation on reliability of genomic estimated breeding values in the Danish Holstein population. *J. Dairy Sci.* 93: 2010. P.1175-1183.
- [20] VanRaden P. M., Sullivan P. G. (2010). International genomic evaluation methods for dairy cattle. *Genet. Sel. Evol.* 42: 2010.7.
- [21] Sermyagin A.A., Zinovyeva N.A. (2015). Using full-genome data to advance the assessment of breeding value of cattle. Materials of the 22nd int. scientific conf. students, graduate students and young scientists Lomonosov-2015, April. Moscow. Publishing house of Moscow University. P. 124-125. (in Russ.).
- [22] Zinovyeva N., Strekozov N., Yanchukov I., Ermilov A., Eskin G. (2015). Cattle genomic evaluation system: primary results. *Animal husbandry of Russia*. № 3. p. 27-30. (in Russ.).
- [23] Guarini A.R., Lourenco D.A.L., Brito L.F., Sargolzaei M., Baes C.F., Miglior F., Misztal I., Schenkel F.S. (2018). Comparison of genomic predictions for lowly heritable traits using multi-step and single-step genomic best linear unbiased predictor in Holstein cattle. *Journal of Dairy Science*, In press, corrected proof, Available online 21 June 2018.
- [24] Smaragdov M.G. (2013). Genomic selection of dairy cattle in the world. Five years of practical use. *Genetics*. V.49. №11. P.1251-1260. (in Russ.).
- [25] Abugaliev S.K., Ombayev O.M. (2015). Biotechnological and molecular genetic methods for creating adaptive ecotypes in the western region of Kazakhstan and the Non-Black Earth Region of Russia. In the collection of the I Eurasian scientific-practical conference. Innovative agrobiotechnologies in animal husbandry and veterinary medicine. p.90-94.
- [26] Tyrisevä A.-M., Mäntysaari E.A., Jakobsen J., Aamand G.P., Dürr J., Fikse W.F., Lidauer M.H. (2018). Detection of evaluation bias caused by genomic preselection. *Journal of Dairy Science*, Volume 101, Issue 4, April 2018, Pages 3155-3163.
- [27] Nei M. (1977). F-statistics and the analysis of gene diversity in subdivided populations. *Ann. Hum. Genet.* Vol. 41. P. 225-233.
- [28] Wright S. (1978). Evolution and the genetics of populations. Variability within and among natural populations. Univ. Chicago. Vol. 4. 590 p.
- [29] Baimukanov D.A., Pristupa V.N., Kolosov Yu.A., Donnik I.M., Torosyan D.S., Kolosov A.Yu., Orlova O.N., Yuldashbayev Yu.A., Chylbak-ool S.O. (2019). Improvement of breeding and productive traits of Kalmyk cattle breed. *Bulletin of the National Academy of Sciences of the Republic of Kazakhstan*. Volume 2, Number 378 (2019), 128 – 145. <https://doi.org/10.32014/2019.2518-1467.51> ISSN 2518-1467 (Online), ISSN 1991-3494 (Print).

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DEVELOPMENT OF SCIENTIFIC APPROACHES TO THE RESEARCH OF THE MANAGEMENT NATURE OF ENTERPRISE CAPITAL

Abstract. The scientific article is devoted to the problems of research of the managerial nature of the capital of the enterprise, which has undergone significant changes in recent years. On the basis of a critical analysis of scientific work on substantive interpretations of the enterprise capital, approaches to their research are organized, organized into the following: economic, according to which capital is explored as wealth, money, resources, value, etc.; accounting, within which the interpretation of capital is carried out in terms of financial results, net assets, financial resources, etc.; financial, according to which capital is considered as a form of organization of financial resources, stock of funds, monetary measurement values. Postindustrial specificity of social development directly reflected on the processes and results of capital management of the enterprise, which actualized the study of capital in the entrepreneurial aspect. It is determined that the difference between this approach and traditional research is the focus on such forms of capital as social, information, knowledge, technological, cultural, etc., which is caused by the postindustrial specificity of processes of human being. However, under such conditions, forms of capital are not able to perform their functions without being involved in the interaction and relationships mediated by the activities of economic entities on the basis of mutual value. The entrepreneurial problematics of enterprise capital research has led to changes in the logic of managerial influences on it, which should be implemented in accordance with a strategic-oriented approach. Its main specificity is related to the expansion of the content space of capital research - not only objective but also incorporated, as well as the implementation of management based on the elimination of extraordinary and ordinary gaps in the results of capital formation processes.

Key words: enterprise capital, capital management, factor of production, ability of capital, value.

The relevance of the study. The objective transformations of the socio-economic system lead to significant structural shifts in social production and, accordingly, to the structure and configuration of capital. Post-industrial trends expand the composition of social capital not only in material but also in intellectual objects, and the change in priority forms of management focus of management at different levels actualizes the problem of the evolutionary transformation of scientific approaches to enterprise capital management. The results of the generalization of the scientific work of the evolutionary direction of the study of capital (K. Marx, K. Bucher, J. Schumpeter, D. Bell, V. Mayevsky, etc.) suggest that its transformation is in accordance with the evolution of the socio-economic system, and penetration capital extends to new spheres of social life that were considered outside the economic space until the post-industrial stage of social development. Under these conditions, new forms (manifestations) of capital appear in both its existing systems (ie, tangible and intangible objects are identified on the basis of capital), and fundamentally new forms of embodiment emerge, which at the present stage are conditioned by the specificity of post-industrial development of society. These phenomena actualize the need to improve capital management, taking into account the evolutionary specificity of its development and theoretical developments within the meaningful limits of this study.

Research of modern scientific problems of capital of enterprises as an object of management is presented in the scientific works of G. Arnold, I. Blank, O. Braille, Y. Brigham, D. Volkov, L. Gapensky, A. Damodaran, I. Ivashkovskaya, O. Mendrul, etc. Despite the significant theoretical and methodological experience in this subject area, there are a number of scientific areas that require development in the

context of modern postindustrial specificity of capital formation, which is caused by changes that occur in the business environment of enterprises.

Research methods. The basis of this study is the general and special methods of scientific knowledge, the use of which is predetermined by the problem. The following methods were used for the study: *bibliographic and terminological analysis* - to streamline scientific positions on the interpretation of the content of capital of enterprises; *scientific generalization* - in the systematization of modern scientific views to the study of enterprise capital and scientific approaches to the implementation of purposeful influences on it; *system analysis and synthesis* - for actualization and argumentation of expediency of entrepreneurial direction of enterprise capital research and strategic-oriented approach to its management.

Results. In economic theory, capital is considered as "value", "wealth", "source of income", "means", "initial amount of funds", "resources", "property", "factor of production", "factor of interaction and relationship», Etc. Based on the critical elaboration and authorial ordering of the areas of scientific research of capital in economic discourse, its main contents can be combined into the following: economic, according to which the existing terminology is multidimensional - "wealth", "relationships", "money", "factor of production", "resources", "utility", "value", "cost", etc. [1-6]; accounting, within which the interpretation of capital is carried out in the following terminologies: financial results (commercial accounting), net assets (static accounting approach), financial resources (dynamic accounting approach), the aggregate of own and borrowed funds (evolutionary-adaptive approach) [7, 8]; financial, according to which capital is considered as a form of organization of financial resources, stock of funds, monetary measurement of value [9-11]; managerial, which on the one hand acts as a synthetic aspect of the economic, financial and accounting contents of the enterprise capital, on the other - implements the logic of systematic, process, functional, situational, structural approaches to purposeful impact on capital [12-17].

The delineation of the selected areas is rather conditional, as each of them complements the general characteristic of the capital of the enterprise with new quality. In this case, in accordance with the thematic focus of this study, the main emphasis will be on managerial nature of the capital of enterprises that require clarification of the author's logic of their relationship.

The results of the generalization of scientific economic publications, which reveal the managerial nature of the capital of the enterprise allows to distinguish the immanent properties of capital, the content of which is that capital is characterized by the ability to reproduce, accumulate, convert forms, as well as the formation of added value and ensure its growth. In their research, the vast majority of scholars focus on the content of the processes themselves, ignoring such a characteristic of capital as an ability that, in the opinion of the authors of the article, is causal in terms of achieving the desired result.

The essence of the concept of "ability" is usually terminologically related to the categories of opportunity and quality (properties). The beginning of such a tradition is laid by Aristotle and is supported and developed in such sciences as philosophy, sociology, psychology, economics. In the dictionary sense, the term "ability" is defined as the characteristics of the subject, which express the degree of development of a certain set of activities. In economic discourse, the subject of the study of capabilities is either a person or an organization, and the main theory that explains the economic nature of organizational capacity is strategic management. Summarizing the theoretical basis of the concept of organizational capabilities in the economic theory of strategy, it is concluded that there is no single scientific position on their meaningful interpretation. On the basis of a critical analysis of approaches to the scientific understanding of abilities, it was concluded that it is advisable to use attributive direction to determine the managerial specificity of the ability of capital.

Determining the ability, as a complex characteristic of the managerial nature of capital, it is logical to present such a set of its properties, which, being included in the dynamics of the value movement, ensure the targeted orientation of managerial influence on capital, which is associated with its growth. It should be emphasized that the presence of certain properties of capital (or its varieties) is not a guarantee of achieving the goals, they will gain certainty only by being included in the dynamics (movement) of the values where the interaction and integrity of the properties of differentiated types of capital occur. That is, financial characteristics of different types of capital seem to be present in each other, which causes their diffusion and synergistic effect, which gives certain properties to the aggregate capital of the economic

entity and provides the expected economic results, which ensure the formation and growth of value of invested capital.

The specificity of modern economic capital research lies in the fact that they go beyond the economic subject of study, which determines the complexity and ambiguity of theoretical conclusions and concepts. Modern scholars emphasize that capital is filled with qualitatively new characteristics and is transformed "from a factor of production into a factor of interaction and relationship" [18].

In the aspect of capital formation of the enterprise, this significantly broadens the meaningful space of his research, which is connected with the problem of the ability of capital to fulfill its basic purpose - to provide formation and value growth. Although the value issue of capital research is not new to economic science, in the managerial sense it has been gaining ground over the last twenty years. This is due, first of all, to the expansion of the invariant structure of economic value, which has traditionally been described in the economy of the enterprise in the categories of utility and costs.

The results of the generalization of participatory approaches to the study of value issues in the aspect of enterprise capital management, and allows us to update the extension of the traditional research context, which can be described by the interconnected terminology "Utility ↔ Costs ↔ Content value" [19, 20], which is completely correlated with the modern aspects of capital formation and is explained in the categories of human, social, knowledge, intellectual capital. It is in the plane of meaningfulness that the content of modern ways of ensuring the growth of the aggregate value of the enterprise is revealed on the basis of effective management of certain types of capital.

This section of the study actualizes the development of a new direction of research on the managerial nature of capital, which can be called entrepreneurial, and its conceptual problems are revealed in such aspects.

1. The actualization of the substantive expansion of the essence of capital is caused by objective tendencies of the post-industrial type of development of the world economic system, which led to the change of emphasis from the priority of the production sphere to the intellectual, informational, social, environmental. This is reflected in the concept of priority forms of capital, and the specificity of economic research has become interdisciplinary. In such a substantive setting, the ideology of enterprise capital management changes, whereby the intellectual and creative abilities of a person become the object of managerial focus, and the resultant aspects of capital formation are explained in the categories of consumer, cultural, corporate, and reputational values.

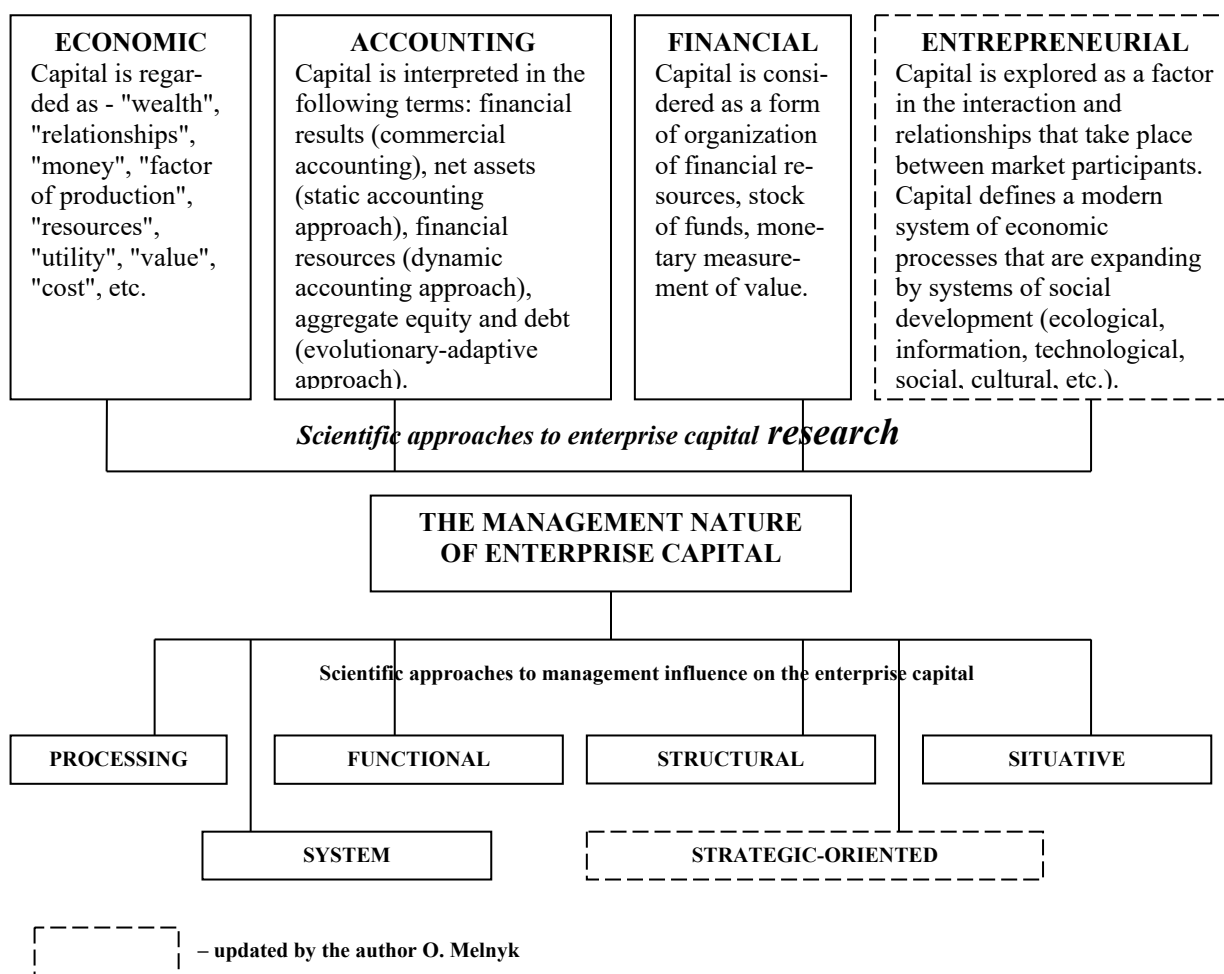
2. Entrepreneurial issues of research capital in the enterprise requires a deeper study of such scientific phenomena as information, social, knowledge, partnership, etc. capital in accordance with the constituent features of the concept of "capital" as an economic category. Realities and tendencies of modern economic processes cause the reduction of clarity and context is the complexity of the content of the studied categories, dynamically evolving in modern economics. To the capital of the enterprise as a factor of production, it lost its only meaningful meaning, which was assigned to it in models of production function and transformed into contextual relations. That is, a meaningful inter-integration of the "classical" factors of production (labor, land, capital), whereby capital "becomes present in one or another contextual form, in each element of the production function", acts as an exogenous and endogenous element of the economic chain processes and interacts both individually and in the global economic system [5, p. 167]. In engaging systems of civilizational development (information, ecological, social, technological, cultural, etc.), they acquire a special general form of capital, which essentially defines the economic organization of modern society. None of these systems is a capital in itself. They acquire the function of capital formation, provided they are included in the relationship between people who united them in the processes of formation and redistribution of values in different specific, according to their content, forms and creating conditions for the growth, accumulation of basic elements, qualities and processes of economic development.

This formulation of problems in the aspect of the managerial nature of the enterprise capital expands the range of directions of scientific research in the field of the chain of processes of capital formation, clarification of the content of its results, methods of their evaluation and ways of ensuring achievement under the condition of post-industrial development of society.

3. The entrepreneurial aspect of enterprise capital research actualizes certain changes in the logic of purposeful influence on it, which has traditionally been implemented within the framework of systemic,

process, functional, situational and structural approaches. It is about the appropriateness of focusing management in eliminating extraordinary and ordinary gaps in ensuring the achievement of the desired outcomes of capital and which, by their nature, the content is much broader than those formalized and measured on the basis of economic and financial indicators. This approach involves changing the logic of managerial decision making from causal to effective, and the process itself acquires strategic characteristics.

Summarizing the results of the author's, can make arrangement directions of managerial nature capital company, formalized as shown in figure. Updating the entrepreneurial direction of the enterprise capital research and strategic-oriented approach to its management forms the space for studying new aspects of capital formation, which are related to the peculiarities of its movement in the extended value chain; transformation of opportunities of business environment into resources of functioning and development of the enterprise; assessing and formalizing the aggregate results of capital formation; organization of capital management on the basis of analysis and elimination of extraordinary and ordinary strategic gaps, etc.



Streamlining scientific approaches to the study of the managerial nature of enterprise capital

Conclusions. Post-industrial tendencies of social development have led to the expansion of the content of their boundaries of capital research, which today is represented not only by material, financial, intellectual, but also other aspects of social development (information, technological, social capital, etc.), and the change of priority forms of focus of management of different levels is actualizing problems of evolutionary transformation of scientific approaches to the study of management problems of capital in enterprises.

On the basis of the results of critical analysis and streamlining ambiguous substantive interpretations of capital, which are systematized into economic, accounting and financial directions, the expediency of its research in the entrepreneurial aspect is actualized. This is due to the fact that at the present stage of social development the substantive boundaries of capital research are expanding not only as a factor of production but also as a factor of interaction and interrelations in the processes of human being. In such circumstances, capital is defined as an economic form of organization of social development. And in the aspect of managerial specificity in the enterprise, the areas of his research are complemented by such as social, information, technological, environmental, cultural, etc.

Entrepreneurial issues of enterprise capital research cause changes in the logic of managerial influences on it by management. Such a substantive statement actualizes and substantiates the feasibility of a strategic-oriented approach to capital management, which differs from the traditional focus on the processes and results of capital formation not only in the objectified, but also in the incorporated plane based on the elimination of extraordinary and extraordinary ones.

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КАСІПКЕРЛІК КАПИТАЛДЫ БАСҚАРУ ТӘРТІБІН ЗЕРТТЕУГЕ ҒЫЛЫМИ ТӘЖІРИБЕЛЕРДІ ДАМУ

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РАЗВИТИЕ НАУЧНЫХ ПОДХОДОВ К ИССЛЕДОВАНИЮ УПРАВЛЕНЧЕСКОЙ ПРИРОДЫ КАПИТАЛА ПРЕДПРИЯТИЯ

Аннотация. Научная статья посвящена проблематике исследования управленческой природы капитала предприятия, которая за последнее десятилетие претерпела существенные изменения. На основе критического анализа научного наследия по вопросам сущностных интерпретаций капитала предприятия, была предложена авторская систематизация существующих научных позиций, которые представлены такими подходами: экономический, согласно которому капитал исследуется как богатство, деньги, ресурсы, ценность, др.; учетный, в рамках которого интерпретация капитала предприятия осуществляется в терминологиях финансовые результаты, чистое имущество, финансовые ресурсы, др.; финансовый, согласно которому капитал рассматривается как форма организации финансовых ресурсов, запас средств, денежное измерение ценности. Постиндустриальная специфика общественного развития непосредственно отразилась на процессах и результатах управления капиталом предприятия, что актуализировало исследования капитала в предпринимательском аспекте. Определено, что отличием предпринимательского подхода к изучению капитала предприятия от традиционных исследований является фокусирование на таких формах капитала как социальный, информационный, технологический, культурный, др., что обусловлено постиндустриальной спецификой процессов человеческого бытия. Однако, сами по себе данные формы капитала не способны реализовать свои функции, не будучи включенными во взаимодействие и взаимоотношения, которые опосредованные деятельностью экономических субъектов на основе обеспечения достижения взаимной ценности. Предпринимательская проблематика исследования капитала предприятия обусловила изменения логики управленческих воздействий на него, которые целесообразно осуществлять на основе стратегически-ориентированного подхода. Его основная специфика связана с расширением содержательного пространства исследования капитала – не только объективированным, но и инкорпорированным, а также осуществлением управления на основе устранения экстраординарных и ординарных разрывов в результатах процессов капиталообразования.

Ключевые слова: капитал предприятия, управление капиталом, фактор производства, способность капитала, ценность.

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REFERENCES

- [1] Zhykhor O.B., Shmatko I.M. (11) Theoretical aspects on definition of the essence of the capital of enterprise // *Financial and credit activities: problems of theory and practice*. 11 (2): DOI: <https://doi.org/10.18371/fcaptp.v2i11.28934> (in Eng.).
- [2] Riabykina K.H. (2014) // *Business Inform*. 10: 23-29 (in Ukr.).
- [3] Blank I.A. (2000) *Management of capital formation*. Nika Center, Elga, Ukraine. ISBN 966-521-066-1 (in Russ.).
- [4] Blank I.A. (2000) *Capital Management*. Nika Center, Elga, Ukraine. ISBN 966-521-071-8 (in Russ.).
- [5] Bukhanets V.V. (2015) // *Bulletin of Kryvyi Rih National University*. 39: 163-168 (in Ukr.).
- [6] Potanina Yu.M. (2009) // *Russian entrepreneurship*. 7: 42-46 (in Russ.).
- [7] Evstafieva E.M. (2011) // *Audit and financial analysis*. 6: 37-44 (in Russ.).
- [8] Kushubakova B.K. (2010) // *Audit and financial analysis*. 3: 56-61 (in Russ.).
- [9] Sopko V.V., Kashena N.B., Chmil G.L. (2018) Theoretical aspects of performance assessment of company capital management // *Financial and credit activities: problems of theory and practice*. 25 (2): 350-356. DOI: <https://doi.org/10.18371/fcaptp.v2i25.136829> (in Eng.).
- [10] Cherkasova A.O. (2012) *Management of capital of a joint-stock partnership: Author's abstract*. 20 (in Russ.).
- [11] Suprun N.V. (2014) *Management of the capital of insurance companies: Author's abstract*. 21 (in Ukr.).
- [12] Shevchuk N.V. (2004) *Management of formation and operation of capital of enterprises: Author's abstract*. 20 (in Russ.).
- [13] Kosinskii R.A. (2005) *Organizational and economic mechanism of enterprise capital management: Author's abstract*. 20 (in Ukr.).
- [14] Lebid O.V. (2009) *Enterprise capital management based on the consistency of its components: Author's abstract*. 20 (in Ukr.).
- [15] Azizova K.M. (2011) *Management of capital of the enterprise on the basis of controlling: Author's abstract*. 24 (in Ukr.).
- [16] Heydor A.P. (2013) *Enterprise capital management: Author's abstract*. 20 (in Ukr.).
- [17] Ryabikina K.G. (2015) *Efficiency of enterprise capital management: Author's abstract*. 20 (in Ukr.).
- [18] Inshakov O.V. (2002) *The theory of factors of production in the context of development economics: Scientific report*. 92 (in Russ.).
- [19] Kutsenko E.K. (2019) *Dialectics of interrelated value categories // Economic Development Strategy of Ukraine*. 44: 16-26. DOI 10.33111/sedu.2019.44.016.026 (in Ukr.).
- [20] Kutsenko E.K., Smyrnov Ie.Ie. (2019) *Evaluation of efficiency of enterprise management by value criteria // Modern Science – Moderní věda*. 4: 5-13 (in Eng.).

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FLEXIBLE TECHNOLOGIES OF UNIVERSITY MANAGEMENT AS A TOOL TO INCREASE THEIR COMPETITIVENESS

Abstract. Higher education faces global challenges caused by the dynamic change of the socium itself and the educational environment under the influence of globalization and extensive digitization of the society. The labor market requires the formation of a new generation of professionals capable of effective development and self-realization. The main problem that impedes the development of the Ukrainian education is the excessive bureaucratization of the educational process in universities where innovations do not find their practical implementation. This makes the higher education system unresponsive to external changes, which leads to the production and transfer of redundant and irrelevant knowledge for modern business environment. The above-mentioned factors determine the low level of competitiveness of Ukrainian higher education institutions. In this regard, there is a need to introduce Scrum management technology in the university education, based on the effective interaction of all participants of the educational process with a prominent level of flexibility and adaptability.

Theoretical and methodological base of the article - conceptual positions and researches of experts on flexible technologies of management. Based on the results of the study, the authors formed the main provisions of the Uniscrum.

The article deals with the crucial problems in the field of higher education. The employment of flexible Scrum technology in the management of higher education institutions to increase the efficiency of their activities is justified. The relevance of the values and principles of Agile flexible approach to the activities of universities in Ukraine is investigated. Authors' definition of "Uniscrum" is proposed. The functions and principles of Uniscrum in relation to the management of the activities of universities are formulated. The key approaches to the use of Uniscrum are defined.

The introduction of Uniscrum management technology in higher education as a project approach to managing the training of highly skilled professionals at universities will contribute to the effectiveness of educational activities, since it will provide the production and transfer of valuable professional knowledge for modern business.

Keywords: scrum; institution of higher education; university competitiveness; Uniscrum; Agile values, Uniscrum principles and functions.

Introduction. The issues of competitiveness under market economy conditions are the most urgent. Regarding the educational system in general and universities in particular, the issues mentioned above are becoming especially pressing as at the background of the economic, political (particularly, the protracted military events in the East), demographic crisis in Ukraine we are witnessing a rapid increase in the number of university entrants who prefer to enter foreign higher education institutions. Ukrainian students (and even high school students) go abroad to study – primarily to Poland, the Czech Republic, Germany, and other countries. Along with many other reasons this causes an aggravation of the crisis of the domestic educational system, the need for its substantial modernization, and the strengthening of the competitiveness of higher educational establishments.

It is possible to carry out a qualitative education reform in the conditions of dynamic social and economic changes in society only in the presence of detailed worked strategy considering as the real situation which developed in education, the accruing tendencies, and the operating relations, and possible ways of future development of society and state [43].

Modern medium of higher education is characterized by a significant degree of complexity and indefiniteness due to the processes of globalization, digitalization, and high level of competition. The

rapid development of digital technologies leads to a change of the way an individual perceives information, fast aging of the latter and transformation of the teacher – student interaction. Under the influence of modern information-communicative technologies, dynamically changing social life changes the society itself as well as the needs and possibilities of an individual living in it. This causes the need for adaptation of both students and academic teaching staff to the conditions in which the educational services market operates, interacting with a changing external environment. Search and application of effective methods of management of an educational institution, organization of educational activity and introduction of the newest teaching methods, based on digital technologies are the most important tasks of modern university education. Approaches to the management of institution of higher education and organization of the educational process require fundamental changes.

A highly developed intellectual resource aimed at achieving the settled objectives and tasks should be the main competitive advantage of an institution of higher education (IHE). Scrum management technology provides effective interaction of academic teaching staff and features high flexibility and adaptability. These factors are currently inaccessible to the complex bureaucratic structures of national universities.

Analysis of recent researches and publications. There is a considerable amount of studies on the management of institutions of higher education done by home scholars; among them are the works by: Kalenyuk I.S., Dyachenko (2016), Padalka O.S., Kulishov V.V. (2016), Shevchenko L.S. (2014), Sakun Ya. A. (2014), Hryshchenko I.M. (2014) [1-5].

The most interesting studies on higher education management have been published by foreign scholars: Porter L. W., McKibbin L. E. (1988), Bates A. W. (2000), Coleman M. (2000), Thrupp M., Willmott R. (2003), Clark B. R. (2003), Salter R. L. (2014), Khavari S. A., Arasteh H., Jafari P. (2016) [6-12].

Various aspects of the competitiveness of universities and the educational system under modern conditions attract the attention of many domestic and foreign scholars – Antonyuk L.L. (2017); Verhoglyadova N.I. (2004); Hrynkevych O.S. (2011); Johnson L., Becker A. (Johnson L., Becker A., Cummins M., Estrada V., Freeman A. and Hall C., 2016); Dyakon A.A., Kalenyuk I.S. (2014); Kolota A.M. (2007); Fathutdinova R.A. (2006), Yakovenko L.I. (2011) and others [13-24], and are also considered in international ratings (2013-2017) [25-33].

Higher educational establishments work on a highly competitive market, complicated by the processes of globalization and rapid technological changes. This involves the use of flexible technologies in the management of IHE and organization of the educational process. Scrum is an example of such technology, a method used in designing and development of complex products.

The term “scrum” has its origin in the sport of rugby; it means the situation “when a group of attacking players from each team who come together with their heads down and arms joined, and push against each other, trying to take control of the ball”. In the field of economy this term was first used by Japanese professors of the Economics Hirota Takeuchi and Ikujiro Nonaka (1986) [34]. In their book, Degra P. and Stahl L. H. (1998) [35] consider scrum as one of flexible and effective methods of software development.

Jeff Sutherland and Ken Schwaber formulated and presented the technology of scrum at the annual research conference OOPSLA’95. They extended the use of scrum technology in many IT companies.

The initiators of application of scrum in the educational process are the teacher of Ashram College (the Netherlands) Willy Wijnands and Alphen aan de Rijn [36].

In their work, Arno Delhij, Rini van Solingen, Willy Wijnands (2015) gave a detailed account of the employing of scrum technology in the educational process [37].

However, the issues of the use of flexible methods, particularly scrum technology, in the management of an educational institution, remain insufficiently highlighted.

The **purpose** of the paper is to develop conceptual framework of the use of the Scrum technology in the management of universities with the aim of increasing of their competitiveness.

Main results of the study. The competitiveness of a university is its capability of: 1) preparing specialists that can stand the competition in their professional sphere at the domestic or foreign labor market; developing competitive innovations in this sphere; conducting an effective reproductive policy in all spheres of its activity (Fatkhutdinov R.A. (2006) [23]; 2) carrying out activities and forming educational product and assortment of services that meet the needs of a competitive market (Verhoglyadova, N.I., 2004) [15]; 3) standing out among other higher educational establishments (including foreign ones)

with better socio-economic indicators, increasing their positions in the ratings, being attractive both for domestic and foreign students; 4) functioning avoiding crisis, being mobile, adapting to new requirements, rapidly changing conditions of the labor market and social requests.

When examining the competitiveness of the domestic educational system, it is worth paying attention to international ratings. The general issues of the competitiveness of the educational system are represented in The Global Competitiveness Report (2015-2018) [26-30], evaluation of higher education in various countries is carried out in rating Universities 21 (2017) [33]. A rather positive tendency is the growth of the quality of Ukrainian educational system by the integral indicator: in 2017-2018 it grew by 23 points in the Global Competitiveness Index in comparison with 2013-2014 (see table 1).

Table 1 – Components of the Global Competitiveness Index that characterize the educational system of Ukraine in 2013-2018*

Characteristic	Position of Ukraine in the Global Competitiveness Index by years				
	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Quality of the educational system in general	79	72	54	56	56
Quality of primary education	37	40	45	51	42
Coverage by secondary education	54	41	39	53	51
Coverage by higher education	10	13	14	11	16
State of higher and professional education (in general)	43	40	34	33	35
Quality of education in the sphere of management	115	88	87	93	88
Quality of higher education in Mathematics and Natural Sciences	28	30	38	27	27
Quantity of countries that participated in the research	148	144	144	138	137
*Compiled by the authors on the basis of the data The Global Competitiveness Report (2013-2018) [26-30].					

To become successful in all of these areas of competitiveness, effective management of the university is a determining factor. Flexible management technologies are most effective in complex, changing environment and help ensure a company or organization's competitiveness in the market. Scrum is one of the flexible approaches that is advisable to use in the management of educational, scientific and other activities of an educational institution, since it is based on ensuring the effective interaction of all participants in educational, scientific and commercial projects.

Scrum was first introduced in the sphere of software development. Today, this method of project management has been successfully applied in many areas: IT services, production, trade, finance, marketing, recruitment, another creative work, etc.

As to the employment of the Scrum technology in the field of higher education, it should be noted that it is due to the very philosophy of Scrum, the essence of which is in a consistent, based on efficient team work, approach to solving project problems by combining the potential of creativity of its participants. The use of Scrum in the management of a higher educational establishment will allow solving of the following problems: students' low motivation to study and research, imperfect technologies of teaching and methodological support in the system of higher education, outdated teaching methods, bureaucratic management of higher educational establishments, complex document circulation, too long scalar chain of command transfer, etc. And most importantly, the use of the Scrum technology can significantly reduce the market and financial risks of IHE.

The Scrum technology is based on Agile principles that received detailed description in The Agile Manifesto by Ken Schwaber and Mike Beedle (Agile Software Development with SCRUM, 2001) [38]. This approach to management is focused on creating the maximum value for business (project). There are four main ideas and twelve major principles formulated in the Manifesto. We will consider whether these values are important and relevant in the management of a higher education institution.

Value 1: *Individuals and interactions over processes and tools*. This value is the most consistent with the mission of educational institutions and is one of the main principles of educational activity. In particular, the main value of an educational institution is the human capital, which consists of scientific and pedagogical staff and management personnel. It is due to them the labor potential of the country is

formed. The educational activities of the university are successful when effective communication between teachers and students is established.

Unfortunately, the payment of the scientific and pedagogical staff of Ukrainian universities is far from being worthwhile, which contributes to the outflow of the best teachers to foreign universities or business sector. A complex bureaucratic organizational structure reduces the effectiveness of interaction between university staff as well as between teachers and students. Moreover, a significant faculty load on teachers is an obstacle to professional communication of the pedagogical staff with students and providing students with efficient counseling.

Value 2: *Working software over comprehensive documentation*. Educational software in a university is a curriculum and/or qualification. The ultimate goal of the students who enter higher educational institution is getting knowledge and a certain qualification. However, this value is practically impossible in Ukrainian realities since both managerial and educational activity of higher educational institutions are overloaded with formal requirements to paperwork. It concerns all spheres of university activity: from a syllabus of a certain subject to licensing or accreditation requirements of a higher educational institution. The scientific-pedagogical staff and the management of an IHE must develop stacks of papers; submit copies of the documents that already exist in electronic form on a university's website and at the USDE (the Unified State Database on Education). In certain cases, a scientific-pedagogical staff member spends more time on paperwork than teaching. Often, in the field of higher education, the quality of the required papers dominates the quality of the educational product.

Value 3: *Customer collaboration over contract negotiation*. The most important final users and customers for an educational institution are entrepreneurs who act as employers for their graduates. Unfortunately, national higher educational institutions prepare specialists whose skills do not meet the requirements of employers. Herewith, universities actually do not cooperate with business and vice versa. The situation is worsening due to the lack of interest of business regarding the formation of curricula, the provision of places for practice, the provision of orders for scientific developments. In fact, entrepreneurial structures do not act as customers of specialists graduating from higher educational institutions. In most of cases, IHE use outdated training technologies, and future specialists do not receive relevant knowledge and skills.

Value 4: *Responding to change over following a plan*. Variable external environment and quick-changing technologies make obtained knowledge irrelevant and obsolete at the stage of graduating from the university. This requires constant updating of the educational product, and the long term of licensing of a new specialty and ineffective organizational structure of the university hinder this.

Thus, all values mentioned above are important and relevant to ensure full competitive educational activities of institutions of higher education. Values are based on the twelve principles of Agile, which are clustered into four groups: meeting requests and customers' needs; quality; team work; project management (Layton C. Mark, 2012) [39]. We are planning to apply them to managing the higher educational institution.

The first group of principles: *satisfying customer demands and needs*. There are two types of clients (customers) in the sphere of higher education: students and business entities that have both common and diverse needs. It is expedient to include to students' needs the following issues: getting training from the best teachers; recognition of achievements; the opportunity to be engaged in a modern, interesting research project; academic mobility; social interaction in the student environment. Business entities' needs are as follows: the opportunity to involve the highly skilled specialists with relevant professional skills as well as those who are capable of creating innovations. A quality educational product belongs to the common needs.

The second group of principles: *quality*. The quality of an educational product is an integral indicator that is determined by the relevance of students' knowledge and skills acquired during training and their ability to meet the needs of the labor market. The quality of education for graduates of educational institutions is expressed in decent wages and labor market demand. The quality for potential employers is the human capital with appropriate professional skills and competencies that can ensure the growth of the efficiency of enterprises.

The third group of principles: *teamwork*. It is the harmonious interaction of teaching staff, managing personnel and students of university aimed at performing the settled tasks and achieving goals. Teamwork involves the motivated staff within teams.

The fourth group of principles: *project management*. This involves the possibility of making changes at any stage of development of the educational product, as well as reducing excessive, formal and insignificant work. It allows educational institution to develop and offer a competitive educational product of high-quality.

Values and principles of Agile are realized through many managerial techniques. The most widespread among them is scrum, which is intended to solve complex problems on the basis of organization of effective work of project groups (teams). According to the report “State of Scrum 2017-2018”, the above-mentioned management technology is successfully used in 27 branches of the economy, including education. This report is based on the results of the survey among certified members Scrum Alliance (2000+ respondents) from 91 countries. According to the results of the survey scrum is most spread in the USA (48%) as well as in India (7%), Germany (6%), Great Britain (5%), Australia and Canada (4%) (State of scrum, 2018) [40,41]. The data of the survey shows that besides IT sphere scrum is used in other departments of various enterprises and organizations (see table 2).

Table 2 – Departments other than IT using scrum, %, according to the results of the survey*

Departments	2015	2017
Operations or Production	48	42
Research and Development	46	31
Sales and Marketing	26	25
Content Development, Management	–	24
Consulting	–	22
Human Resources	12	19
Financial or Accounting	16	18
*Compiled by the authors on the basis of the data (State of scrum 2017–2018; The 2015 State of scrum report) [40, 41].		

It should be noted that 15% of the projects implemented with the help of scrum do not belong to the IT sphere. The effectiveness of the projects implemented on the basis of Scrum technology is 63% (State of scrum, 2018) [40].

It is important to note that in the system of higher education, it is advisable to consider scrum in two planes:

- teaching of disciplines;
- management of an educational institution.

Regarding the first plane, the use of this technique will not only improve the quality of learning, but also increase the level of students’ motivation and their focus on the result. The use of scrum in the learning process is detailed in the EduScrum Guide “The Rules of the Game” (Arno Delhij, Rini van Solingen Willy Wijnands, 2015) [37].

We will focus on the second component. The use of scrum management technique will significantly improve the efficiency of university administration, as well as its interaction with stakeholders which is the basis of its competitiveness.

Among the caveats it should be noted that the above technology has been developed for small project teams of 5 to 10 people. Therefore, the question arises whether it is appropriate to use this managerial technology for university management, which has a complex bureaucratic structure and a considerable number of staff?

The survey results presented in the report Scrum Alliance give a positive answer to this question. LeSS scrum (Large-Scale Scrum) is efficient for big organizations, and its use allows abandoning command-administrative management methods and apply flexible ones. Respondents from large companies single out the following advantages of the use of scrum: fulfilling customers’ needs, improving time to market and reducing cycle time (State of scrum, 2018) [40]. Thus, the use of scrum allows solving of the most pressing issues of universities, namely: to eliminate the discrepancy between the acquired knowledge and skills of graduates of IHE and the requirements of employers to the competences of potential employees; reduce the time spent on developing new educational programs and bringing them to the educa-

tional market. An additional advantage of Scrum technology is the possibility to use mobile applications, which is important for the digital generation, to which students belong. With the mobile app it is possible to notify students of changes in the schedule, correspond with a supervisor, receive information about assessment, establish cooperation within academic groups and so on. The use of mobile applications is also relevant for scientific and teaching staff and managerial board of university.

Since management of a higher educational institution has its own specific character, we will use the term “Uniscrum” to define this technology. This term is composed of two parts – “Uni” which is a contracted form of the word “university” and “scrum”(Azmut N.A., Kuklin O.V., Kuznetsova N. B. (2017) [42]. We regard “Uniscrum” as the project approach to managing the processes of training highly skilled professionals in universities, in which the effectiveness of teaching, methodological, research, educational and other activities is ensured by the use of flexible teamwork tools based on the principles of creativity and control of quality of this process.

The essence of Uniscrum is revealed through its functions. The main of the latter are as follows:

- improving the quality of educational services on the basis of self-organization and creative approach to solving key problems in the activities of IHE and the use of intellectual potential of scrum-teams;

- formation of creative teams from the scientific and pedagogical staff, representatives of government, business, students, organized for solving certain tasks in the field of higher education;

- attracting private investment for the development and training of highly skilled professionals in the higher education sector for business needs;

- conducting of applied researches aimed at increasing the efficiency of socio-economic development of the regions;

- establishing interaction between universities and stakeholders – representatives of business, local authorities, etc.

We will define the basic principles of management of an educational institution.

The *basic principles* of the Uniscrum technology are:

- *flexibility* – rapid response to the challenges of the environment and making appropriate changes in the educational product. This will enable the universities to respond to labor market demands in a timely manner and make appropriate changes in the educational product;

- *transparency* – all aspects of management should be open to all individuals involved. The use of digital technologies should become the basis of this;

- *controllability* – qualitative monitoring of tasks execution for maximizing the effectiveness of team work on an educational product;

- *adaptivity* – prompt input of necessary task adjustments to avoid undesirable deviations in the process or work materials;

- *creativity* – free, favorable for development of creativity scientific-pedagogical environment, which will provide flexibility and efficiency of the work of a scrum-team;

- *motivatedness* – team work on the result increases the level of motivation of each member: motivation of the management structure members enhances motivation of the teaching staff, and the latter increases motivation of student in its turn;

- *interaction* – consolidation of joint efforts (heads of IHE, their structural divisions, representatives of the authorities, business, public organizations, students) aimed at the implementation of commercial and social projects in the field of higher education, science and business.

- *constant improving* predetermines that university constantly is constantly improving its activities through experimentation and training.

For successful implementation of the project task, in this case – educational project, it is important to form **Scrum Team** and distribute the major roles. To the latter we refer: Product Owner, Product Owner’s assisting team, Scrum Master and Development Team.

Within the Uniscrum technology, the role of *Product Owner* belongs to a professional who is an expert in the educational product and understands the needs of business. This expert is president of a university and/or owner of an IHE; he/she has a clear understanding of the goal the team has to reach. Interaction with stakeholders is among the Product Owner’s main functions. Stakeholders include business

representatives, Ministry of Education and Science of Ukraine, State Employment Service of Ukraine, regional and local structures for supporting entrepreneurship, research companies, public organizations, etc.

Product Owner's assisting team is characteristic for big organizations. It is aimed to help Product Owner to perform his/her functions and ensure effectiveness of his/her activities.

The main function of the *Scrum Master* is to ensure the productivity of the team – a group of scientific and pedagogical staff members who work on the educational product. The Scrum Master's major task is to secure the team from extra undesired interferences from the outside. Amongst other tasks of the Scrum Master (Head of educational product (program)) are: forming a complete list of requirements (objectives) and assessment together with his team performance in hours.

The *Development Team* should include scientific and pedagogical staff members who work on the same educational project (program) or scientific research project. The team should consist of the workers possessing cross-functional skills that are able to perform all types of work from the beginning to the end of the project. All product teams cooperate because they are united for the sole purpose. An important stage of the team's work planning is the division of the project into several parts (sprints). Each stage of work on an educational or scientific product ends with a retrospective, where team members: discuss results, mark positive sides and identify shortcomings, determine the ways of improving their work in the future.

Based on the above, we formulate approaches to the Uniscrum. The main *approaches* to the Uniscrum technology in the modern information society are: empirical, competency, digital.

– *Empirical* approach suggests that knowledge is formed on the basis of the experience gained, that is, based on the results obtained by the decisions taken.

– *Competency* approach is closely connected with the empirical one and implies the formation of the necessary competencies by all participants in the educational process. The basis of this approach is the constant increase of the competence of the administrative, scientific and pedagogical and student staff of a university.

– *Digital* approach presupposes the realization of the management of a higher educational institution on the basis of the use of modern cloud platforms, which will provide an opportunity to increase the efficiency of work, establish interaction between scientific and educational staff and the administration members of IHE, as well as between teachers and students. It allows to organize the interaction of the members of the university scientific and pedagogical team, control the quality and timing of the tasks. The examples of digital instruments can be the following products: Trello, Worksection, Scrumdo, etc.

Conclusions. Thus, the use of the Scrum technology nowadays opens opportunities for making management more efficient in various spheres of human activities, and especially in the field of higher education through better fulfillment of clients' requests and needs, improvement of service quality, coordinated team work and clear project management. It is a solid basis for increasing the competitiveness of universities by improving access to resources and more efficient use of them, increasing social capital (image, relations, support environment, etc.), diversification of educational services, etc.

We strongly believe that with the help of the Uniscrum technology, based on the involvement not only scientific and pedagogical staff and students but representatives of local authorities, business structures, and public organizations to scrum teams, it is possible to successfully implement definite strategic tasks, projects and programs of social and economic development of cities and regions. Universities are the institutions of city-formative and regional-formative value; it is them that should become centers of innovation infrastructure development for entrepreneurship. Uniscrum is based on the following principles: flexibility, transparency, controllability, adaptivity, creativity, motivatedness, and interaction. The major approaches to Uniscrum are as follows: empirical, competency and digital. Further work needs to be primarily focused on the analysis of cases (practice) of the application of the Uniscrum methodology to the management of higher educational institutions activities; research of other factors of competitiveness of universities, besides technology of management; substantiation of the use of the Scrum technology in the work of bodies that provide public services to population (for example, the State Employment Service).

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УНИВЕРСИТЕТТЕРДІ БАСҚАРУДЫҢ ИКЕМДІ ТЕХНОЛОГИЯЛАРЫ ОЛАРДЫҢ БӘСЕКЕГЕ ҚАБІЛЕТТІЛІГІН АРТТЫРУ ҚҰРАЛЫ РЕТІНДЕ

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ГИБКИЕ ТЕХНОЛОГИИ УПРАВЛЕНИЯ УНИВЕРСИТЕТАМИ КАК ИНСТРУМЕНТ ПОВЫШЕНИЯ ИХ КОНКУРЕНТОСПОСОБНОСТИ

Аннотация. В статье изучаются основные проблемы в сфере высшего образования, которые обуславливают низкий уровень конкурентоспособности национальных высших учебных заведений. Высшие учебные заведения работают в сложной и быстро изменяющейся внешней среде, которая трансформируется под влиянием глобализации и диджитализации. На современном рынке труда востребованы специалисты нового поколения, способные к продуцированию инноваций, эффективному развитию и самореализации. Основными препятствиями развития украинского образования являются чрезмерная бюрократизация образовательного процесса в университетах, отсутствие налаженного взаимодействия между учебными заведениями и бизнесом, снижение качества образовательных услуг, отток высококвалифицированных кадров. Это приводит к торможению инновационного развития, как университетов, так и предпринимательства.

В статье обоснована возможность использования гибкой технологии скрам в управлении вузами с целью повышения их конкурентоспособности. Теоретико-методологической базой статьи являются концептуальные подходы и результаты исследований экспертов из гибких технологий управления. Авторами исследовано актуальность ценностей и принципов гибкого подхода управления аджайл в деятельности университетов в Украине.

На основании результатов исследования авторы сформировали основные положения Uniscrum. Предложено авторское определение "Uniscrum". Сформулированы функции и принципы Uniscrum управленческой деятельности университетов. Определены ключевые подходы к использованию Uniscrum в учреждениях высшего образования.

Внедрение технологии управления Uniscrum будет способствовать повышению эффективности образовательной деятельности, поскольку это обеспечит генерирование актуальных профессиональных знаний, активизацию инновационных прикладных разработок, и, вместе с тем, подготовку специалистов, отвечающих требованиям современного бизнеса.

Ключевые слова: скрам; учреждение высшего образования; конкурентоспособность университета; ценности аджайл; унискрам; функции и принципы унискрам.

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REFERENCES

- [1] Kalenyuk I.S., Dyachenko A.L. (2016). Entrepreneurship Universities in the Global Educational Space // International Economic Policy. 2. P. 59-75.
- [2] Padalka O.S., Kulishov V.V. (2016). Economics and Management Education: National Aspect // Economy of Ukraine. (1). P. 84-91.
- [3] Shevchenko L.S. (2014). University Strategic Management: Rationale for Mission and Development Goals // Bulletin of the National university. Series: Economic Theory and Law. 1(16). P. 6-22.
- [4] Sakun, L.N., Koval Ya.A. (2014). Application of quality management methods in higher education system // Regional Economics and Management. (3-2). P. 68-71.
- [5] Grishchenko I.M. (2014). Professional education in the system of economic research: Monograph. K.: Gramota.
- [6] Porter L.W., McKibbin L.E. (1988). Management Education and Development: Drift or Thrust into the 21st Century? McGraw-Hill Book Company, College Division, PO Box 400, Hightstown, NJ 08520.

- [7] Bates A.W. (2000). *Managing Technological Change: Strategies for College and University Leaders*. The Jossey-Bass Higher and Adult Education Series. Jossey-Bass Publishers, 350 Sansome St., San Francisco, CA 94104.
- [8] Coleman M. (2000). *Leadership and strategic management in education*. Vol. 2. SAGE.
- [9] Salter R.L. (2014). *Two case studies of the university strategic planning process: Doctoral dissertation*. Lindenwood University.
- [10] Thrupp M., Willmott R. (2003). *Educational management in managerialist times*. McGraw-Hill Education (UK).
- [11] Clark B.R. (2003). Sustaining change in universities: Continuities in case studies and concepts // *Tertiary education and management*. 9(2). P. 99-116.
- [12] Khavari S.A., Arasteh H., Jafari P. (2016). Assessing the Level Organizational Universities Agility; Case Study of Islamic Azad University in Mazandaran // *Mediterranean Journal of Social Sciences*. 7(3 S2). P. 112.
- [13] Antoniuk L.L., Il'nitsky D.O., Barabash D.O., Sandul M.S. (2017) International competitive disposition of national systems of higher education // *International economic policy*. 2 (27). P. 7-32.
- [14] Brintseva E.G. (2017) Human Capital in the Sphere of Science and Education: Trends in Fictivization // *Człowiek. Społeczeństwo. Gospodarka*. Vol. 5: Problemy zatrudnienia w organizacjach. Uniwersytet Zielonogórski. P. 15-26.
- [15] Verhoglyadova N.I. (2004). *Economic Dimension of the Quality of Higher Education as a Component of National Competitiveness: Monograph*. Donetsk. DNU.
- [16] Grinkevich O.S. (2011). Application of the theory of fuzzy sets in the rating assessment of the competitiveness of universities // Available at http://archive.nbuv.gov.ua/portal/soc_gum/Ek/2011_1-3/9.pdf
- [17] Grishnova O.A., Brintseva O.G. (2015). Fictitious human capital: essence, characteristic features, factors of formation // *Demography and Social Economy*. (1). P. 90-101.
- [18] Grishnova O.A., Brintseva O.G., Shurpa S.Ya. (2017). The fictivization of human capital and new employment risks // *Scientific bulletin of Polissya*. 1 (9). P. 2. P. 91-98.
- [19] Johnson L., Adams Becker S., Cummins M., Estrada V., Freeman A., Hall C. (2016) *NMC Horizon Report: 2016 Higher Education Edition*. Austin, Texas: The New Media Consortium // Available at <http://cdn.nmc.org/media/2016-nmc-horizon-report-he-EN.pdf>
- [20] Dyakon A.A., Kalenyuk I.S. (2014) Development of higher education in a globalized world // *Demography and social economy*. 1. P. 24-36.
- [21] Dyakon A.A. (2014). Worldwide rankings of universities as an instrument of competition in the international educational services market // *Scientific Herald of the Chernihiv State Institute of Economics and Management*. 1 (21). P. 19-26.v
- [22] Kolot A.M. (2007). Higher education as a factor in the formation of human capital: the current state, trends of development: Coll. sciences Prikarpat pr. nats Un-t them. V. Stefanyk - Ivano-Frankivsk.
- [23] Fatkhutdinov R.A. (2006). Management competitiveness of the university. // *Higher education in Russia*. 9. P. 37-38.
- [24] Yakovenko L.I. (2016) *The Economic Basis for the Modernization of Higher Education in the Conditions of the Formation of the Knowledge Economy: Monograph*. Poltava: Skytech, 216 p.
- [25] Ranking web of universities. Ukraine // Available at: <http://www.webometrics.info/en/search/Rankings/ukraine>
- [26] The Global Competitiveness Report 2013–2014 // Available at: http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2013-14.pdf
- [27] The Global Competitiveness Report 2014–2015 // Available at: http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf
- [28] The Global Competitiveness Report 2015–2016 // Available at: https://www.smm.lt/uploads/documents/mokslas/Global_Competitiveness_Report_2015-2016.pdf
- [29] The Global Competitiveness Report 2016–2017 // Available at: http://www3.weforum.org/docs/GCR2016-2017/05FullReport/TheGlobalCompetitivenessReport2016-2017_FINAL.pdf
- [30] The Global Competitiveness Report 2017–2018 // Available at: <http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf>
- [31] The QS World University Rankings 2018 // Available at: <https://www.topuniversities.com/university-rankings/world-university-rankings/2018>
- [32] The Times Higher Education World University Rankings 2018 // Available at: https://www.timeshighereducation.com/world-university-rankings/2018/world-ranking#!/page/0/length/25/locations/UA/sort_by/rank/sort_order/sc/cols/stats
- [33] U21 Ranking of National Higher Education Systems 2017 // Available at: <http://www.universitas21.com/article/projects/details/152/u21-ranking-of-national-higher-education-systems-2017>
- [34] Takeuchi H., Nonaka I. (1986). The New New Product Development Game. *Harvard Business Review*, Jan-Feb.
- [35] Degrace P., Stahl L.H. (1998). *Wicked Problems, Righteous Solutions: A Catalog of Modern Engineering Paradigms*.
- [36] The eduScrum team: eduScrum. Available at: <http://eduscrum.nl/en/eduscrum-team>
- [37] The eduScrum Guide. The rules of the Game (2015) Arno Delhij, Rini van Solingen Willy Wijnands
- [38] Schwaber K., Beedle M. (2001). *Agile Software Development with Scrum*.
- [39] Layton C. Mark (2012) *Agile Project Management For Dummies*.
- [40] State of scrum 2017–2018. Scaling and agile transformation (2018). Scrum alliance // Available at: <https://www.scrumalliance.org>
- [41] The 2015 State of scrum report. (2015) Scrum alliance // Available at: <https://www.scrumalliance.org>
- [42] Azmuk N.A., Kuklin O.V., Kuznetsova N. B. (2017) Uniscrum Technology in Higher Education: Authorship Certificate 73752.
- [43] Toybazarova N.A., Nazarova G. (2018) The modernization of education in Kazakhstan: trends, perspective and problems // 2018. Vol. 6, N 376. P. 104-114. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print). <https://doi.org/10.32014/2018.2518-1467.33>

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**ENVIRONMENTAL PROTECTION
UNDER THE LEGISLATION
OF UKRAINE AND THE REPUBLIC OF POLAND:
A COMPARATIVE ANALYSIS OF THE MAIN FEATURES**

Abstract. Environmental protection plays an important role in the activities of each citizen individually and in the community as a whole.

The article provides a comparative analysis of some aspects of environmental protection under the legislation of Ukraine and the Republic of Poland. The concept of environmental objects in the two countries studied is investigated. The main normative legal acts concerning the protection of the environment of Ukraine and the Republic of Poland are characterized. The main areas of focus on environmental protection are explored. The similarities between such spheres in Ukraine and the Republic of Poland are reflected. The necessity of the existence of bilateral agreements for both states to ensure co-operation and exchange of experience between the states has been proved.

In the course of the study, it was found out that there is a close understanding of the main priorities of environmental protection activities in Ukraine and the Republic of Poland. The example of the Republic of Poland, as one of the Member States of the European Union, reflects the need to involve the experience of environmental law of the European Union. The necessity of the existence of three levels of institutional mechanism in the field of environmental protection: general, special and functional has been investigated.

The main environmental protection measures that Ukraine will be able to implement in the coming years are identified, the main ones being: exchange of information and technologies, environmental monitoring, creation of a system of rational use of nature, exchange of experience in the field of improvement of management and legal regulation in the field of environmental protection improving the environmentally friendly waste storage and use system and others.

Key words: environment, environmental protection, bilateral agreements in the field of environmental protection, World Environment Day.

Relevance. Not so long ago, Ukraine traditionally celebrated with the whole world - World Environment Day (June 5). Such a day is a world-class event celebrated in more than 100 countries. Environmental protection is a basic priority of everyone without exception of the state. After all, the level of environmental protection will certainly be linked to its impact on the whole world.

Environmental protection is a new form of interaction between people and nature. Such interaction is manifested primarily in the system of certain state or social measures, which may include: international, educational, administrative, economic, or technological. Such activities are aimed at the full interaction of nature and society as a whole, the reproduction and conservation of natural resources or existing environmental societies for future generations. Today, environmental problems are one of the most important or even of the highest priority, determining the level of well-being for the whole world civilization, including for Ukraine.

Quite often, Ukraine learns certain skills and competences from the European countries of the world, because in comparison it is possible to find ways to solve problems that not only Ukraine faces. Investigating international environmental experience should pay attention to countries that have similar climatic

conditions, natural resources and other environmental indicators. One of these countries, on the European continent, is the Republic of Poland, which will be the subject of our comparative study.

The comparative analysis of certain aspects of environmental protection became the subject of consideration of the following Ukrainian scientists and became a reflection in their works: V.I. Andreytseva, M.M. Brinchuk, M.I. Vasilyeva, A.L. Dubovik, B.V. Erofeeva, V.V. Kostitsky, M.V. Krasnova, V.V. Antonyuk, V.I. Lozo, N.R. Malysheva, Y.S. Shemshenko and others.

Main points. As early as 1972 (December 15), the UN General Assembly proclaimed June 5, every year, as World Environment Day. The motive for proclaiming such a day was the request sent on 11 May 1971 to the Secretary-General of the United Nations. The petition was signed by 2200 figures of science and culture, representing about 23 countries. Figures warned that humanity was in real danger of being polluted by the environment.

Considering environmental protection in the Republic of Poland, one should first of all have an idea of what the objects of protection will be. The first law of the Republic of Poland concerning environmental protection "is the Law of the Republic of Poland" On Nature Conservation "of March 10, 1934, which recognized as objects only those that can be used by humans and wildlife objects, respectively, are not subject to such legal protection [1, p. 94].

The current Law of the Republic of Poland "On Environmental Protection" of April 16, 2004 attributes the following objects to the objects of protection: 1. "Ecosystems; 2. Natural resources; 3. Natural objects; 4. Ozone layer of the earth, microorganisms, genetic fund; 5. Life and health of people [2].

Considering the priorities of Polish environmental policy, it is worth its focus on sustainable development ideas presented in the environmental strategy of both the European Union and Poland. Poland has enshrined the principle of sustainable environmental development and adheres to a key environmental policy priority that is universally recognized and binding on all EU countries, namely the prevention of environmental pollution through environmental predictability and prudence through the use of "The Best Available" technologies, which is Best Available Technology - the application of those production methods that at the present level of scientific and technical knowledge make it possible to guarantee the highest environmental safety.

The Republic of Poland, being a member of the European Union, adheres to the fundamental environmental principles that are established for all EU Member States. The strategic goal of modern EU environmental policy is to preserve natural ecosystems, improve public health and demographics, ensure the EU's environmental security and improve the standard of living and health of Europeans. The EU's modern environmental policy is inextricably linked to other policies, such as social, economic, scientific and technological ones, and therefore focuses on anthropogenic and man-made environmental activities in the EU Member States, resulting in the so-called boomerang effect. The partnership model itself is one of the most effective ways of increasing the weight of the EU's environmental policy internationally [3, 117].

Speaking of the Republic of Poland, it should be noted that they created the National Fund for the Environment and Water Management (NFONSIVG), which was established as a separate legal entity in 1989 and became a truly necessary revolutionary transformation. The Fund started its operations in July 1989 in accordance with the Law of the Republic of Poland "On Environmental Protection and Formation". In addition, the Voivodship Funds for Environmental Protection and Water Management (VFONSIVG) were established, but the status of certain legal entities was only possible in 1993 [4].

Polish scientists note that the field of environmental protection in the Republic of Poland covers three areas:

1. The sphere of protection and rational use of natural resources (this includes land, soil, water, forests, plants and animals);
2. Protection of specific and valuable components of the environment, valuable elements of nature (which include national parks, nature reserves and monuments, certain especially valuable species of animals and plants), landscaping in settlements, development of green tourism and recreation, protection and protection of parks, resorts, and green areas in cities and villages;
3. The sphere of protection of life and health of people in the process of negative (harmful) impact on the environment of the human environment (this area includes processing and safe disposal of waste, vibration, utilization, radiation, protective methods against noise) [5, 203].

At the same time comparing the environmental protection of the Republic Poland with environmental protection in Ukraine, it should be noted that in Ukraine, the field of environmental protection is defined at the level of the Verkhovna Rada of Ukraine "On the main directions of state policy of Ukraine in the field of environmental protection, use of natural resources", which was adopted on March 5, 1998 years and changes have not been made for more than 20 years. According to this Ordinance, the main priorities of environmental protection and rational use of natural resources are: 1. "guaranteeing the ecological safety of nuclear facilities and radiation protection of the population and the environment; 2. minimizing the adverse effects of the Chernobyl accident; 3. improving the environmental status of Ukraine's swimming pools and drinking water quality; 4. stabilization and improvement of ecological status in cities and industrial centers of Donetsk -Prydniprovsky region 5. construction of new and reconstruction of existing facilities of municipal sewage treatment facilities; 6. prevention of pollution of the Black and Azov seas and improvement of their ecological status; 7. formation of a balanced system of nature management and adequate structural restructuring of the production potential of the economy, 8. greening of technologies in industry, energy, construction, agriculture, transport; 9. conservation of biological and landscape diversity, 10. conservation case" [6].

It can be said that despite the fact that the Resolution is outdated, the main directions (areas) of environmental protection of the Republic of Poland and Ukraine are relevant. This is confirmed by the fact that they include the protection and use of the environment as a whole and its individual elements. Such elements include the protection of territories and objects of the ecological network of Ukraine, in addition environmental protection and protection of human life.

The main specificity in the protection and environmental protection of the Republic of Poland is that, apart from its own system of protection and protection of the environment, the Republic of Poland, as a member of the European Union, relies on decisions taken at the level of the European Union.

The novelty concerning the methods of environmental protection was adopted on July 20, 2018 by the Law of the Republic of Poland "On the total prohibition of importation into the territory of the country of any kind of waste for the purpose of their disposal into the territory of the Republic of Poland" [7].

An important project of the Republic of Poland, which it implements together with the European Union and which is directly aimed at the development of environmental education and environmental protection is the project "Road to a clean environment", implemented within the framework of the Program "Infrastructure and Environment 2014-2020".

Considerable attention is also paid to the development of conservation activities and issues related to the conservation of biodiversity of flora and fauna. Comparing Ukraine and the Republic of Poland, it can be seen that 34.2% in the territory of the Republic of Poland are nature conservation areas, as well as objects without taking into account the area of Natura 2000 objects. For comparison, in Ukraine the area of objects and territories of the nature conservation fund is only 5.5% [8].

In Ukraine, in fact, a considerable number of laws and by-laws are devoted to environmental protection. Most of them also have a strategic purpose. For example, the Law of Ukraine "On the Fundamental Principles (Strategy) of the State Environmental Policy of Ukraine for the Period up to 2030", which enters into force on January 1, 2020, determines that the main objective of the state environmental policy will be "achievement of good environmental status through the introduction of ecosystems. approach to all areas of socio-economic development of Ukraine in order to ensure the constitutional right of every citizen of Ukraine to a clean and safe environment, to introduce a balanced use of nature and to conserve and restore nature of ecosystems" [9].

It is this legislation that is based on the priority of environmental protection and contains norms that reflect the experience of foreign countries.

The law also sets out basic tools for environmental protection. From the whole range of tools you can distinguish the following: 1. "intersectoral partnerships and stakeholder engagement; 2. information and communication; 3. state regulation in the field of environmental protection; 4. strategic environmental and environmental impact assessment; 5. environmental management systems, environmental audit, environmental certification and product labeling; 6. environmental accounting; 7. technical regulation and accounting in the field of environmental protection, environmental management and environmental security; 8. the legislation of Ukraine in the field of environmental protection, which is adapted to the legislation of

the European Union, 9. education in the interests of balanced (sustainable) development; 10. economic and financial mechanisms, including the environmental modernization of industrial enterprises by reducing the environmental tax rate or in the form of a fixed annual amount of compensation (tax refund); 11. comprehensive monitoring of the state of the environment and supervision (control) in the field of environmental protection, rational use, reproduction and protection of the natural environment; 12. international cooperation in the field of environmental protection and environmental protection" [8].

Ukraine, like the Republic of Poland, is also actively implementing bilateral agreements on cooperation in the field of environmental protection (environment), which facilitates the exchange of experience of the states concluding such agreements.

The best example of cooperation is the Agreement between the Governments of Ukraine, the Republic of Poland and the Republic of Belarus on the creation of a transboundary biosphere reserve "Western Polesie". This transboundary biosphere reserve "Western Polesie" consists of three national biosphere reserves of each of the signatory states: 1. Shatsky (Ukraine); 2. Pribuzhsky Polesie (Belarus); 3. Western Polesie (Poland) [10].

The result of such cooperation was that in 2012 this tripartite reserve was included in the UNESCO World Network of Biosphere Reserves of the Human and Biosphere Program.

Since the environmental audit is considered as an effect auditor, the performance of the public audit object should be evaluated and analyzed efficiently, economically, efficiently and effectively [12].

If we consider only cooperation between Ukraine and the Republic of Poland, it is also worth mentioning the two-party agreement on cooperation in the field of environmental protection, signed in 1994. The subject of this agreement are the following main tasks: - «exchange of experience in the field of improvement of management and legal regulation in the field of environmental protection; - protection of the atmosphere; - protection of surface and groundwater from pollution; - protection of wildlife, and in particular the organization of protected natural areas, the protection of rare and endangered species of fauna and flora; - creation of a system of rational environmental management, including at the regional level; - interaction and exchange of experience of environmental control services; - environmental monitoring, especially in the border areas; - Improvement of environmentally safe storage and use of waste; - control over the transboundary movement of hazardous waste, as well as the prevention and counteraction to the illicit circulation of this waste; - exchange of information and technologies in the field of accident prevention and elimination of their consequences »[11]

Conclusions. Therefore, we can draw some logical conclusions about the recommendation for environmental protection in Ukraine, based on the experience of a neighboring country - the Republic of Poland.

The main measures aimed at protecting the environment for Ukraine may be: 1. Limitation of emissions into the atmosphere and hydrosphere in order to improve the overall environmental situation; 2. Gradual increase of reserves, reserves and national parks in order to preserve natural complexes; 3. Substantial restriction of fishing and hunting of animals for the conservation of certain species; 4. Reduction of unauthorized waste disposal; 5. Use of methods of significant environmental logistics for the purpose of total clearance from unauthorized contamination of certain territories. 6. Use of environmental payments to give businesses the freedom to choose alternative solutions for payment for pollution; 7. Introducing voluntary agreements between nature users and environmental inspectors; 8. System of penalties for administrative violations of environmental legislation; 9. Granting of licenses for carrying out complex enterprise surveys and individual approaches to regulatory environmental impact assessment.

This is only a small list of the main activities Ukraine can has implement in the next few years to improve the environment.

Summarizing the above, it is possible to ascertain the only purpose that unites Ukraine and the Republic of Poland is to find alternative ways and means of preserving the environment. One such tool (perhaps even a mechanism) that is common to both countries under investigation is cooperation at the level of governments, which is manifested in the conclusion of bilateral agreements. Such agreements are aimed specifically at the necessary experience and exchange of useful methods that can avoid problems arising in the field of environmental protection.

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**УКРАИНА ЖӘНЕ ПОЛЬША РЕСПУБЛИКАСЫНЫҢ
ЗАҢНАМАЛАРЫНДА ҚОРШАҒАН ОРТАНЫ ҚОРҒАУ:
НЕГІЗГІ ЕРЕКШЕЛІКТЕРДІ САЛЫСТЫРМАЛЫ ТАЛДАУ**

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**ОХРАНА ОКРУЖАЮЩЕЙ СРЕДЫ
В ЗАКОНОДАТЕЛЬСТВАХ УКРАИНЫ И РЕСПУБЛИКИ ПОЛЬША:
СРАВНИТЕЛЬНЫЙ АНАЛИЗ ОСНОВНЫХ ОСОБЕННОСТЕЙ**

Аннотация. Охрана окружающей среды занимает важное место в деятельности как каждого гражданина в отдельности, так и всего общества вместе.

В статье осуществлен сравнительный анализ некоторых аспектов охраны окружающей среды по законодательству Украины и Республике Польша. Исследовано понятие объектов охраны окружающей среды в двух исследуемых государствах. Охарактеризованы ключевые нормативно-правовые акты, касающиеся охраны окружающей среды Украины и Республики Польша. Исследованы основные сферы на которые направлено действия по охране окружающей среды. Отражено сходство между такими сферами в Украине и Республике Польша. Доказана необходимость существования двусторонних соглашений для обоих государств для обеспечения сотрудничества то обмена опытом между государствами.

В процессе исследования была выяснена, близость понимание основных приоритетов деятельности в сфере охраны окружающей среды Украины и Республики Польша. На примере Республики Польша, как одного из государств-членов Европейского Союза, отражена необходимость привлечения опыта экологического права Европейского Союза. Исследована необходимость существования трех уровней институционального механизма в сфере охраны окружающей среды: общего, специального и функционального.

Определены основные меры по охране окружающей среды, которые Украина сможет реализовать в ближайшие годы, основными из которых являются: обмен информацией и технологиями, мониторинг окружающей среды, создание системы рационального природопользования, обмен опытом в области совершенствования управления и правового регулирования в области охраны окружающей среды, совершенствование безопасной для окружающей среды системы складирования и использования отходов и другие.

Ключевые слова: окружающая среда, охрана окружающей среды, двусторонние соглашения в области охраны окружающей среды, Всемирный день охраны окружающей среды.

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REFERENCES

- [1] Sirenko I. Specificity of the protection of inanimate objects in Poland // *Bulletin of the University of Lviv. Series: Geographical*. 2013. Vip. 41. P. 282-294.
- [2] Statute of the ochronie przyrody dated 16 October 2004. URL: <http://prawo.sejm.gov.pl/isap.nsf/download.xsp/WDU20091511220/U/D20091220Lj.pdf> (accessed 08.08.2019)
- [3] Ivasechko O. Peculiarities of shaping the environmental policy of the European Union // *Ukrainian national idea: realities and prospects of development*. 2013. Vip. 25. P. 113-118. URL: http://nbuv.gov.ua/UJRN/Unir_2013_25_21. (accessed 08.08.2019)
- [4] *Odnawial to źródło ekorozwoju. Zmieniliśmy i zmieniamy Polskę (Narodowy Fundusz Ochrony Środowiska and Gospodarki Wodnej 1989–2014)*, Warszawa 2014).
- [5] Antonyuk V.V. Legal protection of the environment in Poland // *Scientific Bulletin of the Kherson State University. Series Law*. 2016. Issue. 2. Vol. 2. P. 202-206.
- [6] On the main directions of the state policy of Ukraine in the field of environmental protection: Resolution of the Verkhovna Rada of Ukraine of 05.03. 1998. N 38-39. Art. 248. URL: <https://zakon3.rada.gov.ua/laws/show/188/98-%D0%B2%D1%80> (accessed 08.08.2019)
- [7] Marsalka Obwieszczenie Sejmu Rzeczypospolitej Polskiej w sprawie ogłoszenia ustawy o Inspekcji Ochrony Środowiska (2018) [Electronic resource] - Access mode: <http://prawo.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU2018>. (accessed 08.08.2019)
- [8] *Droga do czystego środowiska - a program of educational and promotional activities on the basis of the widespread wiwiadomości społecznej korzystania z środowiska with poszanowaniem ogólnie przyjętych zasad i norm. Rekt (2017)* [Electronic resource] - Rezhym pristupu: <http://www.gdos.gov.pl/pl> (accessed 08.08.2019)
- [9] On the Fundamental Principles (Strategy) of the State Environmental Policy of Ukraine for the Period up to 2030: Law of Ukraine of 28.02.2019. N 16. Article 70. URL: <https://zakon.rada.gov.ua/laws/show/2697-19> (accessed 08.08.2019)
- [10] Agriment between the Government of Ukraine, the Government of Government of Bilorus and the Government of the Republic of Poland about creation of transboundary boasferno reserve Zakhidne Polissia (2012) [Electronic resource]. - Rezhym pristup http://zakon.rada.gov.ua/laws/show/998_534. (accessed 08.08.2019)
- [11] Agreement between the Government of Ukraine and the Government of the Republic of Poland on cooperation in the field of environment protection dated 24.01.1994. N 616_073. URL: https://zakon.rada.gov.ua/laws/show/616_073 (accessed 08.08.2019)
- [12] Nikiforova E.V., Alibekova B.A., Rakaeva A.N., Otegulova Zh.Zh. (2019) State audit of environmental protection // 2019. Vol. 3, N 379. P. 102-106. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print). <https://doi.org/10.32014/2018.2518-1467.74>

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DNA MARKERS CHARACTERISTICS OF RAM HOGS OF MEAT-LARD BREEDS (GROWTH, DEVELOPMENT AND MEAT PRODUCTIVITY)

Abstract. The article presents the results of studying the growth, development and meat productivity of meat-lard ram hogs, as well as the presence of gene polymorphism in meat-lard sheep.

As a result of studies aimed at investigating the role of marker assessment of sheep, there were obtained data on the frequency of occurrence of genotypes in the two studied genes associated with the growth rate and meat quality of sheep. It was found that in the studied sample of sheep, the GH2 and I(IGF1) genes were polymorphic. The presence of associations of various genetic variations with one or another level of the studied traits was revealed.

During the experiment, the growth and development of young meat-lard ram hogs from birth to 12 months of age were monitored by weighing and linear analysis, taking into account the dynamics of changes in live weight and exterior indicators. It was established that young animals of both breeds had the highest growth energy in the first month and at the time of weaning. The smallest weight gain was between 4 and 7 months of age, i.e. during the feeding season.

At the age of 12 months, the Edilbay sheep had a live weight of 61.1 kg, which is 5.7 kg or 9.7% higher than that of young Kazakh fat-tailed ones. Gimmers of Edilbay breed had a similar advantage. So, at the same age, the difference in favor of gimmers of Edilbay breed was 4.8 kg or 10.1%.

The results of the control slaughter of one-year-old rams showed the presence of certain interbreed differences in the main indicators. In terms of pre-slaughter weight, young Edilbay sheep exceeded their peers - the Kazakh fat-tailed breed by 9.9%, and by carcass weight without a fat tail by 11.7%. The slaughter yield was: in the Edilbay breed - 49.9, in the Kazakh fat-tailed breed - 48.6%, which is 2.7% lower. The unequal content of protein and fat in the meat led to different calorific values: higher - 215.6 kcal in Edilbay sheep, and 207.2 kcal in young sheep of the Kazakh fat-tailed breed, which is 3.9% lower.

Morphobiochemical analysis showed that, in general, blood parameters in young animals of both breeds were within the physiological standards.

Keywords: meat and lard sheep breeding, selection, meat productivity, morphobiochemical composition of blood, gene polymorphism, DNA markers.

Relevance. The creation of highly productive breeds and types of sheep with improved productive and consumer traits is currently impossible without the use of modern achievements in the field of animal genetics. In many countries, new approaches based on the use of genetic markers of productivity traits have begun to be widely used in creating breeds and types of animals. Marking of traits at the genotype level, in addition to traditional classical breeding methods, can significantly increase the efficiency of breeding and selection and achieve the desired result within several generations.

Despite extensive foreign data on the benefits of using genetic markers in breeding, there is only poor information on the results of their practical application as additional criteria for evaluating animals bred in

Kazakhstan. In this regard, it became necessary to conduct studies aimed at investigating the role of marker assessment of sheep using DNA markers. The use of this method in addition to the traditional methods of assessing and selection of animals by phenotype will increase the efficiency of selection and breeding work with sheep of various breeds.

Increasing meat production and improving its quality remains an urgent task for livestock bred in Kazakhstan. In the successful solution of this problem, a special role belongs to sheep breeding. In the future, the share of mutton in the formation of the country's meat balance should be significantly increased due to its resources. Modern sheep breeding both in our country and abroad is developing and improving based on the achievement of science and technology. Recognizing the leading role of traditional breeding methods, it should be noted that the use of only classical breeding can no longer provide the proper level of breeding efficiency.

The main sources of mutton production in Kazakhstan are specialized meat and lard breeds, which include the Edilbay and Kazakh fat-tailed breeds [1-4].

A distinctive feature of sheep of these breeds is their good adaptability to year-round grazing in the most extreme conditions. They easily carry long distances to pastures located in areas from deserts to high mountains [5, 6]. However, the comparative productivity and quality of meat of one-year-old ram hogs of these breeds, depending on the natural and economic conditions of farms, is not well understood.

Materials and research methods. The studies were conducted in the conditions of the Bakdaulet farm (sheep of the Kazakh fat-tailed breed-KF) of the Kyzylorda region and the Nauryz peasant farm (sheep of the Edilbay breed-E) of the West Kazakhstan region. Sheep herd in both farms is adequately provided with pasture feed using natural pastures. Only during lambing or during prolonged low temperatures, in addition to rough feed, animals eat concentrates.

The experiments were carried out following the standard methods for organizing zootechnic experiments [7]. The productive traits of rams, ewes, and their offspring were estimated by live weight, wool, and meat productivity.

DNA screening was performed on 189 sheep of the Kazakh fat-tailed breed. The biological material for the study included samples of preserved blood. DNA was extracted using an Extran-2 reagent kit for extraction of genomic DNA from animal tissue (Sintol, Russia) and columns of Nexttec Biotechnologie GmbH, Germany) in accordance with the manufacturer's protocol. The purity and integrity of genomic DNA were assessed using gel electrophoresis and NanoDrop 8000 spectrophotometer. The concentration of DNA preparations was determined using the Qubit™ fluorometer (Invitrogen™). DNA analysis and PCR were performed using standard methods.

The growth and development of experimental animals were studied by indicators of live weight at birth, at the age of 4, 7 and 12 months. Based on the obtained data, the absolute, average daily and relative growths were calculated. The investigation of linear growth was carried out by taking measurements and calculating body build indices.

The wool productivity of the experimental sheep was determined by taking into account the shearing in the physical mass and washed fiber.

Reproductive qualities of ewes were determined by evaluating the results of mating and lambing, taking into account the number of live and stillborn lambs.

The survival rate of young animals was defined by taking into account the safety of the lambs from birth to weaning, i.e. up to 4 months of age. Ewe milking capacity was estimated by the gain in live weight of young animals from birth to the age of 20 days.

Meat productivity was studied by control slaughter of 3 ram hogs from each group at the age of 4, 7 and 12 months. Slaughter of animals, assessment of the slaughter qualities of sheep was carried out according to the Federal Science Center for Animal Husbandry method [8]. To characterize the meat qualities and determine the morphological composition of the carcasses, the carcasses were deboned and trimmed following GOST 7596-81 [9]. The chemical composition and calorific value of the pulp were determined according to generally accepted methods.

Research results. The most important condition for improving the existing and creating the new, more highly productive breeds and types of animals, is the use of genetic methods. Genetic progress in sheep breeding can be achieved only as a result of the integrated application of traditional breeding methods and modern DNA technology using molecular genetic markers (genes) associated with the main

economically useful traits. The identification of such genes allows, in addition to traditional selection, breeding to be carried out directly at the DNA level, i.e. by genotype.

In this regard, there is a need for research aimed at studying the role of marker assessment of sheep using DNA markers. Of particular importance among the polygene systems of the body are blood protein systems such as genes for growth hormone (bGH), insulin-like growth factor 1 (IGF-1), myostatin (MSTN), and fatty acid-4 binding protein (FABP4).

It should be noted that much fewer works have been devoted to the study of polymorphism of blood proteins in sheep than in other animals (17,18,19,20,21,22,23). The main goal of our research is to study the polymorphism of the main blood proteins of sheep of meat-lard breeds and to establish its relationship with economically useful traits. In the study of polymorphic systems of blood proteins, the differentiation degree of the genetic structures of breeds according to alleles and genotypes of polymorphic proteins, as well as their relationship with productive traits, was determined.

The analysis of polymorphism in the genes of growth hormone (GH2), insulin-like growth factor-1 (IGF-1) was carried out using test systems that were specifically designed to perform research in the laboratory of molecular foundations of the selection at the Federal Science Center for Animal Husbandry named after L.K. Ernst.

Growth hormone is a protein hormone consisting of a single polypeptide chain, it is synthesized and secreted by anterior pituitary eosinophil cells in vertebrates. GH growth hormone can speed up metabolism and promote the growth of many organs and tissues, especially bone, muscle, and visceral organs. Besides, the effects of growth hormone on dairy productivity and animal health are known. The growth hormone gene (GH2) has a direct impact on the synthesis and secretion of growth hormone, and thereby plays an important role in the growth of animals.

The growth hormone also affects animal organism through indirect effects, including the secretion of insulin-like growth factor (IGF-1).

Insulin-like growth factor 1 (IGF-1) is an important growth factor involved in the regulation of such significant physiological processes as reproduction, fetal development, and animal growth. It is assumed that IGF-1 is associated with the size of fatty tails, the weight of unwashed hair, the quality and quantity of semen in rams, the lactation resistance of milk sheep, and the size of offspring. Due to their role in the regulation of cell proliferation, the development of muscle tissue through the stimulating effect of growth hormone and testosterone and animal growth, the IGF-1 gene is considered as a candidate marker for growth indicators and meat productivity in farm animals.

In the course of the studies, the frequency of complex genotypes in animals was simultaneously determined by the genes for growth hormone (bGH) and insulin-like growth factor 1 (IGF-1).

As a result of testing, it was revealed that the GH2 gene is polymorphic in the studied sheep population. The highest frequency of occurrence was in the G allele (0.7169), which was found in the homozygous state in 97 (51.4%) sheep and in the heterozygous state in 77 (40.7%) sheep. The frequency of occurrence of allele A and genotype AA was 0.2831 and 7.9%, respectively.

As a result of the analysis, it was found that the CC genotype for gene 1 (IGF-1) was predominant in the studied sheep population (70.9%). The frequency of occurrence of the C allele was significantly higher than the T allele: 0.8386 and 0.1614, respectively. The homozygous TT genotype was defined as the rarest in the studied sample of sheep (3.2%).

As a consequence, data on the frequency of occurrence of genotypes in the two studied genes associated with the growth rate and meat quality of sheep were first obtained. It was found that in the studied sheep, the GH2 and 1(IGF1) genes were polymorphic.

While studying the influence of the above-mentioned genes on the live weight of meat and lard fat-tailed sheep, it was established that animal carriers of heterozygous types (AG of GH2 gene and CT of IGF1 gene) grew more intensively compared to homozygous genotypes. Their superiority in terms of average daily gain was 9.5%.

When assessing the ram hogs by slaughter and meat indices, depending on the genotypes of the studied genes, it was found that groups of animals with different polymorphic variants of the GH2 and IGF1 genes differ in the yield of internal lard and fat tail, as well as in the slaughter yield. So, in the group of animals with the SS genotype of the IGF1 gene, the slaughter yield was 53.7%, which is 9.0% more than the CT genotype. A similar pattern is observed for the GG genotype of the GH2 gene.

Identification of quantitative trait loci and candidate genes associated with meat productivity traits of meat-lard sheep is a prerequisite for the development of marker-based selection programs. We performed an analysis of genotypes associations of DNA markers of growth hormone (GH2) and insulin-like growth factor (IGF1).

Assessment of the dynamics of live weight of rams at different age periods depending on the genotypes of the studied genes showed that rams with the genotype GG of the growth hormone (GH2) and the genotype CC of insulin-like growth factor (IGF1) at the age of one year exceeded on average by 8.5% the live weight of their peers with other genotypes. It should be noted that animals with those genotypes had rather good indicators of live weight over all analyzed periods of growth and development.

It was established that the sheep with the AG genotype of the GH2 gene and the CC genotype of the IGF1 gene exceeded their peers with other genotypes in slaughter weight by 1.7 and 1.9 kg, respectively. However, in animals with the GG genotype of the GH2 gene, the slaughter yield was 5.3% higher in comparison with the average indicators of other genotypes animals.

When analyzing the polymorphism of the GH2 and IGF1 genes, the presence of associated bonds of different genetic variants with meat quality indicators was not revealed. A slight association of polymorphism of GH and IGF1 genes with the total number of the obtained lambs and death under one year of age was revealed.

The main indicator of the meat productivity of sheep is their live weight. To determine the live weight of individual sex and age groups of sheep, we carried out weighing. At the same time, the average live weight of stud rams of the Kazakh fat-tailed breed was 85.7 kg, of ewes - 64.8 kg. The similar indices for the Edilbay breed were 91.3 and 68.1 kg, respectively (table 1).

Table 1 – Productive qualities of rams and ewes

Sex and age group	Breed	live weight, kg	wool clip, kg	wool yield, %	milking capacity, kg
Stud rams	KF	85.7	3.24	68.4	–
	E	91.3	3.47	71.8	–
Ewes	KF	64.8	2.12	67.9	21.9
	E	68.1	2.25	69.3	23.8

The stud rams of Kazakh fat-tailed breed had a wool cut of 3.24 kg with a wool yield of 68.4%. These indicators are lower than in animals of the Edilbay breed by 6.6 and 4.7%, respectively. The milking capacity of the ewes ensured a good growth of the young stock in the first 20 days of life. So, in the rams of the Kazakh fat-tailed breed, the live weight was 8.95 kg, in young animals of the Edilbay breed - 10.1 kg. The yield of lambs per 100 ewes was 106.8% in the Kazakh fat-tailed, and 104.1% in the Edilbay breed. The livability of the Edilbay lambs was 97.7%, while in the Kazakh fat-tailed breed this indicator is slightly lower - 96.4%.

According to the indicators of live weight, wool clip and body measurements (table 2), rams and ewes of both breeds meet the standard requirements for animals of these breeds.

Table 2 – Body measurements of rams and ewes

Sex and age group	Breed	Measurements, cm					
		Oblique body length	height at the withers	chest depth	chest width	chest girth	Metacarpus girth
Stud rams	KF	77.8	75.1	34.8	20.4	87.2	9.2
	E	84.2	81.3	39.2	21.9	94.0	9.4
Ewes	KF	71.6	69.0	29.5	19.5	83.8	8.5
	E	76.1	74.5	32.9	20.5	90.7	9.1

In Kazakhstan, for the mutton production, the sale of young meat and lard fat-tailed sheep breeds of high early maturity is of great importance.

In the course of the experiment, the growth and development of young meat-lard breeds from birth to 12 months of age was monitored by weight and linear analysis taking into account the dynamics of changes in live weight and exterior indicators that reflect the type of constitution and animal productivity.

In all periods of growth and development, the ram hogs in both farms grew rapidly, indicators of live weight and average daily gain are shown in table 3.

Table 3 – Dynamics of live weight of young meat-lard sheep

Indicators	Kazakh fat-tailed		Edilbay	
	Ram hogs	Ewe hogs	Ram hogs	Ewe hogs
Live weight, kg				
- at birth	3.9	3.7	5.2	4.4
- at the age of 4 months	30.7	28.4	34.5	31.7
- at the age of 7 months	34.2	30.7	39.7	35.4
- at the age of 12 months	55.4	47.8	61.1	52.6
Average daily gain, g				
0-4 months	219.7	204.2	239.7	225.7
0-7 months	141.6	126.2	159.8	144.8
0-12 months	141.1	120.8	153.7	132.1
Relative gain, %				
0-4 months	155.0	153.4	145.0	150.8
0-7 months	159.1	157.0	155.3	155.8
0-12 months	173.7	171.3	169.7	169.1

As can be seen from the data in Table 3, young animals of both breeds in the suckling period grew at a steady rate. By the time of weaning from mothers, the live weight of rams and ewes of the Kazakh fat-tailed breed was 30.7 and 28.4 kg, and the live weight of the rams and ewes of the Edilbay breed were 34.5 and 31.7 kg, respectively. Analyzing the growth dynamics of the live weight of lambs for this time, it should be noted that young animals of both breeds have had the highest growth energy in the first month and at the time of weaning. Such high gains in live weight in fat-tailed lambs from birth to 4 months of age should be explained, first of all, due to the genetic rhythmicity of postnatal ontogenesis developed during the evolution of fat-tailed sheep and high milking capacity of ewes.

After weaning, the lambs were fed till the age of 7 months. This circumstance negatively affected the growth and development of young animals. The average daily gain during this period was the smallest and amounted to 38.5 and 25.3 g for rams and ewes of the Kazakh fat-tailed, and 63.7 and 40.6 g for the Edilbay breed, respectively.

At the age of one year, the Edilbay breed sheep had a live weight of 61.1 kg, which is 5.7 kg, or 9.7% higher than that of young Kazakh fat-tailed sheep. The Edilbay ewes had a similar advantage. So, at the age of 12 months, the difference in favor of the Edilbay breed was 4.8 kg or 10.1%.

At the age of 12 months, we took measurements and calculated the 6 main body indices (table 4).

The young stock of the Edilbay breed was massive and less extended than the ram hogs of the Kazakh fat-tailed breed. The massiveness index for Edilbay sheep amounted to 128.2%, and for young Kazakh fat-tailed sheep - 125.8%, consequently, the bone index was higher for Edilbay rams (12.4%), and for the Kazakh fat-tailed breed - 12.1%.

Thus, at the age of 12 months, the Edilbay sheep were distinguished by a higher live weight, massiveness, a better-developed hindquarter, and a relatively rough skeleton.

The main indicators of sheep meat productivity are live weight, slaughter weight, and slaughter yield. The value of the parameters of these traits depends on many factors (10, 11, 12, 13, 14, 15, 16). The live weight of meat-lard sheep is the leading economically useful breeding trait and is determined by the degree of the growth rate of the tissues that form the meatiness of the carcass. However, this indicator

Table 4 – Body measurements and indices of young animals at the age of 12 months

Parameters	Kazakh fat-tailed		Edilbay	
	Ram hogs	Ewe hogs	Ram hogs	Ewe hogs
Measurements, cm				
height at the withers	62.7	58.0	65.2	61.4
oblique body length	63.3	57.4	65.3	61.1
chest depth	28.8	24.7	31.4	27.2
chest width	16.8	15.2	17.4	15.8
chest girth	78.9	74.4	83.6	80.4
Metacarpus girth	7.6	7.0	8.1	7.5
Indices, %				
long legs	54.1	57.4	51.8	55.7
extension	101.0	99.0	100.2	99.5
breast	58.3	61.5	55.4	58.1
blockiness	124.6	129.6	128.0	131.6
massiveness	125.8	128.3	128.2	130.9
bone	12.1	12.1	12.4	12.2

cannot give a complete and correct idea of the meat qualities of sheep. Therefore, only a control slaughter provides accurate information on the degree of development of muscle, especially fatty tissue. The results of the control slaughter show the presence of certain interbreed differences in the main indicators.

At the age of one year, all animals had enough high pre-slaughter live weight; well-developed carcasses were obtained from them (table 5).

Table 5 – The results of the control slaughter of ram hogs at the age of 12 months

Indicators	Kazakh fat-tailed	Edilbay
Pre-slaughter weight, kg	53.7	59.0
Carcass weight without a fat tail, kg	22.3	24.9
Fat tail mass, kg	2.74	3.24
Internal fat mass, kg	1.07	1.30
Slaughter weight	26.11	29.44
Slaughter yield, %	48.6	49.9

From the data in Table 5 it follows that at one year of age, young animals of the Edilbay breed exceeded their peers of the Kazakh fat-tailed breed by 9.9% in terms of pre-slaughter live weight, and by 11.7% in carcass weight without a fat tail. In terms of fat deposition, the sheep of the Kazakh fat-tailed breed are somewhat inferior to the Edilbay peers, but this fact does not reduce the meat qualities within the requirements for meat-lard sheep breeds. The slaughter yield for the groups was 49.9 for the Edilbay breed and 48.6% for the Kazakh fat-tailed breed, which is 2.7% lower.

It is known that the quality of the carcass is determined by its morphological composition, the main components of the carcass include muscles, fat, bone, and tendons. Evaluation of the morphological composition of the carcass is of considerable interest in the study of meat productivity and early maturity of animals, since only it can give the correct impression of meat and the ratio of tissues - muscle, fat, and bone, which form the meatiness of sheep.

For a complete description of the meat qualities, the carcasses were deboned and trimmed following GOST 7596-81. According to the results of deboning carcasses, its morphological composition was defined (table 6). In terms of the absolute and relative mass of pulp and fat, relatively high parameters were observed in young stock of the Edilbay breed than in sheep of the Kazakh fat-tailed breed.

Table 6 – Morphological composition of meat of the ram hogs at the age of 12 months

Indicators	Kazakh fat-tailed	Edilbay
Weight, kg:		
- chilled carcass	22.3	24.9
- pulp and fat	17.7	20.0
- bones and tendons	4.6	4.9
Meatiness coefficient	3.85	4.08

The relative weight of pulp and fat is 80.4% for young animals of the Edilbay breed, and 79.3% for the Kazakh fat-tailed sheep. This means that per 1 kg of carcass weight in the Kazakh fat-tailed breed, 793.8 g of pulp is accounted for, and in young Edilbay sheep - 803.3 g. Accordingly, the mass of bones and tendons in the Kazakh fat-tailed sheep is 5.7% more.

One of the main and objective indicators of meat qualities is the ratio of pulp and bones in the carcass - the meatiness coefficient. The value of this indicator largely depends on the breed characteristics, age, fatness and sex of the animals. According to this indicator, the Edilbay sheep had an advantage over their peers - by 6.0%. These data show that with proper growth at all age periods, the rams of both the Edilbay and the Kazakh fat-tailed breeds are characterized by quite satisfactory meat qualities as early as at the age of one year.

The varietal assortment of carcasses is an important indicator of meat productivity since the nutritive value of meat in different parts of the carcass is not the same. To study in details the meat advantages of young animals of different origin, after slaughter, high-quality carcasses were cut. Moreover, according to the current standard, the scapular-back, lumbar and hip cuts were assigned to the 1st grade. Certain differences in the yield of the most valuable 1-grade cut in young animals were revealed, depending on the genotype. Butchering the carcasses of young animals slaughtered at the age of 12 months showed that in the carcass of the Edilbay animals, the yield of 1-grade meat (81.3%) is 0.9% higher than that of the young Kazakh fat-tailed animals.

The cross-sectional area of the longest muscle of the back (“rib eye”) has a conjugation with the meatiness of the carcass. Thus, a positive correlation between the mass of muscles in the carcass and the area of rib eye in young sheep is 0.64-0.77. Therefore, the meatiness of carcasses can be judged by the cross-sectional area of the rib eye. The data obtained during the measurement showed that the young stock of the Edilbay breed exceeded their peers of the young Kazakh fat-tailed animals by 6.2% in the cross-sectional area of the longest muscle of the back.

To study the meat qualities of animals, in addition to the quantitative characteristics of their meatiness, information on the quality and nutritive value of meat is needed. As known, the quality of meat is largely characterized by its chemical composition and energy value.

Physico-chemical methods of study allowed to establish some differences in the quality of meat between the ram hogs of the studied breeds. Compared to the meat of young animals of the Edilbay breed, Kazakh fat-tailed breed meat contained 2.1% more moisture, and Edilbay sheep fat pulp contained 3.2% more fat (table 7).

Table 7 – The chemical composition and calorific value of meat of the 12-month-old ram hogs

Indicators	Kazakh fat-tailed	Edilbay
Pulp composition, %:		
- water	68.6	67.2
- fat	15.8	16.3
- protein	14.7	15.6
- ash	0.9	0.9
Calorific value, kcal	207.2	215.6

During the slaughter, the ratio of protein and fat in the pulp of the ram hogs of the Kazakh fat-tailed breed was 1:0.93, and in the young Edilbaev breed sheep - 1:0.96. The unequal content of protein and fat

in the meat led to different calorific values: high - 215.6 kcal for sheep of the Edilbay breed, and 207.2 kcal for young Kazakh fat-tailed sheep, which is 3.9% lower. In general, the meat composition of the Edilbay breed of sheep was more mature than the meat of young stock of the Kazakh fat-tailed breed.

Blood values are the most important indicators related to the intensity of oxidation-reduction reactions, the level of general metabolism and the growth and development processes. In both groups of animals, a higher content of red blood cells was found in rams. Thus, their level in the Kazakh fat-tailed breed is higher by 8.6% in ram hogs compared to the ewe hogs, and in the Edilbay breed, it is higher by 3.2%. This to some extent indicates that in the body of ram hogs, redox processes occur at a higher level.

Differences were also revealed in the content of leukocytes, and the indicators of the rams of both breeds exceeded the same indicators in the ewes. This shows the functional state of the hematopoietic organs of experimental animals and, above all, the increased activity of the leukopoietic apparatus in rams.

In terms of hemoglobin content, the rams of both breeds also exceeded the ewes. The rams of the Kazakh fat-tailed breed had a particularly noticeable advantage over their peers - by 3.1%. The increased content of hemoglobin in the blood of rams compared with ewes suggests an increase in the intensity of blood formation processes, as well as accelerating the rate of redox processes in their body.

The physiological state of animals most accurately is reflected by the biochemical composition of the blood, which indicates not only metabolic disorders in the body, but also errors in protein feeding, lack of vitamins, microelements and other biologically active substances in the diets.

The amount of total protein in serum indicates the level of protein metabolism in the body. The higher the protein content, the higher the protein metabolism and animal productivity. According to the results of the analyses, it was found that at the age of 12 months in experimental rams, in general, the protein content in the blood serum was relatively high and amounted to 76.1-74.4 g/l (table 8).

In the process of protein metabolism in the body, not only the total amount of protein, but also individual fractions of the protein play an important role. It should be noted that the increase in the level of total protein in the blood of rams and ewes of both breeds occurred mainly due to the albumin fraction. As is known, albumin creates colloid-osmotic blood pressure, as a result of which the equilibrium of water and electrolytes between plasma and tissues is regulated. An analysis of the ratios of protein fractions showed that the rams of the Kazakh fat tail breed were superior to peers from the group of animals of the Edilbay breed in the content of albumin by 0.9 g/l (3.2%).

Table 8 – Morphobiochemical composition of the blood of animals at the age of 12 months

Parameters	Kazakh fat-tailed		Edilbay	
	Ram hogs	Ewe hogs	Ram hogs	Ewe hogs
Red blood cells, million/mm ³	10.1	9.3	9.8	9.5
Hemoglobin, g/l	10.2	9.9	10.5	10.3
Leukocytes, thousand/mm ³	9.9	9.4	9.6	9.1
Total protein, g/l	76.1	70.4	74.4	73.2
Including albumin, g/l	29.8	28.3	28.9	26.9
Calcium, mmol/l	2.93	2.81	2.72	2.55
phosphorus, mmol/l	1.66	1.72	1.73	1.76

Erythrocytes in the blood are lower (by 2.9%) in the Edilbay sheep, but in terms of hemoglobin, they are superior to peers from the Kazakh fat-tailed breed (by 3.0%), which ensures a normal breathing process.

In the research process, the content in the blood of the main minerals – calcium and phosphorus – was studied. At the age of 12 months, certain differences were observed in favor of the Kazakh fat-tailed breed sheep in terms of calcium content and in young Edilbay breed sheep in terms of phosphorus content. Thus, the calcium content in the blood of the Kazakh fat-tailed rams was 7.8% higher than that of Edilbay sheep, while phosphorus content was lower by 4.0% than that of Edilbay sheep. The calcium-phosphorus ratio by breed was in the range: 1.63-1.76 for the Kazakh fat-tailed and 1.45-1.57 for the Edilbay breed. An analysis of the data revealed that, in general, the morphobiochemical parameters of blood in young animals of both breeds were within the physiological norm.

Thus, the studied meat-lard breeds have quite distinguishable biological and productive traits, indicating an independent genesis and individual characteristics of these animal populations. Further improvement of meat productivity indicators and their directed use in breeding practice is the most important task in working with meat-and-lard breeds of Kazakhstan.

Meat productivity and growth rate are important economically useful traits in sheep. The identification of the molecular-genetic mechanisms underlying the formation of these traits is of particular importance in terms of the growing market demand for mutton.

Conclusion. Growth hormone testing results showed that the GH2 gene is polymorphic in the studied sheep population. The highest frequency of occurrence was characterized by the G allele (0.7169), which was found in the homozygous state in 51.4% of sheep and in the heterozygous state - in 40.7% of sheep.

As a result of the analysis, it was established that according to the gene of insulin-like growth factor - 1 (IGF-1), the CC genotype was predominant in the studied population - 70.9%. The frequency of occurrence of the C allele was significantly higher than the T allele: 0.8386 and 0.1614, respectively.

It was also found that animals-carriers of heterozygous genotypes (AG of the GH2 gene and CT of the IGF1 gene) grew more intensively compared to homozygous genotypes. According to live weight, the one-year-old rams with the genotype GG of growth hormone (GH2) and the genotype CC of insulin-like growth factor (IGF1) surpassed their peers with other genotypes by 8.5%.

When analyzing the polymorphism of the GH2 and IGF1 genes, no associated bonds of different genetic variants with meat quality indicators were revealed.

The indicators of growth, development, and meat productivity of the Edilbay and Kazakh fat-tailed breeds have quite distinguishable biological and productive traits, which speak of an independent genesis and individual characteristics of these animal populations.

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ЕТТІ-МАЙЛЫ ТҰҚЫМДЫ ҚОЙ ЕТІНІҢ ДНК-МАРКЕРЛЕРІ БОЙЫНША СИПАТТАМАСЫ (ӨСУІ, ДАМУЫ ЖӘНЕ ЕТТІ ӨНІМДІЛІГІ)

Аннотация. Мақалада ет-май тұқымдас қойлардың өсуін, дамуын және ет өнімділігін, сондай-ақ ет-май тұқымдас қойлардағы гендердің полиморфизмін зерттеу нәтижелері келтіріледі.

Қойларды маркерлік бағалаудың рөлін зерттеуге бағытталған зерттеулер нәтижесінде екі зерттелген гендерде генотиптердің өсу жылдамдығымен және қойдың ет қасиеттерімен байланыстырылған кездесуі жиілігі туралы деректер алынды. Зерттелген таңдауда GH2 және I(IGF1) гендері полиморфты болды. Зерттелетін белгілердің қандай да бір деңгейімен әртүрлі генетикалық нұсқалардың ассоциацияларының бар болуы анықталды.

Тәжірибе барысында тірі салмағы мен сыртқы көрсеткіштерінің өзгеру динамикасын есепке ала отырып, салмақтық және аталық ізі бойынша талдау арқылы туғаннан бастап 12 айлық жасқа дейінгі етті-майлы қойлар төлінің өсуі мен дамуы байқалды. Екі тұқымды жас төлде өсудің ең жоғары энергиясы бірінші айда және кетіру кезінде байқалады. Дене салмағының ең аз өсуі 4-тен 7 айлық жасқа дейінгі кезеңде болды, яғни бағылу кезеңінде.

12 айлық жасында еділбай тұқымындағы қойдың тірі салмағы 61,1 кг болған, бұл қазақтың құйрықты тұқымындағы төлінен 5,7 кг немесе 9,7% жоғары. Осындай артықшылыққа еділбай тұқымының жарықтары да ие болды. Сонымен, осы жаста Еділбаев тұқымының қой пайдасына айырмашылық 4,8 кг немесе 10,1% құрады.

Бір жастағы қойлардың бақылау союсының нәтижелері негізгі көрсеткіштер бойынша тұқымаралық айырмашылықтардың бар екендігін көрсетті. Сою алдындағы массасы бойынша Еділбаев тұқымының төлдері өзінің құрдастарынан – қазақты құйрықты қойынан 9,9%-ға, ал тұтас еттің салмағы бойынша 11,7%-ға асып түсті. Тұтас еттің салмағы: Еділбаев тұқымында – 49,9, қазақ құйрықты тұқымында – 48,6% құрады, бұл 2,7% төмен. Еттегі протеин мен майдың біркелкі емес құрамы әртүрлі калориялық болып есептілді:

жоғары – Еділбаев тұқымдас қошқарларда – 215,6 ккал, ал қазақ құйрықты тұқымдарында – 207,2 ккал, бұл 3,9% төмен.

Морфобиохимиялық талдау көрсеткендей, екі тұқымды төлде қанның жалпы параметрлері физиологиялық норма шегінде болды.

Түйін сөздер: етті-құйрықты қой шаруашылығы, селекция, ет өнімділігі, қанның морфобиохимиялық құрамы, гендердің полиморфизмі, ДНК-маркерлер.

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ХАРАКТЕРИСТИКА ПО ДНК-МАРКЕРАМ БАРАНЧИКОВ МЯСОСАЛЬНЫХ ПОРОД (РОСТ, РАЗВИТИЕ И МЯСНАЯ ПРОДУКТИВНОСТЬ)

Аннотация. В статье приводятся результаты изучения роста, развития и мясной продуктивности овец мясосальных пород, а также наличия полиморфизма генов у овец мясосальных пород.

В результате исследований направленных на изучение роли маркерной оценки овец были получены данные о частоте встречаемости генотипов в двух исследованных генах, ассоциированных со скоростью роста и мясными качествами овец. Было установлено, что в изучаемой выборке овец гены GH2 и I(IGF1) были полиморфными. Выявлено наличие ассоциаций различных генетических вариантов с тем или иным уровнем изучаемых признаков.

В ходе опыта проследили рост и развитие молодняка мясосальных овец с момента рождения до 12-месячного возраста путем весового и линейного анализа с учетом динамики изменения живой массы и экстерьерных показателей. Установлено, что у молодняка обеих пород наиболее высокая энергия роста наблюдается в первый месяц и к моменту отъема. Наименьший прирост массы тела был в период от 4 до 7-месячного возраста, т.е. в период нагула.

В 12-месячном возрасте бараны эдильбаевской породы имели живую массу 61,1 кг, что на 5,7 кг или на 9,7% выше чем у молодняка казахской курдючной породы. Аналогичное преимущество имели и ярки эдильбаевской породы. Так, в этом же возрасте разница в пользу ярок эдильбаевской породы составила 4,8 кг или 10,1%.

Результаты контрольного убоя годовалых баранчиков показали наличие определенных межпородных различий по основным показателям. По предубойной массе молодняк эдильбаевской породы превосходили своих сверстников – баранчиков казахской курдючной породы на 9,9%, а по массе туши без курдюка на 11,7%. Убойный выход составил: у эдильбаевской породы – 49,9, у казахской курдючной – 48,6%, что на 2,7% ниже. Неодинаковое содержание протеина и жира в мясе обусловило разную калорийность: более высокая – у баранчиков эдильбаевской породы – 215,6 ккал, а у молодняка казахской курдючной породы – 207,2 ккал, что на 3,9% ниже.

Морфобиохимический анализ показал, что в целом параметры крови у молодняка обеих пород были в пределах физиологической нормы.

Ключевые слова: мясосальное овцеводство, селекция, мясная продуктивность, морфобиохимический состав крови, полиморфизм генов, ДНК-маркеры.

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REFERENCES

- [1] Ermekov M.A., Golodnov A.V. (1981). Tailed sheep of Kazakhstan. Alma-Ata: Kainar. P. 75-78 (in Russ.).
- [2] Kanapin K., Akhatov A. (2000). Tailed coarse-haired sheep of Kazakhstan. Almaty. P. 77-80 (in Russ.).
- [3] Kanapin K. (2009). Edilbay sheep. Almaty. 182 p. (in Russ.).
- [4] Traisov B., Esengaliev K., Karazhanov A. (2013). The meat productivity of lambs of the Kazakh fat-tail coarse-heared breed // Sheep, goats, woolen work. Moscow. N 3. P. 18 (in Russ.).
- [5] Golodnov A.V., Akhatov A., Alpkarin S.G. (1978). Methods of improving meat and lard sheep of Kazakhstan. Moscow. P. 177-179 (in Russ.).
- [6] Kanapin K., Isinbaev K. (2007). The applied value of Kazakh fat-tailed sheep // Bulletin of agricultural science. Almaty: Bastau. N 7. P. 31-34 (in Russ.).
- [7] Viktorov P.I., Menkin V.K. (1991). Methodology and organization of livestock experiments. M.: Publishing house Agropromizdat. 112 p. (in Russ.).
- [8] Methodology for assessing the meat productivity of sheep. (1978). VIZH. Dubrovitsy. 48 p. (in Russ.).
- [9] GOST 7596-81. (2006). Meat. Cutting mutton and goat meat for retail. Interstate standard. M.: Standartinform. 13 p. (in Russ.).
- [10] Magomedov T.A. (2007). The formation of meatiness in sheep in postnatal ontogenesis depending on genetic and paratyptic factors: Autoref. dis. ... Dr. agricul. sc. Moscow. 42 p. (in Russ.).
- [11] Erokhin A.I., Magomedov T.A., Karasev EA. (2010). The ratio of muscle, fat and bone tissue in carcasses of sheep of different directions of productivity and age // Sheep, goats, woolen work. Moscow. N 4. P. 29-33 (in Russ.).
- [12] Molchanov A.V. (2011). Genetic potential and methods for increasing the meat productivity of sheep in the Volga region: Abstract. dis. ... Dr. agricultural sc. Cherkessk. 39 p. (in Russ.).
- [13] Kubashev I.G. et al. (2010). Conjugation of traits in sheep. Izhevsk. 131 p. (in Russ.).
- [14] Nikonova E.A., Kosilov V.I., Shkilev P.N. (2008). The meat productivity of Tsigai sheep, depending on sexual dimorphism and age // Sheep, goats, woolen work. N 4. P. 38-40 (in Russ.).
- [15] Kubatbekov T.S., Mamaev S.Sh. (2013). Slaughter indicators of sheep of the Kyrgyz fine-wool breed of different ages // Sheep, goats, woolen work. Moscow. N 3. P. 30-31 (in Russ.).
- [16]. Molchanov A.V., Lushnikov V.P. (2011). Meat productivity of Edilbay rams of various lambing terms // Sheep, goats, woolen work. Moscow. N 3. P. 70-72 (in Russ.).
- [17] Bannikova A.D. (2012). Polymorphism of DNA markers associated with reproductive qualities in Large white and Yorkshire pig breeds: Abstract. dis. ... Cand. biol. sc. Dubrovitsy. 24 p. (in Russ.).
- [18] Glazko V.I. et al. (1999). Genetic markers of horses. Agricultural biology. Moscow. N 4. P. 38-47 (in Russ.).
- [19] Ernst L.K. Zinoviev N.A. (2008). The biological problems of animal husbandry in the 21st century. Moscow. RAAS. 501 p. (in Russ.).
- [20] Bardukov N.V., Konovalova G.K., Glazko V.I. (2010). DNA marker profiles in roadster horses // News of K.A. Timiryazev MAA. Issue 6. P. 152-157 (in Russ.).
- [21] Kharzinova V.R. (2011). The study of the genotypes of DNA markers GH, DGAT1, and TG5 in connection with the linear affiliation and the level of dairy productivity of Black-and-white cows: Abstract. dis. ... Cand. biol.sc. Dubrovitsy. 23 p. (in Russ.).
- [22] Grishkova A.P., Barkov D.A. (2015). The use of DNA markers in the breeding of pigs of the KM-1 factory type // International Journal of Applied and Basic Research. Moscow. N 3. P. 241-244 (in Russ.).
- [23] Yuldashbayev Yu.A., Selionova M.I., Aibazov M.M., Svetlichny S.I., Bondarenko N.N., Svistunov S.V., Baimukanov D.A., Chylbak-ool S.O., Tlepov A.A. (2019). Estrus induction in dairy sheep during the anestrus period // Bulletin of the National academy of Sciences of the Republic of Kazakhstan. 2019. Vol. 3, N 379. P. 64-71. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print). <https://doi.org/10.32014/2019.2518-1467.70>

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PERSONAL SELF-DEVELOPMENT IN THE CONTEXT OF GLOBAL EDUCATION: THE TRANSFORMATION OF VALUES AND IDENTITY

Abstract. The article discusses the issues of pedagogical support for personal self-development and the problems of human self-development, acting as one of the leading trends in improving education and training in the context of globalization of the modern world and modern education. It considers the limitations and opportunities (pedagogical resources) of additional and global education in the field of personal self-development and the implementation of pedagogical ideas of Russian and foreign scientists. Global education is a complex idea that helps a person better understand the world. Thanks to global education, a person can comprehend the problems of relations between peoples and other social groups, the problems of war and migration, the problems of corruption and social justice, the problems of poverty and homelessness, the bioethical and biotechnological problems of mankind, the problems of ecology and culture, science and art, the problems of gender relations and generations, career and professional issues, science and education, other global aspects. He can comprehend them in the context of international representations. In addition, he can touch the “timeless” Vedic knowledge of his ancestors about the unity of the universe, its laws, etc. This can be done both through contact with the Vedic sources and texts proper, and in the context of understanding the ideas of modern cosmic scientists. Global (as Vedic) education is able to transform the way people understand themselves and the world, it helps them (trans) to shape themselves and the world in the most harmonious, authentic and congruent way. This will naturally manifest itself in the transformation of values and identities of pupils and students facilitate the proactive participation of people and their mutual learning and upbringing in the process of solving significant problems for their community and the context of the evolution of humankind, preventing and blocking involutory processes.

Keywords: globalization of education, Vedic knowledge, laws of the universe, values, identity, self-development, pedagogical support of self-development of a person.

Introduction. In the world community, a system-holistic view of man and the world, science and education, arose at the turn of the XX and XXI centuries. This view presupposes the solution of the global problems of humankind, including the problems of education as a practice of development of the individual and society. Global education is a complex idea that is taught to enhance our understanding of the world. Students learning to be global citizens through global education will be able to learn more about the most significant issues of human life. These are the issues about international communities and migrations, problems of the corruption and social justice issues, problems of poverty and poverty, bioethical and biotechnological problems of mankind, problems of ecology and culture, science and arts, professional life and education, other global events, and international ideas in their typical classroom setting. Global Education will shape the way people understand themselves and the world to help better

shape the world. It will foster service learning initiatives and activism within the different community, organizations and families, and around the world (Friesen, 1995; Gaudiani, 1995). Global education that opens people's consciousness to the realities of the transnational and multi-religion interaction, multi-regional and globalized world and awakens them to bring about a world of greater moral and spiritual, justice and equity, human duties and rights for all. Global education is understood to encompass development education, human rights and duties education, education for sustainable development, education for peace and conflict prevention and intercultural education; being the global dimension of education for citizenship and ecological harmony (Lo, 1991; Milone, 1995; Ostheimer, 1995; Sinha, & Sinha, 1977).

Discussion. Self-development of a person in the context of global education is associated with significant transformations: the transformation of the values and identity of a person as a person, partner and professional necessarily requires active and systematic psychological and pedagogical support. Therefore, not limited to traditional subject-based learning, the trends in managing human self-development are being updated all over the world. These processes are especially important in the context of the globalization of the modern world and modern education. An example of the implementation of this strategy is global education in the west, and additional education in Russia and other countries of the former USSR. In addition, in Russia, especially important points are aspects of a person's acquaintance not only with global processes in themselves, but also with principles known from antiquity ("Vedas"), with Vedic knowledge of the ancient ancestors of humankind (Aitamurto, 2016; Bennett, 1963; Bridgman, 2005; Godwin, 1993; Shnirelman, 2017; Jeffrey, 2000; Sydorov, 2018). This knowledge contains the most important foundations of a harmonious, authentic and congruent, and therefore meaningful, happy, long human life. They help a person realize himself, achieve a state of existential fulfillment, which combines social efficiency and personal effectiveness (self-efficacy), harmony and transparency. Many modern methods of training and education, as well as directed support for self-development, have a distinction of limitations and opportunities, therefore, special additional and global education is necessary. They are needed as targeted channels to support personal self-development. In the framework of this support, the implementation of the pedagogical ideas of Russian and foreign cosmists is useful, according to which a person is a creature of the cosmos, not just the land, country, region, community, family, not only the individual, but also part of the vast Universe. Cosmism is based on the Vedic understanding of man and the world (microcosm and macrocosm), reveals to man his divine essence. Thanks to global education, a person can comprehend the problems of people's relations to themselves and the world in the context of situational and temporary, perceptions prevailing at one time or another in society and the world. However, he can also touch the "timeless" Vedic knowledge of his ancestors about the unity of the universe, its laws, etc. (Sydorov, 2018). This can be done both through contact with the Vedic sources and texts proper, and in the context of understanding the ideas of modern cosmic scientists. Global (Vedic) education is able to transform the way people understand themselves and the world, it helps them (trans) to shape themselves and the world in the most harmonious, authentic and congruent way. This will naturally manifest itself in the transformation of values and identities of students and learners facilitate the proactive participation of people and their mutual learning, and education in the process of solving significant problems for them and the community in the context of the evolution of humankind, prevention and blocking of involutory processes (Sydorov, 2018 and others).

Global education emphasizes the unity and interdependence of human society, developing a sense of self and appreciation of cultural diversity, affirmation of social justice and moral, and human rights and duties, as well as building peace and actions for a sustainable future in different times and places, different nations and organizations .

Global education promotes constructive humankind values and assists students and teachers (educators) to take responsibility for their actions and to see themselves as global citizens who can contribute to a more peaceful, just, harmonica and sustainable world. Global education is a dimension that runs through the total schools curriculums, an extra filter to help children and educators make sense of all the information about themselves and world and opinion the world is throwing at them. On methodology level, it combines some experiential and experimental (scientific) discussion based activities, a caring, co-operative and open outlook on the classroom and other types of human experience, and core concerns. It combines some experiential and experimental (scientific) discussion about culture and nature of the world, about all countries, regions and groups, about the causes of poverty and inequality (here as well as in other

countries), criminality and corruption, about the technical and social environment and about life meaning problems and dimensions. Global education is an active learning process based on the universal values of love and tolerance, solidarity and co-operation, equality and non-violence, justice and moral, inclusion and participation, nobility and dignity. Global education begins with raising awareness of global challenges such as poverty, unfair distribution of opportunities and resources, environmental degradation and climate change, violent conflict and non-respect of human rights. It then creates a deeper understanding of the complex underlying issues (banks, 2015; harris, and morrison, 2012). Thereby it aims at changing people's attitudes and encourages them to reflect on their own role in the world. Global education motivates and empowers people to become active as responsible and active "global citizens" (bajaj, hantzopoulos m. 2016).

Global Education is a way of approaching and integrating different knowing and skills. It integrate everything we teach about the life and the world. It broadens understanding of the world and personal life horizons and encourages exploration of all subjects from a global perspective. It also contributes to the whole curriculum and enhances our understanding of the world. This education provides a comprehensive approach to educating for a just and sustainable future. It includes with religious and historical trends that have molded our understanding of "peace" and then presents a variety of ways to practice peace education in schools and communities, and explains how it can motivate students. The teaching and practice of peace, multicultural and other components of the global education provides a basis of valuable knowledge about resolving conflicts and transforming violence without the use of force, about life in harmony with nature and culture, social and personal essences.

Unfortunately, in Russia global education is a topic not disclosed. A number of similar approaches are devoted to its comprehension, including the research of scientists and practitioners in the field of studies of the evolution of humankind (Arpentieva, Kassymova, Lavrinenko, Tyumaseva, Valeeva, Kenzhaliyev, Triyono, Duvalina, Kosov 2019; Kassymova, Valeeva, Muller, Anufrieva, Arpentieva, Lavrinenko, Dossayeva, 2019; Arpentieva, Kirichkova, Kosov, Feshchenko, Golubeva, 2018; Mamedov, 2004). Among them, we can especially highlight the works of cosmopolitan philosophers, who comprehend the co-evolution of man and nature, the role of space in this evolution (Maralov 2004; Perekusikina 2013; Pushkareva, Pushkarev, Latukha, 2007; Pushkin, 2012). We can also single out the work of economists who consider the relationship and role of social, human and cultural capital in the development of production technologies on different turns and within the framework of different models of socio-political and economic development (Tyumaseva, 2004).

The solution of global problems of the present, ensuring the sustainable development of humankind as a planetary phenomenon, a prosperous future of society assumes the globalization of human consciousness and the concerted actions of the world's population to harmonize relations in the system "man-society-nature" (Tarasenko, 2011, p. 335). Globalization today is one of the main factors of civilizational development (U. Beck, Kh. A. Barlybaev, A.S. Panarin, M.A. Muntean, A.D. Ursul, A.I. Utkin, etc.), while the process of globalization is interpreted as the formation of a single interconnected world, the process of the unification of mankind on a worldwide scale (Tarasenko 2011, p. 116). According to other scientists, "the processes of globalization, unfolding in our time, fundamentally differ from their historical precedents. They embrace the person, society and nature in their multifaceted interrelations, manifest not only in vast territories, but on the whole of our planet, in all countries of the world and touch upon vital interests, the future of every inhabitant of the Earth " (Mamedov, 2004, p. 34). In turn, the modern paradigm of education should reflect the cardinal changes in the character of human development of the beginning of the XXI century. The modern paradigm of education should be aimed at the formation of a personality capable of meeting the challenges of time. According to the researchers: V.V. Kazyutinsky, A.S. Pushkareva, Yu. V. Pushkarev, O.A. Latukh and others, education is in the epicenter of globalization. The scientists note that it is here that a new generation is being formed, on which the real implementation will depend, both the positive aspects of globalization and the elimination of its negative consequences. Therefore, it is in the sphere of education that one must carefully study the phenomenon of globalization, its driving forces, its consequences, and influence these processes. Education in the modern world becomes an integrating factor and a condition for the development of the individual and the entire world community (there is satisfaction of both individual and social needs)" (Pushkareva, Pushkarev, Latukha, 2007, p. 405-406).

At the level of UNESCO and the Council of Europe at the beginning of the XXI century, the concept of global education was formulated: "The Earth is our common home", the main tasks of which are:

- the formation of an understanding of the world on the basis of holistic (perception of the world as a whole) and humanistic views;
- education of the person responsible for all forms of life on Earth and in the cosmos;
- education of a person who is able to combine freedom of choice with personal responsibility for the decisions made, universal human interests with national ones, security in the world with tolerance, friendship among nations, etc. (Bajaj, Hantzopoulos M. 2016, p. 108).

Proceeding from UNESCO documents, the main goal of the XXI century education is a full-fledged, qualitative development of the Person, one of the main tasks is the formation of a global understanding of the world.

The modern development of the world community requires an innovative education that would form a person's ability to forestall the future and responsibility for it. One of the main objectives of the XXI century education should be to disclose the global interdependence, the integrity of all existing on the Earth and in the Universe, the discovery of the logic of the development of this relationship, the definition of a special role and responsibility of man for preserving this integrity and himself in it.

The idea of the formation of global responsibility makes it necessary to orient the modern educational process on preparing students for solving global problems, for spiritual and scientific development of the surrounding world, for the upbringing of moral qualities that meet the imperative of survival and sustainable development of human civilization (Pushkin, 2012, p. 141). In turn, the formation of global responsibility is an integral component of the process of self-development of the individual, assuming, on the one hand, freedom of choice. On the other hand, responsibility for its implementation. Turning to the definition of freedom, K. Rogers emphasizes that it is not limited to the choice of external alternatives; on the contrary, personal freedom is an existential quality of the individual, the ability to internal choice. Another important aspect of determining freedom is the responsibility for your choice. When a person chooses himself, he learns to take responsibility and keep an answer not only to others (such a responsibility is of a formal nature), but also to himself, to his conscience (Rogers, 1994). Existential responsibility is the management of freedom as exits beyond the limits of social existence, which should be directed to the benefit of the person himself and surrounding people, of humanity as a whole. It should be noted that the idea of educating global responsibility was anticipated by Russian cosmists (N.A. Berdyaev, V.I. Vernadskiy, K.N. Wentzel, V.S. Soloviev, N.K. and E.I. Roerich, N.F. Fedorov, N.G. Kholodniy, K.E. Tsiolkovskiy, A.L. Chizhevskiy, and others cosmicist), whose ideas received special relevance in the context of the globalization of education.

In the context of the globalization of education, the following ideas of the philosophy of space education are of particular relevance:

- comprehension of the infinity of the Universe embodied in the infinity of cognition of the Cosmos and man as its particles, ensuring the development of freedom of thought, personal freedom and existential responsibility for one's choice;
- the proclamation of the interdependence and continuity of man and the Cosmos, the realization of which ensures the integrity of thinking, a holistic view of oneself and the world around us;
- the proclamation of the idea of moral Unity of man, mankind and the Universe, which predetermines the priority of moral values in the self-development of the individual and the search for ways of their development in education;
- defining as the leading task of education the creation of conditions for making a person highly intelligent and moral, and therefore more perfect and happy, capable of self-development, which can be embodied in the content of education and the educational methods used, techniques, technologies (Arpentieva, Kassymova, Lavrinenko, Tyumaseva, Valeeva, Kenzhaliyev, Triyono, Duvalina, Kosov 2019; Kassymova, Valeeva, Muller, Anufrieva, Arpentieva, Lavrinenko, Dossayeva, 2019; Arpentieva, Kirichkova, Kosov, Feshchenko, Golubeva, 2018).

The main feature of Russian cosmism is not in the contemplative attitude of man to the Earth and the Universe, but in the formation of his active position, since man is called upon to creatively and responsibly transform this World. It was within the framework of Russian cosmism at the beginning of the XX century that an understanding of the responsibility of the mind for resolving the contradictions

between man and mankind, man and nature was born. Man is a creator, not a destroyer. Therefore, cosmicists have always affirmed the priority of moral education. Perfection and self-development of man, in the opinion of Russian space scientists, is the main task of pedagogy.

According to Russian investigators, the objectives of education, reflecting the axiological ideas of Russian cosmism, can be formulated as follows:

- child education as a citizen of the universe; The result should be a person's awareness of the community of his life with the life of the cosmic;
- child education as a free creative person (development of individuality, personal self-awareness);
- the result should be an individual's awareness of the meaning of his life in connection with the meaning of the existence of mankind and the world;
- child education as a member of society (development of social consciousness) and as part of the natural community;
- the result is a person's realization of his unity with humanity as a collection of individuals rising to higher forms of harmonic existence, and unity with the life of the Planet (Perekusikina, 2013, p. 67).

The main "point of growth" of the modern educational system should be the formation of a new cosmic outlook for children and teachers, the emergence of new meaningful landmarks as a result of comprehension by each person of the grandeur of its existence and purpose. The content of the educational process can be presented in the form of knowledge of the scientific and philosophical nature of the laws of the cosmos, the harmonious unity of man, mankind and the universe, the need to maintain and develop the original unity. Today, the pedagogy of the ideas of Russian cosmism, which found their actualization in the context of the globalization of education, can be presented in the context of educational practice for the implementation of pedagogical support for the self-development of children in the conditions of education. The definition of the category of pedagogical support for self-development is based on the theoretical constructions proposed by V.G. Maralov, V.I. Slobodchikov and E.I. Isaev. So, according to V.G. Maralov, the process of pedagogical support of children's self-development is an educational practice, involving the inclusion of an adult in the educational process with the goal of creating conditions for self-development, self-movement in the activities of all subjects of interaction (Maralov, 2004). According to V.I. Slobodchikov and E.I. Iseva, self-development is understood as the process of becoming "subjectness" in a given period. Self-development presupposes, on the one hand, personal freedom, on the other hand, responsibility before itself (Slobodchikov, Isaev 2000).

We believe that the greatest efficiency and effectiveness of psychological and pedagogical support for self-development of children of different age groups is achieved in conditions of additional education. This is because the environment (conditions) of additional education for children have a number of important educational resources (opportunities):

- the priority in personal development belongs to "self-processes" (self-knowledge, self-development, self-actualization, self-improvement, self-forecasting). This priority is expressed in providing the child with freedom of choice, taking into account the individual needs of the child and his family due to the variability and integrative character of complementary education. It manifests itself in the expansion and deepening of the educational space;
- the educational environment of the children's association is favorable for the children to manifest their "I", self-expression in the circle of peers;
- Children's association is a favorable environment for the formation of the subjectivity of the child, in the equal dialogue between the teacher and the child, the co-existence of children and adults is born;
- The absence of universal, uniform for all standards of the content of education and strict regulation of the educational process creates favorable conditions for creativity, initiative, success, self-knowledge and self-development;
- in additional education there are conditions for the development of independence and individuality, responsibility and initiative of the child. These conditions arise, among other things, thanks to the children's self-government, which presupposes the responsible execution of various social roles;
- in additional education there is a consideration of the pedagogical principle of the adoption and protection of the individual interests of the child. On the contrary, accounting for his academic merits is not the most important. The main thing - the creation of a teacher situation of success (Arpentieva, Kassymova, Lavrinenko, Tyumaseva, Valeeva, Kenzhaliyev, Triyono, Duvalina, Kosov 2019; Kassy-

mov, Valeeva, Muller, Anufrieva, Arpentieva, Lavrinenko, Dossayeva, 2019; Arpentieva, Kirichkova, Kosov, Feshchenko, Golubeva, 2018).

Psychological and pedagogical support of the child's self-development in supplementary education is the creation of conditions conducive to the development of the subjectivity of children in the environment of a child-adult community. Psychological and pedagogical support of the child's self-development is organized in the form of a system of interaction accompanied and accompanying. Because of interaction, the child learns ways of independent and optimal (subjectively) realization of personal choice based on the system of value orientations formed, as well as resolving emerging problems that impede self-development (Arpentieva, Kassymova, Lavrinenko, Tyumaseva, Valeeva, Kenzhaliyev, Triyono, Duvalina, Kosov 2019; Kassymova, Valeeva, Muller, Anufrieva, Arpentieva, Lavrinenko, Dossayeva, 2019; Arpentieva, Kirichkova, Kosov, Feshchenko, Golubeva, 2018).

The implementation of pedagogical support for the self-development of children in supplementary education should take into account the peculiarities of the situation of personal choice. The choice is based on the child's self-development. He creates conditions for self-determination. Psychological and pedagogical support takes into account the following features of personal elections:

- the formation of the child's (pupil's) ideas about the plurality of options (alternatives) for education and life. Additional education develops a system of pupil's representations by offering him a system of educational areas of self-realization;

- the formation of qualitative characteristics of the choice (the importance of choice, the assumption of responsibility for the choice, the experience of independent choice). Additional education develops the ability to choose by offering the student a system of educational areas of self-fulfillment, and also by creating conditions for the selection of children at different stages of development subjectivity (taking into account their age and other characteristics);

- the procedural aspect of the choice (assessment of the consequences of decision making and choice, the retention of the consequences of the choice, their correlation with the value system in the situation of "crossroads" in the moral choice, trying on probabilistic consequences). The procedural aspect of the choice is supported by an additional education through the development of the value-semantic sphere of the child, motivation for self-development through immersion in the content of additional education. Such education must be saturated with anthropo-cosmic ideas and existential values;

- the determinants of choice (the existence of independence, freedom of choice, the realization of one's vital, moral position at the time of the choice). The determinants of choice are supported by additional education through the search and correction of technologies of psychological and pedagogical support for children's self-development in education;

- availability of readiness for selection (achievement of emotional satisfaction when making a choice, recognition of the decision as the best possible as a basis for self-acceptance, ability and willingness to accomplish independent elections and bear responsibility for them). Readiness for choice is supported by a teacher, a psychologist, a social worker by offering the child a system of educational areas of self-realization in supplementary education. They create conditions for making a choice and responsibility for the choice for children who are at different stages of development of subjectivity (taking into account their age and other characteristics).

Results. The embodiment of the pedagogical ideas of Vedas and modern Russian and world space scientists in the context of psychological and pedagogical support for the self-development of children is seen by scientists today in a number of aspects of the additional education:

- the use of forms of organization of classes that promote the development of personal freedom and the existential responsibility of children (open group discussion, discussion in the form of a television talk show, mini-conferences, trainings, design classes on the declared educational interests of children, research, viewing and discussion of videos with identification actual problems, social design, etc.);

- Substantive emphasis of educational activities on the study of global and everyday problems;

- the priority of implementing integrated educational programs of different focus as a condition for ensuring the formation of a holistic view of themselves and the world around them,

- the orientation of education on the formation and development of the student's awareness of the cause and effect relationships of his and others' actions, the world as a whole. Such awareness creates a basis for the accomplishment of an independent choice, taking into account the study of possible scenarios

for the development of events, the investigation of the consequences of certain elections and the activity to implement them. Awareness of the choice contributes to the formation of responsibility for the decisions made;

- development of children by additional educational programs of aerospace orientation. The development of these programs contributes to the development of the child's motivation for learning about himself and the Cosmos. The realization of its inseparable, involvement in the world around us, the Universe is combined with the formation and development of a truly scientific worldview.

The scientific worldview is based, in this context, on the tradition of Russian cosmism, the achievements of the aerospace industry, environmental science and global education. In addition, there is a development of a sense of patriotism and love for the Motherland, for the Earth. Development of cognitive abilities of children, expansion of their outlook, formation of not only visual-figurative (empirical), but also theoretical thinking develops. In the process of further education, students acquire competencies in the field of research (the ability to put forward hypotheses and find the means of their adequate study). In parallel, the experience of self-knowledge and self-forecasting accumulates. An important part of this experience - personal and creative achievements as the results of student self-realization in additional education.

The content component of education may include the following aspects:

- providing extensive material for studying the biographies of great people who have contributed to the culture, science, and history of mankind;

- help the student in understanding the higher principles of being, recorded in the Vedas and private scriptures, including understanding the concept of the Supreme (the principle of the existence of an ideal), ideas about the law of measure, the law of conformity, the basic moral commandments and their meaning;

- the basic ideas of man as a microcosm, who came to Earth to fulfill his mission, his mission, including in the context of the general evolution of mankind and the world,

- the liberation of the inhabitants of the planet from death and its causes: immorality, alienation and ignorance;

- creating conditions for a person, enabling him to learn and carry out research and development processes of his potential as a person, partner and professional, help in understanding and realizing the dharma - destiny or "rock" associated with the "higher Self", and not with worldly desires, attachments and addictions, help in the study of self-improvement methods;

- education of a positive, productive, creative attitude to oneself and the world, including family, professional and other systems of relations, to give an understanding of the importance of meaningfulness and valuable completeness of work;

- help in understanding the meaning and functions of spiritual values, moral relations and education in the norms of highly moral human relations;

- the provision of knowledge about nature and culture, systemic and multi-level, multi-aspect capture of laws and trends of development and co-evolution of man and nature;

- to help form a universal picture of the world, based on the wealth of achievements of mankind, and not on the mass ("garbage") culture, its ideals of permissiveness and a-culture, to help in the formation and development of the rich inner world of man, his beauty and harmony.

Because of the implementation of pedagogical and psychological support for human self-development in addition to the general

minimum education added the educational resources of the educational environment of basic and continuing education. Many important moments of human life are formed and developed:

- children, adolescents, youths, etc. motivated by the reflection of their subjectivity, the support of their desire to know themselves and the world, to find their unique place in the world;

- a subjective position is formed, one's own point of view, the ability to express one's opinion and defend one's position, correspond to one's own principles - understanding oneself as part of the world;

- the idea of a plurality of elections and freedom in decision-making is being formed;

- the understanding of the world as a whole (as a single system) is being formed, the level of awareness of the world and life, their cause-effect relationships is rising.

Psychological and pedagogical support helps to understand the relationship between a person's choice and its consequences. Because a person is aware, he will be able to become an active part of the universe;

- children form and develop responsibility for their fate, the life of their loved ones, country, planet;
- raising awareness of their actions, the results of their choice, predicting the consequences of their decisions and actions in terms of their impact on a person, nature, planet;
- in the minds of children there is a statement about the priorities of universal, universal cultural values; orientation is formed on the leading principles of human life in the development of independent choice, including the choice of evolution, and not involution;
- the ability to see alternative solutions to the problem is formed and comes to an independent choice to abandon imposed desires in favor of true needs;
- motivation and willingness to conduct independent elections based on value orientations are formed;
- reflexivity develops, or as it is sometimes inaccurately called the “criticality” of understanding, it is possible to overcome stereotypes, the ability to show individuality in different types of activities

These results of additional education directly correlate with the tasks of global education. Global education is the development of global thinking, the upbringing of a sense of the involvement of children in the life of the planet Earth, our common home, the establishment of harmonious human relations with nature, with ourselves. It can be concluded that the educational process, which in its goals, principles, content and technology relies on the global ideas of the philosophy of cosmism as a methodological basis, can provide an effective solution to the problem of the formation of the existential responsibility of the individual in the conditions of a globalizing world.

Conclusion. Self-development, self-realization of a person as an individual, partner and professional is associated with the transformation of life values and priorities, and, therefore, identity: personal, social, professional. In the process of directed preparation and support of the development of a child, adolescent, youth and adult in a "global" or "additional" educational process, these transformations appear not as additional, but as central effects. The teacher seeks data transformation in students as the goal of the didactic process: it is important not so much training as education of a person, his development and self-development.

Approaches to the organization of pedagogical support for the self-development of children can to find wide application in the educational practice of additional education and extracurricular activities in conditions of development Federal state educational standards. Pedagogical support for children's self-development in the conditions of education globalization is aimed to the global competency of the children. Global competency is defined in various ways, for example (Mestenhauser, 2011; Hamza, 2010; Russo, & Sans, 2009; Reimers, 2009 and others):

- Global competency is ability to define as Investigate the World, that is, to be aware of and interested in the world and its workings. This ability involves investigate and exploring globally significant questions and creating a coherent and complex response that considers multiple levels and perspectives and draws useful, defensible and creative conclusions.

- Global competency is ability to weigh perspectives (of the understanding and activity). Students recognize that they have a particular perspective of the understanding and activity and those others may or may not share it. They can then articulate and explain the perspectives of the understanding and activity of other people and can compare their perspective with others and construct a new understanding and ways of the action and life.

- Global competence entails effective and productive interaction and communication—both verbal and non-verbal with diverse audiences, opponents and proponents. Globally competent students are proficient different language. They are also skilled users of digital media and other modern technology.

- Global competency is ability to take action and participation. Globally competent students are able to weigh options based on evidence and insight, assess potential for impact, consider possible consequences, and act and reflect on those actions. Globally competent students are able to cooperate and serve to other individuals and organizations. “Global competency [is] the knowledge and skills that help people understand the flat world in which they live and the skills to integrate across disciplinary domains to comprehend global affairs and events and to create possibilities to address them. Global competencies are also the attitudinal and ethical dispositions that make it possible to interact peacefully, respectfully and productively with fellow human beings from diverse geographies.” (Reimers, 2010, p. 283). In education,

harmony of interests of a person, society, state and business is necessary. Global education is education aimed at the formation and development of a person as an individual, as an individual and a professional, as a partner and member of the community. It is aimed at actualization and realization of the essence of man, his abilities and purpose in a certain cultural, historical and socio-political environment (Arpentieva, Duvalina, Gorelova, 2017; Arpentieva, 2016; Gunesch, 2004; Kassymova, Stepanova, Stepanova, Menshikov, Arpentieva, Merezhnikov, Kunakovskaya, 2018; Kassymova, Tokar, Tashcheva, Slepukhina, Gridneva, Bazhenova, Shpakovskaya, Arpentieva, 2019; Kassymova, Tyumaseva, Valeeva, Lavrinenko, Arpentieva, Kenzhaliyev, Kosherbayeva, Kosov, Duvalina, 2019; Kassymova, Kosherbayeva, Sangilbayev, Schachl, Cox, 2018).

The transformation of personal values and identity in the context of its self-development and development in the process of training and education, as well as the support of training and education, includes several aspects in the process of global education:

1) the transformation of ideas about moral and legal laws and principles of human relations, enrichment with ideas and laws reflected in philosophical, esoteric and scientific models and doctrines of the existence and development of the Universe (Vedic and post-Vedic knowledge;

2) the addition of individual identity and values by universal human, the idea of oneself as a being of the Cosmos, the Universe;

3) understanding the multilevel and versatile relationship of man and nature. Man and culture, the formation and development of a person's self-image of society as subjects of nature and culture, the formation and development of the ability of dialogue with culture and nature;

4) the achievement of transparency, harmony, consistency and integrity of the person as a person, partner, professional and subject of life in general.

Self-development of a person in the context of global education is associated with significant transformations: the transformation of the values and identity of a person as a person, partner and professional necessarily requires active and systematic psychological and pedagogical support. Therefore, not limited to traditional subject-based learning, the trends in managing human self-development are being updated all over the world. Particularly important points are aspects of a person's acquaintance not so much with ideas related to the idea of "globalization" per se, as with principles known from antiquity ("Vedas"), with Vedic knowledge of the ancient ancestors of humankind (Sydorov, 2018). This knowledge contains the most important foundations of a harmonious, authentic and congruent, and therefore meaningful, happy, long human life. They help a person realize himself, achieve a state of existential fulfillment, which combines social efficiency and personal effectiveness (self-efficacy), harmony and transparency. Many modern methods of training and education, as well as directed support for self-development, have a distinction of limitations and opportunities, therefore, special additional and global education is necessary. They are needed as targeted channels to support personal self-development. In the framework of this support, the implementation of the pedagogical ideas of Russian and foreign cosmists is useful, according to which a person is a creature of the cosmos, not just the land, country, region, community, family, not only the individual, but also part of the vast Universe (Sydorov, 2018). Cosmism is based on the Vedic understanding of man and the world (microcosm and macrocosm), reveals to operate his divine essence. Thanks to a truly, and not formally global, education, a person can touch the "timeless" Vedic knowledge of his ancestors about the unity of the universe, its laws, etc. This can be done both through contact with the Vedic sources and texts proper, and in the context of understanding the ideas of cosmic scientists. Global (Vedic) education is able to transform the way people understand themselves and the world, it helps them (trans) to shape themselves and the world in the most harmonious, authentic and congruent way in the course of solving significant problems for them and the community in the context of the evolution of mankind, preventing and blocking involutory processes.

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ЖАҒАНДЫҚ БІЛІМ БЕРУ КОНТЕКСТІНДЕГІ ТҰЛҒАНЫҢ ӨЗІН-ӨЗІ ДАМУЫ: ҚҰНДЫЛЫҚТАР МЕН СӘЙКЕСТІЛІКТІҢ ӨЗГЕРУІ

Аннотация. Дүниежүзілік білім беру жағдайында тұлғаның өзін-өзі дамытуы маңызды өзгерістерге байланысты: адамның құндылықтары мен тұлға ретінде жеке басын, серіктес және кәсіби тұлға ретінде өзгертуі міндетті түрде белсенді және жүйелі психологиялық-педагогикалық қолдауды қажет етеді. Мақалада қазіргі әлемнің және қазіргі білімнің жаһандануы жағдайында білім беру мен оқығуды жетілдірудің жетекші бағыттарының бірі ретінде әрекет ететін жеке өзін-өзі дамытуды педагогикалық қолдау мәселелері және адамның өзін-өзі дамыту мәселелері қарастырылады. Ол жеке өзін-өзі дамыту және ресейлік және шетелдік ғалымдардың педагогикалық идеяларын жүзеге асыру саласындағы қосымша және ғаламдық білімнің шектеулері мен мүмкіндіктерін (педагогикалық ресурстар) қарастырады. Жаһандық білім - бұл адамға әлемді жақсы түсінуге көмектесетін күрделі идея. Жаһандық білімнің арқасында адам халықтар мен басқа да әлеуметтік топтар арасындағы қатынастардың проблемаларын, соғыс пен көші-қон, сыбайлас жемқорлық пен әлеуметтік әділетсіздік, кедейлік пен панасыздық проблемаларын, адамзаттың биоэтикалық және биотехнологиялық мәселелерін, экология мен мәдениеттің, ғылым мен өнердің проблемаларын, гендерлік қатынастар және т.б. ұрпақ, мансап және кәсіби мәселелер, ғылым мен білім, басқа да жаһандық аспектілерді қарастырады. Ол оларды халықаралық өкілдіктер тұрғысынан түсіне алады. Сонымен қатар, ол өзінің ата-бабаларының «мәңгі емес» ведикалық біліміне, әлемнің бірлігі, оның заңдылықтары туралы білімдеріне қол тигізе алады. Мұны Ведиялық дереккөздермен және мәтіндермен байланыс арқылы да, қазіргі космостық ғалымдардың идеяларын түсіну арқылы да жасауға болады. Жаһандық (Ведикалық) білім адамдардың өзін және әлемді түсіну тәсілін өзгерте алады, бұл оларға (транс) өздерін және әлемді ең үйлесімді, шынайы және келісімді түрде қалыптастыруға көмектеседі. Бұл, әрине, оқушылар мен студенттердің құндылықтары мен жеке тұлғаларының өзгеруінде көрінеді, адамдардың қоғамдастық үшін маңызды проблемаларды шешу процесінде және адамзаттың эволюциясы контекстінде, инволюциялық процестерді болдырмауда және болдырмауда олардың белсенді қатысуына және олардың өзара оқуы мен тәрбиесіне ықпал етеді.

Түйін сөздер: білімнің жаһандануы, ведикалық білім, ғаламның заңдылықтары, құндылықтар, өзіндік ерекшелік, өзін-өзі дамыту, тұлғаның өзін-өзі дамытуын педагогикалық қолдау.

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САМОРАЗВИТИЕ ЛИЧНОСТИ В УСЛОВИЯХ ГЛОБАЛЬНОГО ОБРАЗОВАНИЯ: ТРАНСФОРМАЦИИ ЦЕННОСТЕЙ И ИДЕНТИЧНОСТИ

Аннотация. Саморазвитие личности в условиях глобального образования связано с существенными трансформациями: трансформации ценностей и идентичности человека как личности, партнера и профессионала необходимым образом требуют активной и системной психологической и педагогической под-

держки. В статье рассматриваются вопросы педагогической поддержки саморазвития личности и проблемы саморазвития человека, выступающие в качестве одного из ведущих трендов совершенствования образования и профессиональной подготовки в условиях глобализации современного мира и современного образования. Рассматриваются ограничения и возможности (педагогические ресурсы) дополнительного и глобального образования в сфере саморазвития личности и реализации педагогических идей российских и зарубежных ученых. Глобальное образование - это сложная идея, которая помогает человеку лучше понять мир. Благодаря глобальному образованию человек может осмыслить проблемы отношений между народами и иными социальными группами, проблемы войн и миграций, проблемы коррупции и социальной справедливости, проблемы бедности и бездомности, биоэтические и биотехнологические проблемы человечества, проблемы экологии и культуры, науки и искусства, проблемы отношений полов и поколений, вопросы карьеры и профессиональной жизни, науки и образования, другие глобальные аспекты. Он может осмыслить их в контексте международных представлений. Кроме того, он может прикоснуться к "вневременному" ведическому знанию своих предков о единстве вселенной, ее законах и т.д. Это можно сделать как через контакт с собственно ведическими источниками и текстами, так и в контексте постижения идей современных ученых-космистов. Глобальное (ведическое) образование способно трансформировать способ понимания людьми себя и мира, оно помогает им (транс)формировать себя и мир наиболее гармоничным, аутентичным и конгруэнтным образом. Это естественным образом будет проявляться в трансформациях ценностей и идентичности учащихся и обучающихся, способствовать инициативному участию людей и их взаимному обучению, и воспитанию в процессе решения значимых для их и их сообщества проблем контексте эволюции человечества, претотвращения и блокирования инволюционных процессов.

Ключевые слова: глобализация образования, ведическое знание, законы вселенной, ценности, идентичность, саморазвитие, педагогическая поддержка саморазвития личности.

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REFERENCES

- [1] Aitamurto, K. (2016). Paganism, Traditionalism, Nationalism. <https://doi.org/10.4324/9781315599304>
- [2] Arpentieva M. R., Kassymova G. K., Lavrinenko S. V., Tyumaseva Z. I., Valeeva G. V., Kenzhaliyev O. B., Triyono M. B., Duvalina O.N., Kosov A. V. (2019) Environmental education in the system of global and additional education. Bulletin of National Academy of Sciences of the Republic of Kazakhstan. 2019. - Vol. 3, (379). P. 11 – 18 <https://doi.org/10.32014/2019.2518-1467.45>
- [3] Arpentieva M.R. (2016) Innovative and traditional approaches to students' preparation for final attestation: the problem of learning styles . / Testing and language progress assessment: traditions and innovations. Bilingual collection of scientific

articles and materials of the international conference. March 21-22, 2016, Surgut. Ed. by C. Westbrook, O. Simonova and A. Sitnikova. UK, Southampton, Russia, Surgut: Southampton Solent University, Surgut State University, p. 5-11.

[4] Arpentieva M.R., Duvalina O.N., Gorelova I.V. (2017) Intersubjective management in aerospace engineering. In: Borikov V., Uchaikin S., Baranov P., Ivanova V., Dolgih A. and Ignatovskaya A. (Eds.) 5th International Forum for Young Scientists "Space Engineering" MATEC Web of Conferences. 12 – 14 April 2017. Tomsk: National Instruments Russia Corporation, p. 01002. <https://doi.org/10.1051/mateconf/201710201002>

[5] Arpentieva M.R., Kassymova G., Kenzhaliyev O., Retnawati H., Kosherbayeva A. (2019) Intersubjective Management in Educational Economy. Materials of International Practical Internet Conference "Challenges of Science". ISBN 978-601-323-144-0. Issue II, 2019. Page 24- 31. <https://doi.org/10.31643/2019.004>

[6] Arpentieva M.R., Kirichkova M.E., Kosov A.V., Feshchenko E.M., Golubeva G.F. (2018) The role of additional and alternative education in the self-development of children and adolescents. Advances in Social Science Education and Humanities Research (Web of Sciences) . Advances in Social Science, Education and Humanities Research (ASSEHR). Paris, France, Amsterdam, Netherlands: AtlantisPress, 2018. - Vol. 198. Proceedings of the International Conference on the Theory and Practice of Personality Formation in Modern Society (ICTPPFMS 2018) / Ed. by D.A. Chinakhov. P. 154-160. <https://doi.org/10.2991/ictppfms-18.2018.27>

[7] Atayeva M., Putro, N. H. P. S., Kassymova G., Kosbay S. (2019). Impact of reading on students' writing ability. Materials of International Practical Internet Conference "Challenges of Science". ISBN 978-601-323-144-0. Issue II, 2019. Page 5-13. <https://doi.org/10.31643/2019.001>

[8] Atayeva, M., Ciptaningrum, D. S., Hidayah R., Kassymova, G. K., Dossayeva, S. K., & Akmal (2019). Cultivating Junior High School students' critical thinking skills by using a short-video in English language classroom. Bulletin of National Academy of Science of the Republic of Kazakhstan. ISSN 1991-34-94. <https://doi.org/10.3204/2019.2518-1467.124>

[9] Bajaj M., Hantzopoulos M. (Ed.) (2016) Peace education: international perspectives. Bloomsbury: Bloomsbury Academic, 304p.

[10] Banks, J.A. (2015) Cultural Diversity and Education London, New York: Routledge, 366p.

[11] Banks, J.A. (2015) Multicultural Education: Issues and Perspectives. New York: Wiley, 360p.

[12] Bennett, J.G (1963). The Hyperborean Origin of the Indo-European Culture. Systematics. Vol. 1 (3).

[13] Bridgman, T.M. (2005). Hyperboreans. Myth and history in Celtic-Hellenic contacts. Studies in Classics. New York and London: Routledge, pp. 1-25.

[14] Friesen, D. (1995). Toward global horizons: Student stories' from an international teacher education project. Action in Teacher Education, vol. 17(2), p. 40-46. <https://doi.org/10.1080/01626620.1995.10463242>

[15] Gaudiani, Cl.L. (1995). Global social development: Higher education's next moral commitment. Educational Record, vol. 76(1), p. 6-13.

[16] Godwin, J. (1993). Arktos: the Polar Myth in Science, Symbolism, and Nazi Survival. London: Thames & Hudson. pp. 32–50.

[17] Gunesch, K. (2004). Education for cosmopolitanism? Cosmopolitanism as a personal cultural identity model for and within international education. Journal of Research in International Education, vol. 3(3), p. 251-275. <https://doi.org/10.1177/1475240904047355>

[18] Hamza, A. (2010). International experience: An opportunity for professional development in higher education. Journal of Studies in International Education, vol. 14(1), p.50-69. <https://doi.org/10.1177/1028315308329793>

[19] Harris, I. and Morrison, M. (2012). Peace education. London: Jefferson, N.C.: McFarland, 292p.

[20] Jeffrey, J. (2000). Hyperborea & the Quest for Mystical Enlightenment New Dawn. Vol. (58). P. 1. (accessed URL: <https://www.newdawnmagazine.com/articles/hyperborea-the-quest-for-mystical-enlightenment>)

[21] Kassymova G. Competence and its implications. Challenges of Science. 2018a. <https://doi.org/10.31643/2018.063>

[22] Kassymova G. K., Stepanova G. A., Stepanova O. P., Menshikov P.V., Arpentieva M.R., Merezhnikov A. P., Kunakovskaya L. A.. (2018) Self-development management in educational globalization. International journal of education and information technologies. Vol. 12 (12). P. 171-176.

[23] Kassymova G.K., Tokar O.V., Tashcheva A.I., Slepukhina G.V., Gridneva S.V., Bazhenova N. G., Shpakovskaya E.Yu., Arpentieva M. R. (2019) Impact of stress on creative human resources and psychological counseling in crises. International journal of education and information technologies. Vol.13 (1). P. 26-32.

[24] Kassymova K. G., Tyumaseva Z. I., Valeeva G. V., Lavrinenko S. V., Arpentieva M. R., Kenzhaliyev B. K., Kosherbayeva A. N., Kosov A. V., Duvalina O.N. (2019) Integrative model of student and teacher stress coping: the correction of relations in educational, professional and personal interaction. Bulletin of National Academy of Sciences of the Republic of Kazakhstan. Vol. 3, (379). P. 2-11 <https://doi.org/10.32014/2019.2518-1467.53>

[25] Kassymova K. G., Valeeva G. V., Muller O.Yu., Anufrieva N.V., Arpentieva M. R., Lavrinenko S.V., Dossayeva S. K. (2019) Innovation in education: prevention and correction of the pediogenias and matetogenias in students and teachers . Bulletin of National Academy of Sciences of the Republic of Kazakhstan. Vol. 5, №381. P.11 – 18 <https://doi.org/10.32014/2019.2518-1467.130>

[26] Kassymova, G. K., Kosherbayeva, A. N., Sangilbayev, O. S., Schachl, H., Cox, N. (2018). Stress management techniques for students . Advances in Social Science Education and Humanities Research или European Proceedings of Social and Behavioural Sciences (ASSEHR). Paris, France, Amsterdam, Netherlands: AtlantisPress, 2018. Vol. 198. Proceedings of the International Conference on the Theory and Practice of Personality Formation in Modern Society (ICTPPFMS 2018). <https://doi.org/10.2991/ictppfms-18.2018.10>

[27] Lo, D.E. (1991). Implementing a global curriculum. Gifted Education International, vol. 7, p. 146-148.

[28] Mamedov N.M. (2004) Globalization as a modern state of social development. The era of global change. Moscow, p. 34-36. (In Russian)

- [29] Maralov V.G. (2004) Fundamentals of self-knowledge and self-development: training. allowance. Moscow: Academy, 256p. (In Russian)
- [30] Mestenhauer, J.A. (2011). Reflections on the past, present, and future of internationalizing higher education: Discovering opportunities to meet challenges. Minneapolis, MN: Global Programs and Strategy Alliance, University of Minnesota, 198p.
- [31] Milone, M.N. (1995). Global education begins at home. *Technology & Learning*, vol. 16(3), p. 48-52.
- [32] Ostheimer, S. (1995). Internationalize yourself and your classes, school, and community. *Business Education Forum*, vol. 76(1), 44-47
- [33] Perekusikina N.A. (2013) Value-goal priorities of Russian cosmism as the world outlook basis of the educational process. *Bulletin of the Buryat State University*, vol. 1, p. 64-68. (In Russian)
- [34] Pushkareva E.A., Pushkarev Yu.V., Latukha O.A. (2007) Russian education in the context of the innovative formation of the global organization of the socio-cultural space. Problems of sociocultural evolution and the philosophy of Western Siberia. Biysk: BSPU them. V.M. Shukshin, p. 404-405. (In Russian)
- [35] Pushkin I.M. (2012) Formation of the global human responsibility in the light of the reforms of the national education. *Bulletin of the Northern (Arctic) Federal University. Series: Humanities and Social Sciences*, vol. 1, p. 141-145. (In Russian)
- [36] Pertiwi, F. D., Sudrajat, A., Kumalasari, D., Retnawati, H., Waspada, S. P. Dossayeva, S. K., Kassymova, G. K., (2019). Gender equality in feminism. *The Bulletin*, 5(381), 112–121. <https://doi.org/10.32014/2019.2518-1467.130>
- [37] Reimers F. (2009). Global Competency' Is Imperative for Global Success. *Chronicle of Higher Education*, vol. 55(21), p. A29.
- [38] Reimers, F. (2010) Educating for Global Competency. In: Cohen J. & Malin M. (Eds.), *International perspectives on the goals of universal basic and secondary education*. New York: Routledge Press, p. 183-202.
- [39] Rogers, K. R. (1994) A look at psychotherapy. The formation of man. Moscow: Progress, 480p. (In Russian)
- [40] Russo, A. & Sans, A. (2009). Student communities and landscapes of creativity: How Venice “The World’s most touristed city’ is changing. *European Urban and Regional Studies*, vol. 16(2), p.161-175. <https://doi.org/10.1177/0969776409102189>
- [41] Shnirelman, V.A. (2017). Obsessed with Culture: The Cultural Impetus of Russian Neo-Pagans. In K. Rountree (ed.). *Cosmopolitanism, Nationalism, and Modern Paganism*. New York: Palgrave Macmillan, p. 87–108. https://doi.org/10.1057/978-1-137-56200-5_5
- [42] Sinha, A.K., & Sinha, U. P. (1977). Some socialisational correlates of worldmindedness. *Asian Journal of Psychology and Education*, vol. 2(3), p. 27-30.
- [43] Slobodchikov V.I., Isaev E.I. (2000) Psychology of human development. Development of subjective reality in ontogenesis. Moscow: School-Press, 2000. 324p. (In Russian)
- [44] Sydorov G. (2018) Chronological and esoteric analysis of the development of modern civilization. In 5 volumes. Moscow: Conceptual Publ., (in Russian)
- [45] Tarasenko N.G. (2011) The problem of the formation of an integral worldview of the individual in the context of ideas of the philosophy of cosmism. *Scientific Bulletin of BelGU. Series: The humanities*, vol. 6 (101),p. 335-342. (In Russian)
- [46] Tarasenko N.G. (2011) The value of K.N. Ventzel's cosmic pedagogy and M. Montessori's ideas about "Cosmic education" in resolving the problem of the formation of a person's world outlook. *Historical and Socio-Educational Thought*, vol. 5, p. 116-121. (In Russian)
- [47] Tyumaseva Z.I. (comp.) (2004) Dictionary-reference book of modern general education. St. Petersburg: Peter, 464p. (In Russian)

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UNIVERSITY EDUCATIONAL SERVICES MARKETING: FEATURES, OPPORTUNITIES, PROBLEMS

Abstract. In the new socio-economic conditions for Kazakhstan, educational institutions are forced to be active market actors, independently formulating an offer, providing and selling their educational services. The interest of universities in the search for opportunities to increase the competitiveness of educational services is beyond doubt. In this work, the author defines some features of educational services as a subject of marketing activities of an educational institution, specifies the marketing potential in the field of higher professional education. The prospect of applying marketing innovations for the development of educational services has been identified.

Key words: educational service; marketing; competitiveness; promotion.

Introduction. The strategy and tactics of reform, which Kazakhstan and Russia have been implementing in recent years in the field of higher professional education, is largely associated with its commercialization. The market is rapidly filled with paid educational services: private schools, commercial Universities, etc. of Course, each such organization is trying to take the most favorable position in the market, which implies the urgent need to develop an effective marketing strategy. At the same time, it should be recognized as insufficient modern scientific developments of organizational and economic support of marketing activity in education, which rather characterize the stage of theoretical understanding of marketing issues in relation to the specifics of the activities of educational organizations, rather than provide a systematic, scientifically based marketing activity using all available opportunities and reserves available to modern universities.

Having originated in the industrial sphere, marketing for a long time did not find appropriate application in the field of educational services. However, the focus of the Kazakh economy on integration into the world economic system, increasing competition and commercialization of educational services have led to the need for early introduction of marketing elements in the practical activities of educational institutions.

If a few decades ago education and business were considered as antagonistic spheres, and the penetration of marketing mechanisms and tools into the system of higher professional education was not possible, in the present we can observe the formation of market relations in the field of production and provision of educational services. The number of non-state educational institutions endowed with relative autonomy and the right to produce and provide their educational services mainly on contractual terms is growing quite actively today. At the same time, the flip side of the privileged autonomy of universities, the need to formulate and implement adaptation strategies, positioning, market penetration, where the "reserves paid educational services still greatly exceeds the capacity demand» [1].

Methods. First of all, the definition of marketing in education is still quite vague, many Russian authors as such use the definition of F. Kotler, which is very vague characterizes the specific functional load and key performance indicators of the marketing function in modern universities [2].

Scientists unanimously define marketing of educational services as a system of management of market activity of educational institutions (table).

Definitions of the concept «marketing of educational services»

Author, source	Definitions
F. Kotler., Fox K. [2]	Research, planning, implementation and monitoring of carefully formed programs, with the aim of initiating voluntary exchange of values with target markets to achieve the objectives of educational institutions
Obolenskaya T.E. [3]	Development, implementation and evaluation of educational services by establishing an exchange relationship between educational institutions and consumers of educational services in order to harmonize the interests and meet the needs of students, pupils, students and listeners
Pankrukhin A. P. [4]	Philosophy (a set of General principles of market relations as a system of views), strategy and tactics of relations and relationships of consumers(users), intermediaries and producers of educational and related services and products in the market, free choice of priorities and actions on both sides, exchange of values
Tikhomirova N. V. [5]	The system of management of market activity of educational institution directed on regulation of market processes and studying of the educational market which leads to the most effective satisfaction of consumers: the person in education; educational institution – in development; firms and other organizations-customers – in growth of personnel potential; society-in the expanded reproduction of total personal and intellectual potential

Marketing of educational services is a science that studies the market of paid educational services; activities for their distribution and promotion; philosophy of educational business. The use of marketing enables each educational institution to monitor the situation on the labor market and adjust the volume and quality of educational services in accordance with it [3].

Despite the use of classical marketing terms "type of activity" and "satisfaction of needs", in our opinion, this definition does not sufficiently characterize the essence and specificity of marketing activities in education, which seriously limits the possibility of its practical use.

The application of marketing in higher education will contribute to improving the quality and expanding the range of educational services, will allow more diverse to meet the demands of consumers of such services and eventually contribute to the rise of education in society to a higher level [4].

The use of marketing in non-profit organizations allows them to avoid dependence on the market situation, to adapt to themselves the main objective factors - both macro and micro-environment, to fully realize the main and entrepreneurial goals, to provide for themselves the most effective financial support.

Participants of marketing relations are educational institutions, consumers (individuals, enterprises and organizations, the state), intermediaries, as well as public structures involved in the promotion of educational services on the market.

An important role among the subjects of marketing of educational services is played by the personality of the student, as he is the material carrier of educational services, as well as their final consumer.

The main objects of marketing of educational services are goods and services, it can also be institutions, territories and individuals. It can be noted that in most cases the object of marketing of educational services is any object offered in the market for exchange.

Objects of marketing of educational services actively interact with each other. For students, the location of the educational institution is important, and what opportunities for their residence it has, in this situation, special attention is paid to such an object of marketing of educational services as the territory [5].

The following features of educational services can be distinguished:

- educational services are not material and are not tangible until the moment of their acquisition;
- educational services are inseparable from the subjects providing them, produced and consumed simultaneously;
- impermanence of quality of educational services. The quality of educational services affects the development of society as a whole, and hence the need for the quality of educational services to meet the requirements of state control;
- significant length of educational services in time;
- non-preservation of educational services.

The purpose of marketing of educational services is the formation of conditions for the development of the education system, which will meet the educational needs of the individual and society as a whole, taking into account the needs of the regional labor market; preservation and development of the education system in the market [6].

A special role in marketing in education is given to the state. It provides legal protection of subjects of marketing relations from monopolism, as well as from bad faith in business and advertising.

The state establishes lists of professions and specialties in which education is conducted, forms a basic range of educational services. It carries out certification and state accreditation of educational institutions, i.e. acts as a guarantor of the quality of educational services, its compliance with educational standards.

The Central place in the marketing of education is the development of a marketing complex, which includes:

1. Service as a commodity: the range of educational services is quite wide, constantly and intensively updated, taking into account the requirements of customers, society, scientific and technological progress. The processes and technologies of providing educational services are quite flexible and easily changeable.

2. Service price: prices for educational services are formed under the influence of the market, competitors acting on it, the value of effective demand, the price can also be used to position the service.

3. Service distribution channels: a set of independent organizations involved in the process of meeting the demand for services and making them available to consumers [7].

4. System of promotion of services to the market: promotion activities are aimed at specific target groups of consumers of educational services, possible intermediaries. The main tools of the system of promotion in the market of educational services include advertising-any paid form of non-personal representation and promotion of educational services by a clearly defined advertiser; sales promotion-a system of short-term incentive measures and methods to encourage the purchase or sale of educational services; personal sales-oral presentation of educational services during a conversation with one or more potential buyers in order to make their sale; public relations-planned long-term efforts aimed at establishing and maintaining relations of educational institutions with different segments of the public.

Main part. The marketing approach to managing the activities of market entities meets with particular difficulties in the field of education. Even in countries with developed market economies, education remains primarily the object of attention and support of the state, financed by public authorities; the need for marketing here is still in its infancy. If in developed countries the need for marketing in the field of education is still growing, in Kazakhstan and Russia, the active commercialization of education has posed the problem of marketing in practical terms, including to public educational institutions.

The next problem today is the opening of prestigious specialties in non-core universities. Indeed, since the early 1990s, due to the intensive development of small business and changes in the judicial and legal system in Ukraine, there were not enough qualified economists, lawyers, etc. Therefore, in technical, agricultural and some other universities, appropriate specialties were opened, despite the weak material base and insufficient staffing. This has led to the fact that, for example, agricultural universities primarily train lawyers, specialists in international Economics, etc., and not farmers

Similar problems are observed in the system of higher pedagogical education. Thus, there are more unemployed teachers registered in urban employment services than there are vacancies in rural schools, but there are still not enough teachers in the latter. The situation is similar with graduates of medical universities. Instead of a differentiated approach, when classical universities provide education in the field of fundamental knowledge and those applied Sciences, in which a particular educational institution has traditionally trained specialists, in the economic and humanitarian spheres, other universities-in sectoral areas: engineering, pedagogical, medical, agricultural, etc., the practice is currently being implemented: "we Prepare everyone for everyone".

There was an acute problem of the quality of training. First of all, this applies to technical universities. Future engineers are forced to look for a place of practice on their own, and a significant part of them do not represent their profile production at all. The state has to put up with the fact that the average age of managers and leading specialists on the once flagships of domestic production is approaching retirement. And this is despite the fact that the number of graduates of engineering specialties has not changed, and the number of workers in the industry has decreased since 1991. about 2.5 times. Thus, an increasing percentage of young people do not work in their specialty or go abroad with the intention of staying there forever. This affects the economic situation of the country and increasingly reduces its prestige in the world [8].

Recently, due to insufficient funding, universities are forced to expand distance education for survival. At first glance, there is nothing wrong with this. The state allows the higher school to act in the spirit of a market economy, teachers have additional earnings, the student who is trained by distance learning can master knowledge without separation from the main place of work. However, in fact, a diploma is actually acquired, not knowledge, so the level of a part-time graduate does not meet the requirements for a specialist with a higher education. Will he then be able to conduct an honest business, professionally manage the team, be a qualified civil servant? The teacher often has three or four part-time jobs in different places, realizing that the main thing for him is not quality, but quantity, which does not contribute to his professional growth as a teacher and scientist. In society there is a paradoxical phenomenon: despite the fact that the "de facto" gradually decreases the value of higher education and professions, for the mastery of which it is necessary to graduate, and the concept of intellectuals is leveled, "de jure" an increasing number of employers require their employees to have not only a diploma, but also a master's degree. After that, do we have confidence in improving the efficiency of managing the economy and other spheres of society's life?

Even 30-40 years ago, a significant part of the middle and Junior managers were with secondary technical education (graduates of technical schools). And today, specialists with a master's degree are appointed to these positions [9].

No less problems in the field of training of scientific personnel. Departmental science practically ceased to exist. Academic science is reduced to a critical minimum. Still somehow science functions in higher educational institutions, and that largely rests on the enthusiasm and desire to get a degree and title, to take a certain position, etc

The percentage of doctoral students who have come from the student's bench is increasing, most of them vaguely represent their prospects in science and higher education. There is a clear need for a certain competition between specialists with higher education, but in the scientific environment there should be a competition of views, concepts, results of scientific and practical activities, and not the scientists themselves. In practice, it goes to the latter.

There is no doubt that the future of any country depends primarily on the development of science. It is impossible to ensure its progress in the conditions of formation of the knowledge economy without the use of the marketing concept, which provides for monitoring of the educational environment and prolonged improvement of the higher education system

The introduction of the concept and tools of marketing as a management system in higher education institutions in the educational, scientific, methodological and educational processes will contribute to the expansion of their innovative component, increase their competitiveness, will form the needs of society in the relevant educational services [10].

Marketing is particularly relevant for the system of domestic education because it will be structural (in areas, specialties and specializations of training) transformation in accordance with the new quality of demand for specialists. According to the most conservative estimates, Russia and Kazakhstan need at least millions of small and medium-sized businesses for the normal functioning of the market. And this - the millions of managers, accountants, and other specialists in the sphere of business. A new wave of demand for specialists in the spheres of production and services is approaching, since the period of "making money out of thin air", the accumulation of initial capital on the resale of goods made by someone earlier, has its natural and rather rapid time limit. Given the length of the cycle of providing educational services, it is unacceptable to wait for this demand to be presented in a formalized form. It is necessary to prepare for it, it is necessary to predict, purposefully form, including taking into account regional and branch segments and features of the market. All these are the tasks of marketing, the scope of its application.

The level of financing of higher education institutions by the state and, as a consequence, the degree of expression of state ownership of universities is now such that outside of market relations, universities can no longer exist.

The statistical difference between the educational system of Kazakhstan and Russia is the ratio of private and public universities. In Kazakhstan, there are five private universities per one state University, while in Russia state universities outnumber non-state educational institutions. According to the CS MNE in 2018, Kazakhstan's public spending on education amounted to 3.7% of gross domestic product (GDP). The share of government spending on higher education remains consistently low in the range of 0.3% of

GDP, spending on science does not exceed 0.2% of GDP. This level of investment as a percentage of GDP is lower than in many countries and below the UNESCO recommended average of 5-7% of GDP.

For comparison: in 2018, Russia allocated 667 billion rubles for the education sector. In Russia, state universities continue to receive the bulk of the funds they need from the state budget in a targeted manner.

In Kazakhstan, a fundamentally different way of development was chosen – universities were corporatized. By 2001, all major higher education institutions in Kazakhstan had become joint-stock companies, 20% of which were distributed among the collectives, and 80% remained in the hands of the state for subsequent sale. Thus, the denationalization of the higher education system began, and the main emphasis was placed on the fact that state universities are non-core and unprofitable assets for the state, little focused on the needs of the labor market. According to the authors of the reform, it was the active players of the labor market-potential employers-who had to gain control over universities and use them to prepare their personnel reserve [11].

In most cases, the corporatization of universities and the arrival of private investors in them had very tangible negative consequences. The authorities of Kazakhstan considered corporatization as an opportunity to reduce the costs of maintaining universities, which often led to a decrease in the quality of training of students.

The process of corporatization of universities is considered as an additional opportunity to find the necessary funds for the maintenance of educational institutions. At the same time, the revenues of universities are also made up of funds from commercial training. This is one of the most closed from the General public topics in Kazakhstan. It is known that the cost of training in most prestigious universities of the Republic is 2-3 thousand us dollars per year. In the universities of the "second level" this value is slightly less. Russian universities have the opportunity to set a higher price level, which is about 5-6 thousand dollars a year. The specific value is influenced by many factors, such as specific specialization, the presence of a military Department in the University, etc.

In Russia, most of the extra-budgetary funds earned in this way remain at the disposal of the University. Control over the expenditure of funds and the passage of payments is carried out by the Federal Treasury, but the cost estimates are compiled and approved by the planning and financial departments of universities independently. In Kazakhstan, the possibilities of universities in this direction are significantly limited, so the financial support of teachers of higher education remains a task, first of all, the state authorities. In the absence of additional payments from extra-budgetary funds, the remuneration of teaching staff in Kazakhstan remains at a low level, which is an additional obstacle to attracting young employees to universities.

The obtained results (conclusions). Thus, the marketing of educational services has a number of features due to the specifics of the service itself and the education sector as a whole. These include: the active role of the end consumer of educational services; deferred detection of results of rendering of educational services; the primacy of cooperation and limit the effectiveness of competition between producers of educational services; the special role and importance of the state in education and the necessity of his participation in the development of education. Summing up, it should be noted that at the moment the marketing of educational services in Russia and Kazakhstan is still at the stage of its formation. Many educational institutions create departments to promote the brand of the University and its educational services to the market. Analyzing the pace of development and specific marketing activities of individual Universities, we can confidently say about the great prospects for the successful formation of this sphere of marketing activity in the market of educational services in our country.

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**ЖОО БІЛІМ БЕРУ ҚЫЗМЕТІНІҢ МАРКЕТИНГІ:
ЕРЕКШЕЛІКТЕРІ, МҮМКІНДІКТЕРІ, МӘСЕЛЕЛЕРІ**

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МАРКЕТИНГ ОБРАЗОВАТЕЛЬНЫХ УСЛУГ ВУЗА: ОСОБЕННОСТИ, ВОЗМОЖНОСТИ, ПРОБЛЕМЫ

Аннотация. В новых для Казахстана социально-экономических условиях образовательные учреждения вынуждены быть активными субъектами рынка, самостоятельно формирующими предложение, оказывающими и продающими свои образовательные услуги. Заинтересованность вузов в поиске возможностей повышения конкурентоспособности образовательных услуг не вызывает сомнений. В данной работе автор определяет некоторые особенности образовательных услуг как предмета маркетинговой деятельности образовательного учреждения, конкретизирует потенциал маркетинга в сфере высшего профессионального образования. Выявлена перспектива применения маркетинговых инноваций для развития сферы образовательных услуг.

Ключевые слова: образовательная услуга; маркетинг; конкурентоспособность; ВУЗ.

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REFERENCES

- [1] Pankrukhin A.P. "Marketing of educational services: methodology, theory and practice." Electronic resource: http://multidollar.ru/marketing/pankrukhin_a_p_marketing_obrazovatel'nykh_uslug_metodologija_teorija_i_praktika_m_2003_159_s.html
- [2] Kotler F. Marketing Basics: Per. from English - М.: "Rostinter", 1996. - 704 p.
- [3] Tuaev V.O. FEATURES OF MARKETING EDUCATIONAL SERVICES // Scientific community of students of the XXI century. ECONOMIC SCIENCES: Sat. Art. by mat. XXX Int. Stud. scientific-practical conf. No. 3 (30). URL: [http://sibac.info/archive/economy/3\(30\).pdf](http://sibac.info/archive/economy/3(30).pdf) (accessed October 6, 2019)
- [4] Marketing educational services: monograph / under the total. ed. Dr. econ. Sciences, Professor O. V. Prokopenko. Ruda Śląska: "Drukarnia i Studio Graficzne Omnidium", 2016. - 168 p.
- [5] Galeeva R. B. Marketing in education. Theory and practice: studies. allowance. Russian assoc. marketing. Kazan, 2011. 183 s.
- [6] Smooth Yu. A. Marketing in education: implementation features (based on marketing research) // Actual problems of economic sciences, 2008. No. 3-1. S. 159-164.
- [7] Narizhnaya N.V. Marketing in the field of education // Innovations in science, 2016. No. 56-2. S. 114-117.
- [8] Smirnov K. A. Marketing at enterprises and corporations: theory and practice: Monograph / K. A. Smirnov, T. E. Nikitina; Scientific ed. K.A. Smirnov. М.: SIC Infra-M, 2012. 166 s.
- [9] Sukhomlinova N.D. Features of the application of the marketing mix in the field of education // Problems and prospects for the development of education in Russia, 2010. No. 6. P. 440-444.
- [10] A.V. Vlasov, Yu.M. Filippov. Russia and Kazakhstan: reform of higher education / http://www.hist.msu.ru/Departments/CIS/Publ/2006_01_3.htm

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WOMEN'S EDUCATION IN WESTERN SIBERIA (XIX – EARLY XX CENTURY): PROBLEMS OF THE FORMATION AND PECULIARITIES OF THE DEVELOPMENT

Abstract. The article justifies the relevance of considering the history of the establishment and operation of women's educational institutions in Western Siberia throughout the 19th and early 20th centuries. Based on the study of published and archival materials, the article concluded, that there are prerequisites and theoretical ideas and practices, which developed in the Russian Empire in the XVIII century to change the social status, cultural and educational potential of the women.

Key words: women's education, women's grammar schools, women's schools, Western Siberia, pedagogical education, private grammar schools, education development, educational policy, vocational training, pedagogical activity.

Materials and methods. The main methods of research are theoretical and methodological analysis of normative documents in the field of women's education of the Russian Empire in the XIX – early XX centuries, comparative analysis of statistical data on the time of creation, number of women's educational institutions. Critical and comparative analysis of published materials and data of official sources were presented in archival materials, analysis of pedagogical and methodological literature on various aspects of the history of women's education.

Results. The conditions of the regularity of the establishment and activity of women's educational institutions in Western Siberia have been identified and described, which make it possible to fill the lack of knowledge about the genesis of women's education in the peripheral region in the second half of the 19th century – the beginning of the 20th century as a holistic phenomenon, to identify its content, regularities and stages, to determine the role and place in the development of the educational and cultural level of the population.

Discussion. Studies on the history of women's education in Russia have revealed during the designated period as a result of changes in state educational policy, abolition of serf law, growth of these institutions. The material of regional education supports the idea, that in Western Siberia the public, private initiative played a significant role in the formation of women's schools and grammar schools.

Conclusion. It is concluded, that the development of women's educational institutions has been significantly influenced by the joint activities of the state and society. Women's educational institutions were initially different from men's ones, women in Russia were prepared for the home economy, but vocational training is gradually being formalized, they were prepared for pedagogical activities; rapid growth of women's schools, grammar schools, primary schools and high schools in the region was possible to train the contingent of the teachers.

Basic provisions:

- Patterns and stages of formation of women's educational institutions in Western Siberia are defined;
- The specifics of regional women's education development were highlighted;
- The contribution of women's educational institutions to the training of pedagogical staff in Western Siberia was justified.

Introduction. In the modern society the question of equality of men and women in professional, public and private life came to the periphery of political struggle. In the 19th century not only politicians, but also scientists seriously discussed the psychological features of men and women, which limited the possibilities of the past in training, professional activity. If in the European countries the political gender equality was discussed, in Russia were not necessary for the women the rights to education and knowledge, equal with the men, to be engaged in certain types of professional activity. Only after Great reform these questions were beyond scientific polemic and began to be solved gradually. At the same time, researchers of the women's issue in Russia (for example, S.S. Shashkov) specified, that the woman in the 18th century was not deprived of the civil rights. S.S. Shashkov gave many examples, when Russian nobles managed estates, learned men's classes [1, P.170-175]. Despite the seeming naturalness of a teacher's profession for the women, the right for work in the state educational institutions for the woman tried to obtain long enough. Only in the reign of Catherine II the women "were granted to new profession of the teacher in women's educational institutions, governess and domestic teacher" [1, P. 174]. But the way to state schools was closed for them.

State women's educational institutions began to be actively established in Western Siberia after the issuance of the "Regulation on Women's Schools of the Department of the Ministry of Public Education" on 10 May, 1860. But also the necessary start-up capital was donated by the merchants' brothers Popov, later the parish schools in Tomsk and Omsk were established, and in 1863 women's schools of the highest grade were opened on their basis. Analysis of archival materials showed, that total 6 women's schools were active in the region after the release of the "Regulations on Women's Schools..." in 1860 (see table 1) [2].

Table 1 – Number of pupils in women's schools in Western Siberia

No.	Women's schools	Number of pupils
1	Tyumen	65
2	Yalutorovsk	82
3	Kurgan	48
4	Ishim	33
5	Tarskaya	20
6	Omsk	The preparatory class is open

The study of the content of the "Regulations on Women's Primary Schools shows the compulsory subjects: the Law of God, Russian, concepts of measurements, geography, history, initial bases of natural history and physics, pure writing, manual and optional: French, German, drawing, music, singing. In 1868-69 with the permission of the Governor-General of Western Siberia introduced: physiology, hygiene, pedagogy and cosmography [3].

Materials and Methods. Qualified teachers were needed to implement the extensive content of education. According to the analysis of archival materials, the main difficulty in women's educational institutions of the region was the lack of teachers with special education. Therefore, they had to take not only co-workers from other educational institutions, but even far from pedagogical activity, the archive gives data that "in view of the absence of teachers, allowed" to teach the history of regional cooking Kuzmin. Physics will be taught by a sub-lieutenant..." [4].

The development of the network of women's education institutions was influenced not only by public and private persons, but also by the representatives of the imperial surname, namely the Office of Empress Maria. The research materials show, that in 1854 the Tobol Mariinsky Women's School was opened, which consisted of two branches: the first - for the girls of lower classes, with the number of pupils 120 people, the second - for daughters of noble rank with 50 pupils. Both branches were divided into higher and lower classes, with 3 years of study in each. The age of pupils - from 10 to 16 years. In the higher department, according to the "Charter of Women's Educational Institutions of Empress Maria" of August 20, 1856 were fixed the following: the Law of God, Russian language, history and geography of the Russian Federation, general history, arithmetic, pure writing, handwriting and household, French and German language, pedagogy, chemistry, dancing, gymnastics [5]. The course of the Mariinsky Schools was equal to the women's grammar schools, but the material means to obtain the status of grammar schools.

The name of the gymnasium was officially assigned to secondary educational institutions after the release of the “Regulations on Women’s Grammar Schools and Pro-Schools” in 1870. Grammar schools and pro-schools were proclaimed baseless educational institutions. The course of study in grammar schools was equated to the course of men’s educational institutions (7 years). We conducted the comparative analysis of the curricula of women’s and men’s grammar schools, which showed that the curriculum of women’s grammar schools reduced the number of hours for the natural and mathematic disciplines. The first women’s grammar schools in the region were opened on the basis of women’s schools in Tomsk and Omsk in 1863.

The work of N. Yurtsovsky provides the statistical data on the number of women’s grammar schools in the region [6]. Table 2 shows the main characteristics of the region’s women’s grammar schools (opening time, enrolment). As it is clear from table 2, there are three periods, which can be distinguished in the formation of women’s grammar schools: in the first period (1860-1900) in the region there were three grammar schools. They were opened in the largest cities of the region, in 1870. Eleven other grammar schools were opened in the following period (1900-1910). In the third period (1910-1915), another 6 women’s grammar schools were established. The analysis of statistical materials and their systematization, comparison with the historical and political context suggest the dynamics of the establishment of women’s educational institutions, depended on many factors: the position of the State, which reflected the educational policy, the initiatives of local authorities and society, the development of the need for women’s education in society.

Table 2 – Women’s grammar schools of Western Siberia

No.	Gymnasium	Year of establishment	Number of pupils
1	The first Omsk	1863	828
2	Tomsk Mariinsky	1863	933
3	Barnaul	1900	480
4	The second Tomsk	1902	337
5	Semipalatinsk	1902	568
6	Kurgan	1903	479
7	Tyumen	1904	684
8	Petropavlovsk	1904	522
9	Biysk	1905	331
10	The third Tomsk	1907	271
11	New Nikolaev	1907	360
12	Barnaul named after Budkevich	1907	376
13	The third Omsk	1907	342
14	The second Omsk	1908	472
15	Mariinsky	1910	293
16	Kainsk	1910	222
17	Ishim	1911	262
18	Ust-Kamenogorsk	1914	121
19	The fourth Tomsk	1915	348
20	Pavlodar	1915	193

According to the analysis of the number of students in the gymnasium, the demand for women’s education in the cities of the region can be judged. The data of N. Jurtsovsky refer to 1917, so the large number of pupils in grammar schools can be explained by their authority to the citizens. But in most cases, the creation of women’s grammar schools in the region has the same pattern. The initiators of the opening of grammar schools were individuals; they applied to the educational administration for the opening of grammar schools on their basis.

Results. The study of the funds of the Tomsky State Archive, the materials about the private gymnasium of O.J. Khvorinova, allows to determine the main steps and typical actions of the society and power of the women's gymnasium in Western Siberia. O.J. Khvorinova has received Certificate from the Directorate of the West Siberian School District, dated October 13, 1907, which allowed "to maintain in Omsk a private women's educational institution of the first grade on the basis of the legitimizations and orders in force on this subject" [7]. A prerequisite for discovery was an invitation to teach the Law of God a special spiritual person. In order to disseminate the information about the private gymnasium, announcement was printed, that the gymnasium will be opened as the part of the first and second grade, and two preparatory departments (junior and senior). Private grammar schools, being in competition with active governmental educational institutions, had to offer their potential consumers something interesting. In the gymnasium of Khvorinova, beyond the program of government, grammar schools included: study of French and German languages from the preparatory class, study of Latin language from the fourth class, gymnastics, manual work, drawing, cake and handmade. Admission to the gymnasium was carried out on the basis of an examination. The fee was set 120 rubles per year in the cooking class and 150 rubles in the rest. Despite the fact, that in the government gymnasium fees could be lower, there were a lot of people, wishing to study in the gymnasium. This can also be explained by more loyal attitude in the gymnasium towards the foreigners, for example in the gymnasium of Khvorinova from 62 pupils 11 pupils were the representatives of non-Orthodox denominations 20% [8].

After a year of work of the gymnasium O.J. Khvorinova wrote to the trustee, that she would like to establish women's state gymnasium in Omsk. The chief pointed out in the letter, that the budget of the gymnasium, which consisted of fees for teaching, was insufficient. In the first year, the gymnasium had only 80 pupils. Olga Yakovlevna stated that in a few years, when the gymnasium will work with a full set of classes, the financial condition will become better. The letter to the Trustee was requested a subsidy of 3,000 rubles per year.

In addition to grammar schools in the county cities of Western Siberia, 12 pro-schools were created with a term of study of 4 years. A gymnasium was discovered in the 70-80 of the 19th century in all county cities of the region: Semipalatinsk, Tyumen, Ishim, Petropavlovsk, Tara, Jarutorovsk, Kurgan, Kainsk, Barnaul, Omsk, Biisk. Most of the pupils paid tuition fees in pro-schools from 5 to 25 rubles, in the gymnasium from 60-100 rubles per year. Comparative analysis of the social composition of grammar schools and pro-schools of the region showed that in grammar schools there were 59% of nobles, in pro-schools the non-privileged urban population was 80%. Nobles entered the gymnasium from the first grade, and other non-privileged segments of the population were most often limited to study in the lower grades of the gymnasium.

The study of published and archival materials, the comparison of the history of the development of general education men's and pedagogical educational institutions shows, that women's grammar schools, pro-schools had their own features, which gave them some advantages, but also created additional risks.

Analysis of archival materials showed that in the gymnasium of O.J. Khvorinova there were mentors from men's secondary educational institutions: teacher of Russian language V.I. Istomin, mathematics S.I. Umansky, geography P.N. Scalon and drawing P.I. Sokolov from the Cadet Corps [9]. A prerequisite for the state support and activity of the women's gymnasium was the establishment of the board of trustees, the selection of boss by the members of the board, with the appointment of the salary.

Discussion. According to the researchers, the serious social and economic problem of higher-level women's educational institutions was the large dropout rate - every year it was 10-15%. According to F.F. Shamakhov, the full course ended only 5.8% [10, P.57]. Most of them left the educational institution "after the request of parents", the main reasons in the statements were: lack of funds, illness, etc.

Many women's educational institutions have acted as pioneers in the spread of pedagogical methods. As the archival materials demonstrated, the women's gymnasium of Khvorinova already introduced the pedagogical innovations: abandoned the ballroom system of assessments and switched the certification, reported to the parents at the end of each third of the school year. That means "awaken the students' independence and well educate them for the teaching" [11].

Thus, in the early 20th century, the development of women's education was very active, ahead of men's. In 1894 there were 163 women's grammar schools in Russia, with the number of pupils' population of 45,544. By 1917, there were 20 women's grammar schools in Western Siberia. The rapid

growth of women's education was linked to the integration of efforts, to develop it between the state and society. The state in the early 20th century supports the establishment of women's grammar schools in the region, but its share in the budget did not exceed 1/10 part. For example, the annual budget of the Tyumen Gymnasium in 1907 consisted of 600 rubles of state treasury funds, 11972 rubles of tuition fees, 128 rubles of 87 coins of donated capital, 1,137 rubles of 50 coins, 235 rubles of miscellaneous funds, and 14,550 rubles of private donations. In total, the annual budget amounted to about 20 thousand rubles [5, P. 43].

The study of regulations, curricula, regulations and other materials governing the organization of women's educational institutions shows, that woman's educational institutions were primarily regarded as educational institutions. In women's boarding houses, the administration exercised strict control over then pupils; girls were indistinguishable under the supervision of the supervisors. The supervisors in a special journal recorded the schedule of the day, characteristics of the pupils. The educational nature of women's educational institutions was related not only to the preparation of female students for the role of mothers and wives, but also to their focus on the preparation for pedagogical activity. This tradition was laid down in the first state educational institution of Russia - the Educational Society of Noble Girls, opened in 1763.

K.V. Elnicki noted: "Women are most characteristic of the activities of teachers in the family and in the public educational institutions. But without knowledge of the science of education and instruction, its educational activities would be deprived of reason and full of harmful contradictions" [12, P. 3-15]. In a program article in the journal of the Ministry of Public Education in 1870, it was noted that "in this regard (the opening of women's grammar schools), the preparation of women for the specialty most characteristic of them, as educators and mentors at the first school age of their children. And the Regulation requires women's grammar schools to establish, where possible, additional pedagogical classes with a one-year or two-year course" [13, P.25].

The study of the history of women's grammar schools in the region showed that almost all of them had pedagogical classes. In the first Omsk gymnasium, a teaching class was opened in 1871. After graduating from grade 7 the girls received the title of teacher of primary city or rural school, and after grade 8 - home teacher, mentor or teacher in lower classes of women's gymnasium. Pedagogy taught in grade 7 and 8 by 2 lessons per week. The study of the "Regulations on Women's Grammar Schools..." shows that it defines: "the special course explains the main provisions on education, as well as the techniques and methods of teaching the course of women's grammar schools". Therefore, before the release of model programs in grammar schools, the teachers by themselves developed the content of psycho-pedagogical disciplines.

For many grammar schools of the region the system of K.V. Elnitskii became exemplary, which in Omsk women's gymnasium since 1872 led subjects of psycho-pedagogical cycle. He developed the programs and normative documents of the Omsk Gymnasium, which were taught for 10 years. Continuing the line of K.D. Ushinsky, Elnicki offered to study the general pedagogy in the 7 grade, and in the 8th- the pedagogical didactics and teaching methodology. Later, a history of pedagogy was added. But due to the fact, that some gymnasium students left the gymnasium after the 7 grade, getting the right to teach in primary schools, K.V. Elnicki began to introduce the students of the 7 grade and the methodology of literacy and arithmetic education [14].

Researchers noted the progressive learning methods used by Elnicki, such as the heuristic ones. In each topic of the course he began with raising problematic questions, encouraging the reasons and joint discussions of the problems. At the end of each topic the conclusion was drawn, connecting the theory to the practice. As Elnicki wrote: "the task of the 8 class to enrich the students with pedagogical knowledge and ideas. The methods of science and practice, pedagogical issues, their development cause the education and upbringing of children" [15, P.162].

K.V. Elnicki prepared the textbooks named "General pedagogy" and "Basics of primary school education". These textbooks were reprinted several times, but in the late 19th century textbooks began to be criticized, for example, one critic wrote, "... The textbook of Elnitskii has many words..." [16, P. 256-270]. The study of the periodic showed that the teaching classes of women's grammar schools were criticized by contemporaries. Despite the abundance of pedagogical classes in the 8 class of the gymnasium, they prepared for work in the folk school. Since most of women have graduated the primary folk school, the course should consist of:

1. Knowledge of the initial teaching methodology (reading, writing, arithmetic);
2. Practical skills in primary school;
3. Introduction to the primary school structure (teaching aids, duties, library) [17, P.106-116].

In order to prepare the teachers in 1876 at Tobol Mariinsky Women's Special School offered to organize the additional pedagogical courses. Approximately 2000-3000 rubles were requested for the maintenance of the courses. Main department of Western Siberia answered, that graduates of this school are already entitled to the home or rural teachers [18]. Thus, Mariin School continued to train teachers for lower primary schools. In 1913 the school was transformed into 7 gymnasium with the 8th additional class, until 1919.

Despite criticism of the pedagogical classes of women's grammar schools, pedagogical courses, Mariinsky schools during the short period of their activity, the situation with the teaching contingents in the region has changed significantly. According to the data of 1877 "in the primary people's schools of Tobol province there were low teachers- 158, teachers - 84 [19].

In addition to women's educational institutions, providing general education, teacher training courses at women's schools have been established to quickly preparation teachers in primary schools. In 1900, one-year pedagogical courses were established: "Pedagogical courses have aimed delivering of pedagogical education for the pupils, who have successfully graduated from the 2nd grade women's school in 1872 for the 5 class of the women's gymnasium" [20].

After the publication of number of state documents on the development of higher women's education in 1916-1917, the importance of pedagogical classes decreased. The majority of primary school teachers were educated in teacher's seminaries. In 1907 the trustee of the G.J. Malarevsky School District applied for the opening of a women's teacher seminary. The most convenient place of its opening Malarevsky called the city of Yalutorovsk, which was in 80 yards of the dirt path from Tyumen, where was a railway and a river path; life in it was cheap.

The Trustee of the West Siberian School District, by his Decree No. 4116 of May 31, 1910, instructed G. Malarevsky to do everything necessary for the opening of the seminary in the coming academic year. As in all Siberian cities, the public was willing to respond to call the Directorate of People's Schools for help. The long correspondence with the Trustee and the Ministry ended in 1912, when Yalutorovsky Seminary was opened. Girls, at least 12 years of age, mainly daughters of peasants, herders and other urban classes, were admitted to the teacher's seminary. The term of study was 4 years. Compared to men's seminaries, the curriculum was supplemented by home economics and handmade. The number of pupils in 1913 was 105. The wide popularity of the seminary was due to the free training.

On the eve of the revolutions of 1917, the social situation of women has changed. Large part of women's society has a need for a specialty. In 1914, there were 57 special educational institutions in Russia, with 6 000 students; 2 000 of them were women. In Western Siberia women received vocational training not only in pedagogics, but also in medical educational institutions.

In 1878, the Tobol Post School was opened, which trained nurses for the hospitals. At the same time, the school for the training of rural salaried women was opened in Omsk. Pupils of the school were the representatives of the peasant population, and the school was held at the expense of urban funds. All medical educational institutions began active medical and preventive activities among the population; in 1883 a free office was opened at the school. The teachers were the best doctors in the city. In 1895 the school was converted into a subordinate-paramedic, and in 1906 into a paramedic-obstetric. Young people were admitted to the school with the education not lower than 4 grades of gymnasium, age from 16 to 28 years. They studied both general education and special subjects: pathology, therapy, newborn care, childhood diseases, surgery, eye diseases, nursing, gynecology [5, P.58].

In January 1, 1911 685 elementary schools were created in Tobol Province with the number of 880 students. "Every year 2/13 personnel were updated, and 118 vacancies were created in existing schools every year. In average 49 schools were opened during the last five years" [21, P.153].

In addition to lower and secondary women's educational institutions, higher women's educational institutions began to be established in the region in the early 20th century [22, P.104]. After the first Russian Revolution, the university cities of Siberia became to involve into the struggle in order to help women to get higher education. In 1901, the women's circle sent a petition to the rector of the University of Tomsk, asking him to attend the lectures, but this request was unanswered. In 1908 Siberian Higher Women's Courses were founded with the Faculty of History and Philosophy [23, P.107]. The difficult material situation led to the organization of the Society for Fundraising Siberian Higher Courses. According to the analysis of sociological data, in 1917 the number of female and male students in Western Siberia began to train women, especially in secondary and special education.

Conclusion. Thus, the analysis of the history of women's education in Western Siberia shows that it significantly influenced by the joint activities of the state and society. The specifics of the development of women's educational institutions in the region were related both to the regional characteristics and to the direction of state educational policy. In terms of the content of education, these educational institutions had specific features at the first stages of development: they limited courses of natural science orientation, increased attention was paid to creativity (music, painting, dancing, and handicrafts) and model kitchens and laundry rooms were created at women's grammar schools. Women were trained mostly for house-keeping. But the professional orientation of women's education, namely pedagogical training, was developed. Rapid growth of women's schools, grammar schools and pro-schools in the region supposed the trained contingent of the teachers. Graduates of women's educational institutions of Western Siberia have changed the educational and cultural level not only of their contemporaries, but also of the future generations.

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БАТЫС СІБІРДЕГІ ӘЙЕЛ БІЛІМІ (XIX – XX ҒҒ. БАСЫ): ҚҰРЫЛУ ПРОБЛЕМАЛАРЫ МЕН ДАМУ ЕРЕКШЕЛІКТЕРІ

Аннотация. Мақала Батыс Сібірдегі әйелдер оқу орындарының құрылуы мен қызметінің тарихын XIX және XX ғасырдың басында қарастырудың өзектілігін негіздейді. Жарияланған және мұрағаттық материалдарды зерделеу негізінде XVIII ғасырда Ресей империясында әйелдердің әлеуметтік мәртебесін, мәдени және білім беру әлеуетін өзгерту үшін қажетті алғышарттар мен теориялық идеялар мен тәжірибелер бар деген тұжырым жасалды. Әйелдердің оқу орындарының дамуына мемлекет пен қоғамның бірлескен қызметі айтарлықтай әсер етті. Әйелдер мектептері бастапқыда ерлерден ерекшеленді, Ресейдегі әйелдер бірінші кезекте үй шаруашылығымен айналысуға дайындалды, бірақ кәсіптік білім біртіндеп қалыптасып, педагогикалық қызметке дайындалып жатты, бұл аймақта әйелдер мектептерінің, гимназиялар мен гимназиялардың қарқынды өсуінің арқасында бастауыш мектептерді оқытушылардың контингентімен толтыру мүмкін болды.

Түйін сөздер: әйел білімі, әйел гимназиялары, әйелдер мектебі, Батыс Сібір, мұғалімдер білімі, жеке гимназиялар, білім беруді дамыту, білім беру саясаты, кәсіптік оқыту, педагогикалық қызмет.

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ЖЕНСКОЕ ОБРАЗОВАНИЕ В ЗАПАДНОЙ СИБИРИ (XIX – НАЧАЛО XX ВВ.): ПРОБЛЕМЫ СТАНОВЛЕНИЯ И ОСОБЕННОСТИ РАЗВИТИЯ

Аннотация. В статье обосновывается актуальность рассмотрения истории создания и деятельности женских учебных заведений в Западной Сибири на протяжении XIX – начала XX вв. На основе изучения опубликованных и архивных материалов делается вывод о существовании предпосылок и теоретических идей в практике, которые сложились в Российской империи в XVIII в. по изменению социального статуса, культурного и образовательного потенциала женщин.

Ключевые слова: женское образование, женские гимназии, женские училища, Западная Сибирь, педагогическое образование, частные гимназии, развитие образования, образовательная политика, профессиональная подготовка, педагогическая деятельность.

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REFERENCES

- [1] Shishkov S.S. Essay of the History of the Russian Woman. St. Petersburg, 1872. 275 p. (in Russian).
- [2] State Archives of Tomsk Region. F.125. Op.1. D.120 (in Russian).
- [3] To the 50th anniversary of the Omsk First Women's Gymnasium of Honorary Gr. Popov. Omsk, 1914. 50 p. (in Russian).
- [4] State Archives of Tomsk Region. F.125. Op.1. D.167 (in Russian).
- [5] Skachkova G.K. Education and Social Activity of Women of Tobol Province in the Second Half of XIX – Early XX century: avtoref. PhD. Tobolsk, 1998. 235 p. (in Russian).
- [6] Jurtsovsky N.S. Essays on the history of education in Siberia. Vol. 1. Novosibirsk: Sib. Regional State Department., 1923. 246 p. (in Russian).
- [7] State Archives of Tomsk Region. F. 126. Op.2. D.2076. L.84 (in Russian).
- [8] State Archives of Tomsk Region. F. 126. OP.2. D.2076. L.65 (in Russian).
- [9] State Archives of Tomsk Region. F.126. OP.2. D.2076. L.38 (in Russian).
- [10] Shamakhov F. F. School of Western Siberia at the end of XIX- early XX centuries. Tomsk: TSPI, 1957. 272 p. (in Russian).
- [11] State Archives of Tomsk Region. F. 126. Op. 2. D.2076. L.66 (in Russian).
- [12] Grush M.D. From the experience of training folk teachers (system of Siberian teacher K.V. Elnitskii) //From the history of training folk teachers. Krasnoyarsk: Krasn. State Ped. Institute, 1968. P.3-15 (in Russian).
- [13] Historical Review of Government Orders on Women's Higher Medical Education. SPb.: Type, 1883. 724 p. (in Russian).
- [14] Medvedev A.P. Pedagogical beliefs of K.V. Elnitskii and his activities in Omsk. Omsk: The Office of OmSPU, 1996. 66 p. (in Russian).
- [15] Elnicki K.V. Organization of classes in the pedagogical class of the Omsk Women's Gymnasium: Selected pedagogical articles. Kiev, 1896. 162 p. (in Russian).
- [16] Brailovsky S. Pedagogy as a subject of study in women's gymnasium // Russian school. 1896. N 5-6. P.256-270 (in Russian).
- [17] Borzakovsky P. On Training of Folk Teachers by Pedagogical Classes of Women's Gymnasium // Russian School. – 1896. No 9-10. – P.106-116 (in Russian).
- [18] State Archives of Tomsk Region. F. 125. Op.1. D.553. L.5 (in Russian).
- [19] State Archives of Tomsk Region. F. 125. Op.1. D.596. L.70 (in Russian).
- [20] State Archives of Tomsk Region. F. 100. Op.1. D.371 (in Russian).
- [21] Churkina N.I. Formation of pedagogical education in Western Siberia (the second half of the 19th century – 1919 year): doctoral diss. Omsk, 2012. 439 p.
- [22] N.A. Toybazaroba, G.Nazarova. The modernization of education in Kazakhstan: trends, perspective and problems // Bulletin of National Academy of Sciences of the Republic of Kazakhstan. Volume 6. Number 376 (2018). P.104-114 <http://doi.org/10.32014/2018.2518-1467.33> (in English).
- [23] Orazbayeva K., Khalitova I., Atemkulova N., Sultanova N., Abdrakhmanov A. Exploring problems pertaining to global competence formation in future teachers // Bulletin of National Academy of Sciences of the Republic of Kazakhstan. Volume 5. – Number 375 (2018). P.106-115 <http://doi.org/10.32014/2018.2518-1467.14> (in English).

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IMPROVING STUDENTS' SELF EFFICACY IN SPEAKING ENGLISH BY USING GROUP-PRESENTATION

Abstract. High level of self-efficacy is linked with good performance in language learning tasks in the various language domains and is considered an individual's belief about personal abilities achieved through practical performance. Consequently, this action research project aimed at identifying if the group presentation in English can improve students' self-efficacy in speaking English in the classroom. In this study, 20 female students of grade XI Madrasah Aliyah PSM Banaran had been chosen. The research was held in two cycles, and each cycle was divided into three meetings. 45 minutes were spent for each meeting. The data of this study were obtained through "English Self-Efficacy Scale" and in order to identify the learners' needs, interview questions were designed. After comparing the data of the English self-efficacy questionnaire, the findings showed that if the students worked frequently together with friends, even less active students could develop their self-efficacy and performed well in English without any anxiety. The group - presentation had great influence not only on students' self- efficacy, but also on their English language speaking fluency.

Keywords: self-efficacy, group presentation, and english speaking skill.

Introduction. The need of obtaining an effective teaching method for improving students' self-efficacy of most senior high school students in Indonesia is paramount for their performance in national exams. Their confidence in participating in the Olympiads and competitions are still delicate or feeble, they lack in self-efficacy and feel anxious during their performance. The students have not been trained to overcome their anxiety which include namely self-esteem, self-efficacy, self-regulation, peer-support and students' attitude (Arpentieva, 2018; Qudsyi and Putri, 2016). The ultimate goal of education is to help students to overcome those destructive feelings that commonly happen during their national exams, public performance, international-national Olympiads or competitions. However, there are very few teachers who care about the students' exact requirements (Qudsyi and Putri, 2016).

Among the characteristics stated above, self-efficacy is considered a primary necessity to be built within students' characters for enabling them to succeed in their school performances and school subjects (Cahill, 2013). It is a dynamic characteristic of the other elements that composes the self-system such as the ability to do the effort, the success one experiences in his or her work, motivations and self-regulation mechanisms (Lule, 2016). According to Bandura (1997 in Sampaio, Thomas & Font, 2012), it is individuals' beliefs about their own self-ability to perform in particular conditions by doing the required actions. Students' self-efficacy is considered as one of the essential aspects that needed to be achieved in their early ages or at their school times (Cahill, 2013) because a student with low self-efficacy hardly succeeds in life nor in education (Arpentieva, 2016; Jansen, Scherer, & Schroeders, 2015). Students with high self-efficacy perform better in their exams, class assignments, even in their social lives than those who have low self-efficacy (Bilgin, Baek, & Park, 2015). An individual with low self-efficacy is likely to

get anxious, frustrated, and other negative feelings that distract him or her to step forward for achievements (Arpentieva, 2017, Qudsyi and Putri, 2016).

In Indonesian schools generally teachers never think about implementing effective teaching methods that might help students to improve their self-efficacy which is very essential for their success in national exams, academic performance and other related events (Qudsyi and Putri, 2016).

Such kinds of problems also happened at Madrasah Aliyah PSM Banaran School. The teachers of this school never tried to implement different strategies or methods to foster students' self-efficacy in their teaching learning practices. This information was gathered by one of the teacher-researchers during her teaching from 2014 to 2016 and the other researchers' formal observations to the school from February 9 to February 22, 2019. The researchers identified students' self-efficacy problems by giving them questionnaire and interviewed four students from the most active to the least active one. The results of the questionnaire and the interview indicated that students' self-efficacy indeed were low. The situation reflected that implementing effective methods in teaching and learning activities to improve students' self-efficacy were urgently needed.

To help students to tackle with the self-efficacy problem, the researchers looked through group presentation, which commonly was used to improve learners' public speaking skill, self-confidence, organizational skill, and message delivery skill (Educational Programs of Texas, 2015). Group work is widely considered as a valuable method in the improvement a range of communication and interpersonal skills which include self-confidence, self-efficacy, and self-esteem. Learners could get good experience and knowledge from their groups on how to care the tasks out in social environment and on how to handle them (Caizzi, Parish, Mackley, Arun, West, & Otunuga, 2018). Moreover, the researchers believe that working in a group can motivate the learners to build self-efficacy within themselves (DiBenedetto, & Schunk, 2018). Tasks of the world could not be solved by an individual, and individual could not be able to improve personal communicative and interpersonal skills without presence of another individual (Hargie, Dickson & Tourish, 2004). In addition, so far, related to the self-efficacy only few studies have been done in Indonesian context (Maulida, 2016). For that reasons, this study aimed to take an action to improve students' self-efficacy through group-presentation.

The definition of "group-presentation" is explained by Jenifer (2013) is that "group" is the process and "presentation" is the product. Good product is the result of good, intelligent process (Jenifer, 2013). Even though in group-presentation, "presentation" has a tendency to be more than "group", good arranged presentation cannot be built with absence of group discussions or with absence of particular people or supervisors, because group members' different opinion, ideas, experiences, and knowledge make the presentation strong and perfect (Jenifer, 2013). Good group-presentation is taking and sharing responsibility with any participants for making agreements to solve the problems (The University of Sheffield, et al.). Cooperation of several individuals in making the presentation will bring rich information for the particular audience (Jenifer, 2013). As Atayeva, Putro, Kassymova, Kosbay (2019) state when students read different sources and share among each other will help student to create good product. The definition and the function of group-presentation present that group-presentation has taken important part in developing individual's problem solving, communicative, and collaborative skills as well. For that reason, researchers believe that to take an action on this topic might be logical.

Method. This research was conducted using Classroom Action Research (CAR). According to Hermida (2001), Classroom Action Research is a method where researchers design appropriate activities to improve students' learning skill. In this study the researchers designed group-presentation to improve students' self-efficacy in English speaking. This research was conducted for eleventh graders in Madrasah Aliyah PSM Banaran, which is located in Kabupaten Magetan, Jawa Timur and it involved 20 female students as the subject for this study. They had been selected purposively. The instruments the researchers used were a non-scheduled interview and a self-efficacy questionnaire developed by Wang, Kim, Bong and Seon (2013). Kemmis & Mc. Taggart model was the instruction for designing this research (in Khamsiah & Rahayu, 2017). According to the model, the implementation of the classroom action research includes four main steps: a. identifying problems and planning the action; b. implementing the action; c. observing the action; d. reflecting the result of the observation.

a. In order to identify problems and plan the action, the researchers made a plan for the first cycle, then made lesson plan based on syllabus material. The main topic was "The song" / "Lagu".

b. The researchers gave training on making good effective group-presentation in English to implement the action by using power-point slides and using one most popular English song as an example in the classroom. Gurbangeldiyewna & Hermayawati (2017), and Atayeva, Ciptaningrum, Hidayah, Kassymova, Dossayeva, & Akmal (2019) state that integrating technology in teaching and learning process will support and motivate the students to perform better than non-technology integrated one. It means that, technology involved learning is more engaging compare to non-technology involved learning. In addition, the researchers also showed and clarified what the students needed to do in the following meetings as well.

c. The observation checklist had been designed before the action was observed. The researchers gave points for all individuals according to their performance. There were some weaknesses in the first attempt. For an example, some of the students were nervous and forgot their words during the presentation. Presentation slides were good enough and students brought good information related to the topic, however, they could not implement them well in English. Nevertheless, it was clear that they spent plenty of time to prepare together with their fellows. The students who could speak English well were confidently helped to their less confident fellows and did their best to be the best presenters. Some students found it interesting, even they used English falsely, each section of their group-presentation, they performed with good self-efficacy.

d. To reflect the result of the observation, after conducting the first cycle, the questionnaire on self-efficacy again was distributed to the students to categorize their self-efficacy in English communication.

Results. Analysis of the 1st and the 2nd results of questionnaire. The results were obtained through an English Self-Efficacy scale for English language learners developed by Wang, Kim, Bong & Seon (2013). The questionnaire was given before the first cycle, after the first cycle and after the second cycle. The first results of English self-efficacy questionnaire is explained in the following chart.

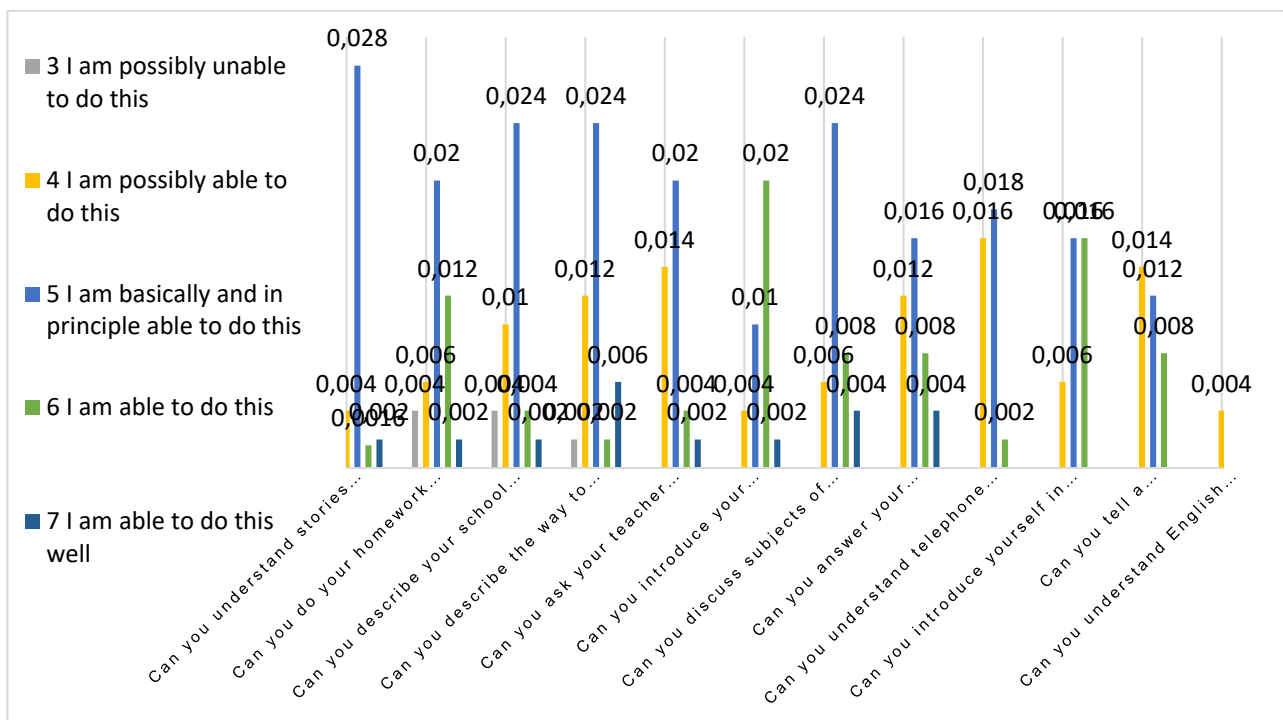


Figure 1 – Pre- Action Questionnaire Results of English Self-Efficacy

The result of the pre-action questionnaire English self-efficacy of the students showed that, their self-efficacy was still below. It can be seen from their response to the questionnaire, for an example: the majority of the students answered for the first question (Can you understand stories told in English?). It means that they were basically and in principle were able to do this or only few 0,16% out of 4% answered “I am able to do this” and there was no student who answered “I am able to do this well”. Almost same results were detected with question number three, four, five, seven and twelve. There were two students in some aspects were confident enough to answer that they are able to do the given tasks

well, for an example: these two students did not have any difficulty in describing things, places, introducing people, giving directions, asking questions to their teachers, discussing subjects and perform in English language. The majority of the students admitted that they could do the task “basically or possibly”. There were two students who found the English as an anxious subject. For question number two (Can you do your homework alone when they include reading English texts?), Eight (Can you answer your teacher’s questions in English?), Nine (Can you understand telephone numbers spoken in English?) And eleven (Can you tell a story/present/perform in English?) They answered “I am possibly unable to do this”.

After analyzing the pre-action English self-efficacy questionnaire results, the researchers modified the English teacher’s lesson plan and applied group-presentation as the teaching method to help learners to improve their self-efficacy. The researchers after completing their first cycle, for a second time distributed the same questionnaire to the students. The second result was much better compare to the previous one. The second result which is displayed on the clustered chart below showed that some students were already confident enough to answer the questions (number three, four, five, six, seven, ten, eleven, and twelve). They responded, “I’m able to do the tasks using English”. The majority of the students answered the questions that they are “basically and in principle able to do the tasks”, or questions from one to five, seven to nine, and the result of question number twelve showed the highest percentage compare to another question results. However, in this time the amount students who answered “I’m basically and in principle able to do the tasks”, “I’m able to do the tasks” and “I’m able to do the tasks well” were much higher compare to the previous questionnaire answers.

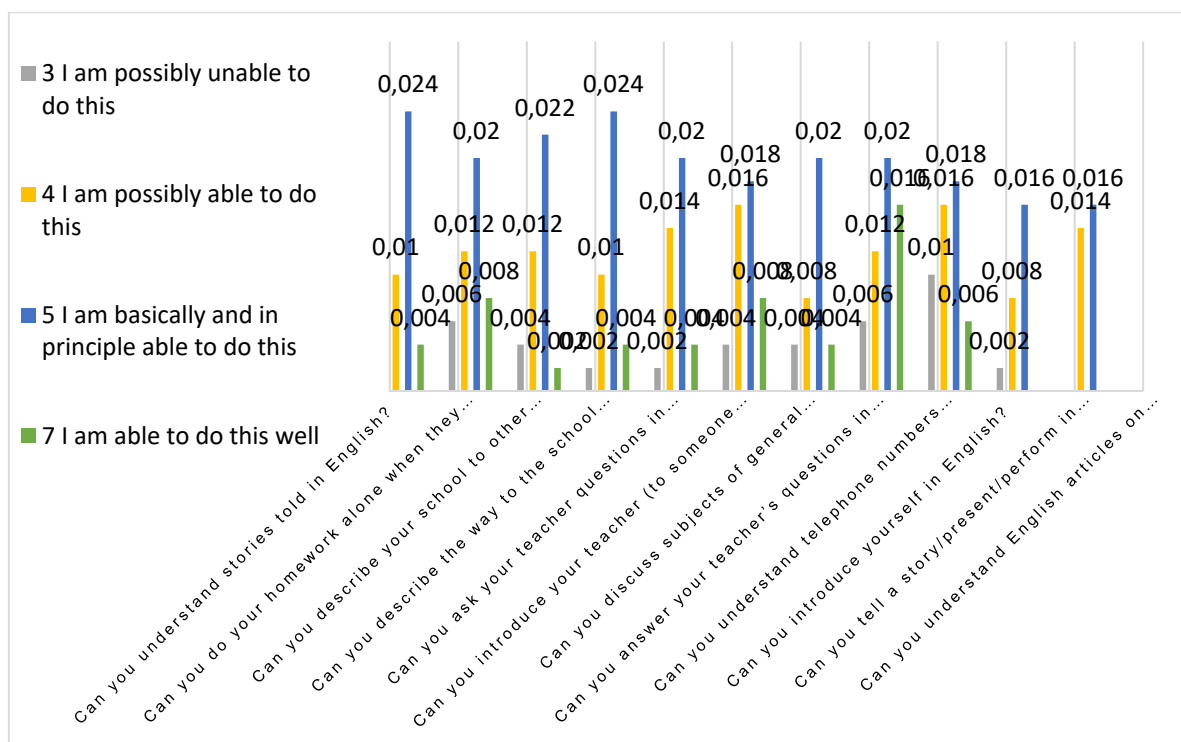


Figure 2 – Questionnaire Results of English Self-Efficacy. (After the 1st cycle)

After the researchers had conducted the first cycle, beside questionnaire answers, they analyzed the checklists one by one to clarify information on students’ weaknesses and strengths. Some students were still nervous, and forgot their words during the presentation. Presentation slides were good enough and students brought good information related to the topic. However, they could not implement them well in English. Nevertheless, it was clear that they spent plenty of time to prepare together. Students with good English and confidence helped to their less confident fellows and did their best to be the best group in the classroom. Some students found it interesting, even they used English falsely, each section of their group-presentation, they performed with good self-efficacy.

Analysis of the 3rd result of questionnaire. The second cycle was also conducted as the first cycle. The researchers spent three meetings, and each meeting was conducted 1x45 minutes. Then, researchers followed the procedure of classroom action research, like they did in the previous cycle. The results of the third questionnaire showed that, students already achieved the expected values. In the last questionnaire, there almost didn't have any student who answered "I'm possibly unable to do the task", which means even the less active student confidently responded that she could do the given tasks using English. It can be seen also in the following graphic.

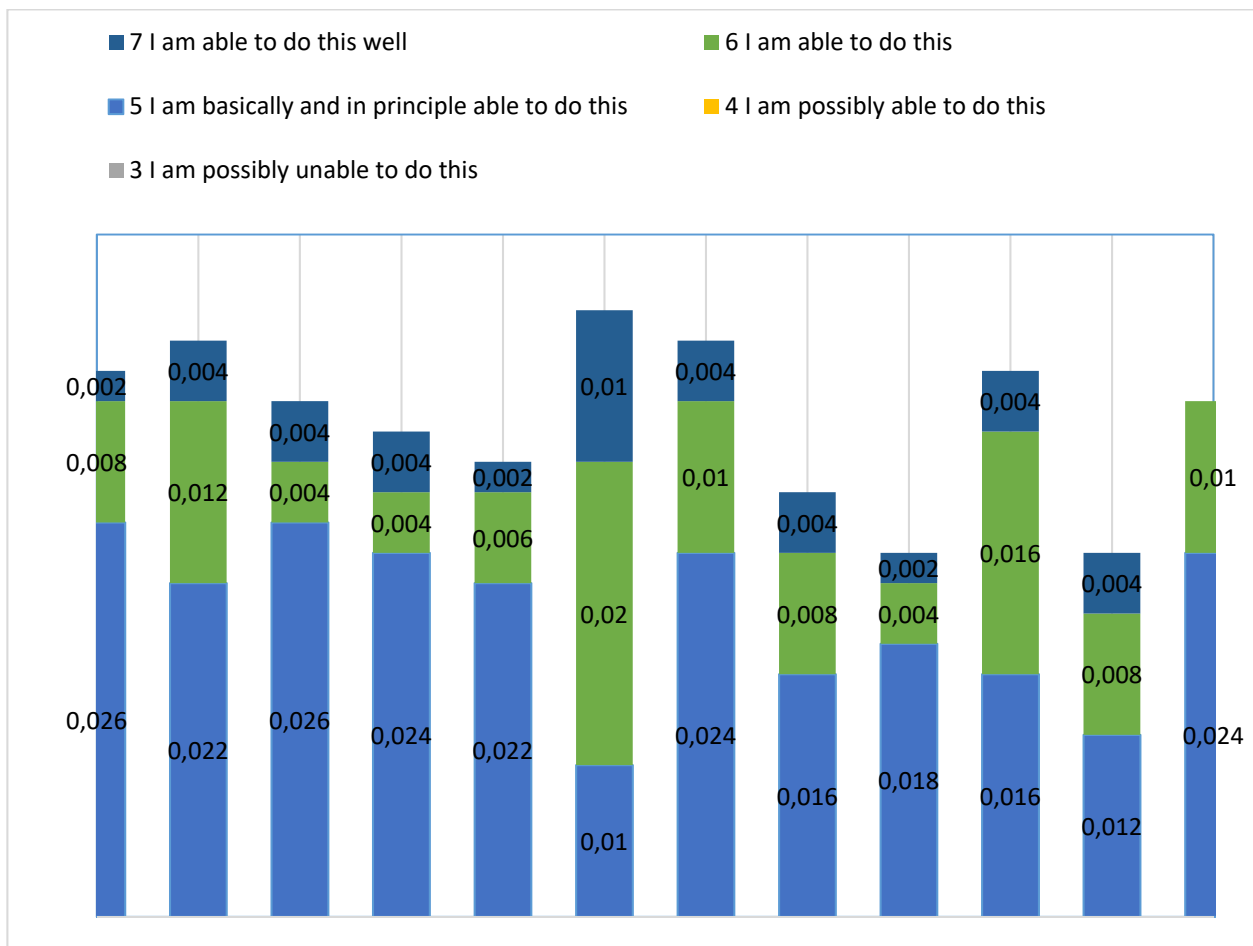


Figure 3 – Questionnaire Results of English Self-Efficacy. (After the 2nd cycle)

The cluster chart above presents that 5 students out of 20 (or 1% out of 4%), for the question number six, answered "I'm able to do the tasks well". Two students (0.40% out of 4%) almost for all questions responded that they are "able to do tasks using English well". The majority of the students still responded that they are "basically and in principle able to do the tasks". However, the amount of the students who responded to the questions "I'm basically and in principle able to do this task" and "I'm able to do this task" increased again compared to the second questionnaire results (see figures 2, 3). In addition, the result of the third questionnaire displays that there doesn't have any student who responded "I am totally unable to do this", "I am unable to do this", or "I am possibly unable to do this". Overall, the result of the third questionnaire compared to the first and second ones, showed that almost all of the students achieved the expected results.

Findings. At the beginning of the study the students' self-efficacy was still low. It can be seen from their response shown in the first chart (see figure 1). The total number of the questions were twelve. The high number of the students answered for the first question that they were "basically and in principle able to do the tasks", and only few 0.16% out of 4% answered "I am able to do this". The responses of the question number three, four, five, seven and twelve displayed almost the same results. There are even

detected a few students who answered “I’m possibly unable to do the tasks using English”. These students found the English as an anxious subject. For example, for question number two, eight, nine, and eleven, they answered “I am possibly unable to do this”. However, there wasn’t any student who responded “I’m unable to do the tasks using English” or “I’m totally unable to do the tasks using English”, and there wasn’t also any student who answered to the questions from one to twelve that they are “able to do the tasks in English well”. The majority of the students only responded that they could do the tasks using English “basically and possibly”.

Subsequently, the researchers analyzed the pre-action English self-efficacy questionnaire results, then they started modifying the English teacher’s lesson plan and applied group-presentation as the teaching method with the intention to improve students’ self-efficacy, and after that they started conducting the first cycle. The researchers after completing their first cycle, for the second time distributed the same questionnaire to the students. The second results were much better compared to the previous one. The second result showed that students have already been confident enough to answer for particular questions with “I’m able to do the tasks using English” (see figure 2). Even though the majority of the students still responded to the questions that they are “basically and in principle able to do the tasks using English”, in this time, a number of them were much higher compared to the previous responses. Also, it was clear that they spent plenty of time to prepare together and practice with their fellows because their performances illustrated that they had divided their time, speech words, and power-point slides equally, which were indeed necessary to deliver an effective presentation.

The results of the third questionnaire showed that, students already achieved the expected values (see Figure 3). In the last questionnaire, there wasn’t any student who answered “I’m possibly unable to do the task”, which means even the less active students confidently responded that they could do the given tasks. Related to the findings above, group-presentation as a strategy has brought different results on students’ self-efficacy in speaking foreign or the English language.

Discussion. The purpose of this research was to help learners to build self-efficacy while they are speaking English or any other foreign language. In this research, the researcher used three instruments: questionnaire, interview, and observation checklist to get the data. The instrument which researcher used to measure self-efficacy of learners’, based on Wang, Kim, Bong and Seon’s (2013) “self-efficacy in English language” questionnaire, and it was given before and after conducting the cycles. This research was held in 2 cycles and for 3x2 meetings, to investigate how far using group-presentation as a strategy could be better to improve learners’ self-efficacy in speaking the second language. The action research was used to solve the existing problem or a self-efficacy problem of the students while performing and dealing with English speaking. The purpose of the classroom action research was to help learners to overcome the anxiety faced in English subject especially with speaking skill. The researchers believed that students might improve their self-efficacy if they work in groups and perform tasks together with friends in front of the class very often.

The data on students’ self-efficacy was obtained through questionnaire. The purpose of giving questionnaire was to know if the students got some significant improvement in their self-efficacy to speak English after they performed group-presentation for several times in the classroom. Group and individual presentations are used to improve learners’ public speaking skills, self-confidence, organizational skill, and ability to successfully deliver a message (Educational Programs of Texas, 2015). In this study the group-presentation used to improve students’ self-efficacy.

Related to the findings above, group-presentation as a strategy has brought different results on students’ self-efficacy in speaking the English language. The result of the third questionnaire compared to the first and second one, showed that almost all of the students achieved the expected results. So, it can be concluded that, if the students work frequently together with friends, even less active students could develop their self-efficacy and perform in English without any anxiety. The group - presentation had great influence on students’ self-efficacy and on their English language speaking fluency.

The researchers do aware that in order to improve students’ self-efficacy, students are needed different methods and strategies in their learning activities. It was obvious that students did very less practice in their English speaking subject which made them less confident and enable them to perform well (especially in English). Therefore, the teacher should begin implementing different and new methods in their English language teaching and learning practices which is very necessary to foster students’ not only the self-efficacy but also other interconnected skills.

Conclusion. Self-efficacy is considered an individual's belief about his or her abilities achieved through practical performance (Bandura a 1997, Pajares 2007, in Phakiti, Hirsh & Woodrow, 2013). This action research project was aimed to identify if the group presentation in English classroom can improve students' English self-efficacy. In this study, 20 students of grade XI Madrasah Aliyah PSM Banaran had been chosen as the sample. The research was held in two cycles. The data of this study were obtained through "English Self-Efficacy Scale" developed by Wang, Kim, Bong and Seon (2013). The findings showed that, if the students work frequently together with friends, even less active students could develop their self-efficacy and perform in English without any anxiety. The group - presentation had great influence on students' self- efficacy and on their English language speaking fluency.

Recommendation. Based on the results and findings, the researchers would like to give suggestions for the English teachers, relevant researchers and learners. Those are as followings;

English teachers. English subject should be fun. Classroom atmosphere should support to make learners feel comfortable. Teachers are suggested to be creative and innovative in designing lesson material in order to improve not only English language skills, but also learners' self-efficacy which is very essential for students' success in performing the subjects.

Language learners. Students are suggested to be more active. They need to broaden their knowledge frequently by working cooperatively. Cooperative work brings a new idea, new knowledge, and new experience. They will start to be aware of themselves by working and learning together. People who aware of themselves, frequently improve themselves to be the better person. Self-awareness, self-esteem, and self-confidence form the self-efficacy (Neill, 2005). Therefore, to build good self-efficacy students need to seek for new experience, knowledge, idea and etc. They don't have to feel shy when they communicate in a foreign language.

Future researchers. The adapted questionnaire might not be in complete form yet, it can be still changed. Also, using group-presentation as a strategy, and instruments to measure the results, might not give the same result in other studies. Thus are only being relevant to the eleventh grade students of Madrasah Aliyah PSM Banaran, Yogyakarta in 2018-2019 Academic Year.

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СТУДЕНТТЕРДІҢ АҒЫЛШЫН ТІЛІНДЕ СӨЙЛЕУДЕ НӘТИЖЕЛІ БОЛУЫН ТОПТЫҚ ПРЕЗЕНТАЦИЯНЫ ҚОЛДАНА ОТЫРЫП ЖАҚСARTУ

Аннотация. Нәтижеліліктің жоғары деңгейі әртүрлігілдік оқу тапсырмаларын жақсы орындауға байланысты және жеке адамның өзінің жеке қабілеттерін тәжірибе арқылы қол жеткізгендігіне қатысты сенімі болып табылады. Осылайша, осы зерттеу жобасы ағылшын тіліндегі аудиторияда топтық презентация жасау оқушылардың ағылшын тілінде сөйлеу сабағында нәтижелілікке қол жеткізенемесе керісінше жеткізе алмайтындығын анықтауға бағытталған. Бұл зерттеуде Madrasah Aliyah PSM Banaran School медресесінің XI сынып студенттері – 20 (жиырма) қыз бала таңдап алынды. Зерттеу екі циклде жүргізілді және әр цикл үш кездесуге бөлінді. Әр кездесуге 45 минут уақыт бөлінді. Зерттеудің деректері «Ағылшын тіліндегі нәтижелілікті бағалаудың шкаласы» арқылы және оқушылардың қажеттіліктерін анықтау мен мұқтаждықтарын талдау үшін әзірленген сұхбат сұрақтары арқылы алынды. Ағылшын тілін меңгеру сауалнамаларын салыстырғаннан кейін, қорытындылар көрсеткендей, егер студенттер достарымен бірге жиі жұмыс жүргізсе, белсенділігі төмен оқушылардың өздерінде нәтижелері арттыра алатындықтары және ағылшын тілінде ешқандай алаңдаусыз сөйлесе алатындықтары байқалды. Топтық презентация студенттердің нәтижелі болуларына ғана емес, сонымен қатар олардың ағылшын тілінде сөйлеу қабілеттеріне де үлкен әсер етті.

Түйін сөздер: өзіндік нәтижелілік, топтық презентация, ағылшын тілін меңгеру дағдылары.

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ПОВЫШЕНИЕ САМОЭФФЕКТИВНОСТИ СТУДЕНТОВ В ИЗУЧЕНИИ АНГЛИЙСКОГО ЯЗЫКА С ПОМОЩЬЮ МЕТОДА ГРУППОВЫХ ПРЕЗЕНТАЦИЙ

Аннотация. Высокий уровень самоэффективности связан с внешней эффективностью в выполнении разнотипных заданий по изучению английского языка. Человек развивает самоэффективность и свои языковые и иные способности, если они подтверждены опытом успешной практической работы. Поэтому представляемый этот исследовательский проект был направлен на то, чтобы определить, способна ли групповая презентация в классе английского языка улучшить самооценку своих знаний и умений в сфере английского языка у студентов, обучающихся разговорному английскому. В этом исследовании в качестве предмета были выбраны 20 учениц одного из билингвального медресе (исламской школы-интерната) в Банарансе (Индонезия). Исследование проводилось в два цикла, и каждый цикл был разделен на три встречи: на каждую встречу было потрачено 45 минут. Данные этого исследования оценивались по «английской шкале самоэффективности». Для оценки потребностей и способностей учащихся также было разработано специальное интервью. В результате сравнения данных, полученных в ходе применения английских вопросников самоэффективности, выявлено, что, если ученики часто работают вместе, то даже наименее активные из них повышают свою самоэффективность и могут говорить и делать презентации на английском языке без какого-либо беспокойства и неуверенности. Групповая презентация оказала сильное положительное влияние не только на самоэффективность студентов, но и на их свободное владение английским языком.

Ключевые слова: самоэффективность, групповая презентация и знание английского языка.

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REFERENCES

[1] Arpentieva, M.R. (2016) Innovative and traditional approaches to students' preparation for final attestation: the problem of learning styles. In: C. Westbrook, O.Simonova and A. Sitnikova (eds.) Testing and language progress assessment: traditions and innovations. Bilingual collection of scientific articles and materials of the international conference. March 21-22, 2016, Surgut. UK, Southampton, Russia, Surgut: Southampton Solent University, Surgut State University, 5-11

[2] Arpentieva, M.R. (2017) Learning to understand as an urgent problem of modern linguodidactics. English at school. 2 (58), 3-11.

[3] Arpentieva, M.R. (2018). Language and education in the information society: problems of standardization and individualization of education. Journal of Language and Education, 6. Annual collection of scientific papers of the IV International Scientific Conference "Language and Education in the Information Society" (YOIOI). March 26, 2018, Moscow / Executive Editors T.A. Baranovskaya, E.N. Solovova. - Moscow: HSE, Peoples' Friendship University of Russia, Russian Representative Office of Pearson Education Limited (Moscow), 87-103

- [4] Arpentieva M.R., Kassymova G., Kenzhaliyev O., Retnawati H., Kosherbayeva A. (2019) Intersubjective Management in Educational Economy. Materials of International Practical Internet Conference "Challenges of Science". ISBN 978-601-323-144-0. Issue II, 2019. Page 24- 31. <https://doi.org/10.31643/2019.004>
- [5] Atayeva M., Putro, N. H. P. S., Kassymova G., Kosbay S. (2019). Impact of reading on students' writing ability. *Challenges of Science*. <https://doi.org/10.31643/2019.001>
- [6] Atayeva, M., Ciptaningrum, D. S., Hidayah R., Kassymova, G. K., Dossayeva, S. K., & Akmal (2019). Cultivating Junior High School students' critical thinking skills by using a short-video in English language classroom. *Bulletin of National Academy of Science of the Republic of Kazakhstan*. ISSN 1991-34-94. <https://doi.org/10.3204/2019.2518-1467.124>
- [7] Bilgin, C. U., Baek, Y., & Park, H. (2015). How debriefing strategies can improve student motivation and self-efficacy in game-based learning. *Journal of Educational Computing Research*, 53(2), 155-182. <https://doi.org/10.1177/0735633115598496>
- [8] Cahill C. J. (2013). A qualitative exploration of higher self-efficacy string students preparing for a competition. *International Journal of Music Education*, 31(1), 4-14. <https://doi.org/10.1177/0255761411431393>
- [9] Caizzi, E., Parish, M., Mackley, S., Arun, N., West, D., & Otunuga, O. (2018). Evidence Review: An evaluation of the impact of adventure learning and leadership programmes on young people's self-esteem, self-confidence and resilience.
- [10] DiBenedetto, M. K., & Schunk, D. H. (2018). Self-efficacy in education revisited through a sociocultural lens. *Big Theories Revisited* 2, 117.
- [11] Gurbangeldiyewna, A. M., & Hermayawati, H. (2017). The Effectiveness Of English Interactive Media In Teaching Writing (An Experimental Study Conducted For Eleventh Graders In SMA N 1 Sedayu, Bantul Yogyakarta). *JELE (Journal of English Language and Education)*, 3(1), 17-28. <https://doi.org/10.26486/jele.v3i1.264>
- [12] Hargie, O., Dickson, D., Tourish, D., & Hargie, O. (2004). Communication skills for effective management. Houndmills, Basingstoke: Palgrave Macmillan. <https://doi.org/10.1007/978-1-4039-3893-0>
- [13] Hermida, J. (2001). How to do classroom action research. *JoSoTL Vol. 2, Number1*.
- [14] Jansen, M., Scherer, R., & Schroeders, U. (2015). Students' self-concept and self-efficacy in the sciences: Differential relations to antecedents and educational outcomes. *Contemporary Educational Psychology*, 41, 13-24. <https://doi.org/10.1016/j.cedpsych.2014.11.002>
- [15] Jenifer F. (2013). Group-Presentations. Public Speaking Project. Millersville University. Millersville, PA. California: USA.
- [16] Kassymova, G. (2018). Competence And Its Implications. *Challenges of Science*. <https://doi.org/10.31643/2018.063>
- [17] Kassymova, G. (2018). Stress management techniques recommended for students. *Challenges of Science*. <https://doi.org/10.31643/2018.008>
- [18] Kassymova, G., Arpentieva, M., Kosherbayeva, A., Triyono, M., ... Sangilbayev, O. (2019). Science, Education & Cognitive Competence Based On E-Learning. *The Bulletin*, 1(377), 269–278. <https://doi.org/10.32014/2019.2518-1467.31>
- [19] (2019). Cultivation of a Critical Thinking Disposition and Inquiry Skills among High School Students. *Deeper Learning, Dialogic Learning, and Critical Thinking*, 299–320. <https://doi.org/10.4324/9780429323058-18>
- [20] Khamsiah, R. A., & Rahayu, P. (2017). Improving students' speaking skill in expressing personal identity through picture media at grade vii a smp ni tandun. *Jurnal Ilmiah Mahasiswa FKIP Prodi Bahasa Inggris*, 2(2).
- [21] Lule Mert, E. (2016). An Assessment on self-efficacy of candidate Turkish and Primary School Teachers for Teaching Profession. *Eurasian Journal of Educational Research*, 65, 55-70.
- [22] Margolis, H., & McCabe, P. P. (2006). Improving self-efficacy and motivation: What to do, what to say. *Intervention in school and clinic*, 41(4), 218-227. <https://doi.org/10.1177/10534512060410040401>
- [23] Maulida, N. A. (2016). The correlation between students' self-efficacy and their speaking performance (Doctoral dissertation, Universitas Pendidikan Indonesia).
- [24] Nation, I. S. P., & Macalister, J. (2010). *Language Curriculum Design*. New York: Routledge.
- [25] Neill, J. (2005). Definitions of Various Self Constructs: Self-esteem, self-efficacy, self-confidence & selfconcept. Retrieved from: <http://wilderdom.com/self/> on June, 14, 2009.
- [26] Phakiti, A., Hirsh, D., & Woodrow, L. (2013). It's not only English: Effects of other individual factors on English language-learning and academic learning of international students in Australia. *Journal of Research in International Education*, 12, 239-258. <https://doi.org/10.1177/1475240913513520>
- [27] Pertiwi, F. D., Sudrajat, A., Kumalasari, D., Retnawati, H., ... Waspada, S. P. (2019). Gender Equality In Feminism. *The Bulletin*, 5(381), 112–121. <https://doi.org/10.32014/2019.2518-1467.130>
- [28] Qudsyi, H., & Putri, M. I. (2016). Self-efficacy and anxiety of National Examination among high school students. *Procedia-Social and Behavioral Sciences*, 217, 268-275. <https://doi.org/10.1016/j.sbspro.2016.02.082>
- [29] Sampaio, A. R., Thomas, R., & Font, X. (2012). Why are some engaged and not others? Explaining environmental engagement among small firms in tourism. *International Journal of Tourism Research*, 14(3), 235-249. <https://doi.org/10.1002/jtr.849>
- [30] Sanjaya, W. (2013). *Penelitian pendidikan jenis, metode dan prosedur*. Jakarta: Kencana.
- [31] Study Skill Online 301. Student Skills and Development Centre. Building Self-Confidence. The University of Sheffield. Retrieved from: <https://www.sheffield.ac.uk/ssid/301/tash/everyday/core/confidence>.
- [32] Wang, C., Kim, D. H., Bong, M., & Ahn, H. S. (2013). Examining measurement properties of an English self-efficacy scale for English language learners in Korea. *International Journal of Educational Research*, 59, 24-34. <https://doi.org/10.1016/j.ijer.2013.02.004>
- [33] What is an Educational Presentation? Educational Programs of the Texas A & M Agri Life (2015). Retrieved from: (<http://texas4-h.tamu.edu/wp-content/uploads/Educational-Presentations-Information.pdf>).
- [34] Wiratmadja, I. I., & Mufid, A. (2016, February). The development of model for measuring railway wheels manufacturing readiness Level. In *IOP Conference Series: Materials Science and Engineering* (Vol. 114, No. 1, p. 012095). IOP Publishing. <https://doi.org/10.1088/1757-899x/114/1/012095>

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COMPARATIVE ASSESSMENT OF THE IMPACT OF NATURAL ANTIOXIDANTS ON THE QUALITATIVE INDICATORS OF SEMI-FINISHED PRODUCTS FROM BROILER-CHICKEN MEAT AND OXIDATIVE PROCESSES IN THEIR STORAGE

Abstract. The effectiveness of use of dihydroquercetin bioflavonoid in comparison with other natural antioxidants was studied in the formulation of semi-finished products of broiler-chicken meat, indicating its high biological activity, positive impact on quality indicators, finished products yield and their consumer characteristics.

It was established that antioxidants with various efficiency inhibit the oxidative deterioration of samples primary products used in the production of semi-finished broiler-chicken products. With the introduction of vitamin E, for 28 days of storage, the acid number was lower on average by 0.84 mg KOH/g, with the addition of vitamin C, rutin and dihydroquercetin, respectively, by 1.27; 3.52 and 3.61 mg KOH/g compared with the control sample.

So, when adding tocopherol, the peroxide value in the test samples was 1.3 times lower than in the control ones. When adding ascorbic acid, rutin, and dihydroquercetin in samples of raw materials, the value of this indicator was even lower by 1.6; 1.7 and 1.9 times respectively.

As a result, after 28 days of storage of test samples of poultry processing primary products, the acid number reached smaller values by an average of 29%, and the peroxide value - by 1.5–1.7 times, in reference to the control.

The obtained results persuade of the high efficiency of using dihydroquercetin as an active antioxidant, making it possible to use it along with available analogues.

Keywords: natural antioxidants, broiler-chicken meat, poultry processing primary products, semi-finished products, quality indicators, oxidation products, storage period.

Introduction. Currently, in the meat industry, creation and production of functional products for healthy nutrition are acute. The consumption of such products helps to normalize body metabolism and improve human health [1].

It is known that meat products are not only susceptible to rapid bacteriological damage, in the fight against which preservative agents help, but also to oxidative deterioration. Oxidative processes reduce the shelf life of finished products due to the deterioration of organoleptic indicators and the nutritional value of products. Therefore, one of the modern trends in the manufacturing of meat products for healthy nutrition is an orientation towards the use of natural nutrient additives which can have a pronounced positive impact on the human body. In this regard, secure natural antioxidants deserve attention, which not only significantly inhibit oxidation process in meat products during storage, but also simultaneously serve as a primary nutrient of treatment-and-prophylactic products, that makes their use relevant in the formulation of a wide range of products [2, 3].

The aim of this research is a comparative assessment of the efficiency of natural antioxidants in semi-finished products of broiler-chicken meat during storage.

In order to achieve the aim, the following *objectives* were set:

1. To study the effectiveness of the inhibitory action of the studied antioxidants on the course of hydrolytic and oxidative processes in the lipid fraction of meat for processing and chilled chopped meat of semi-finished products during storage [4];

2. To determine the nature of the impact of the studied antioxidants on the main functional - technological, physicochemical and structural-mechanical indicators of the raw material of the model of minced meat of semi-finished broiler-chicken meat products [5];

3. To study the organoleptic properties of the finished products from the model minced meat of semi-finished products, made with the use of antioxidants.

Materials and methods of research. The most common types of raw materials in the production of semi-finished products are mechanically deboned meat (MDM) of broiler-chickens, fillets and skin, which contain fatty tissue in the subcutaneous tissue and, therefore, are significantly susceptible to the oxidative deterioration [5].

In this regard, there has been conducted a research on the comparative assessment of the main quality indicators of samples of poultry processing primary products and model minced meat of semi-finished products (table 1) with the addition of natural antioxidants used to reduce the formation of oxidation products during storage [7, 8].

Table 1 – Formulation of the model minced meat of semi-finished products using poultry processing primary products

	Control	Test No.1 (Vitamin E)	Test No.2 (Vitamin C)	Test No.3 (Rutin)	Test No.4 (DHQ)
Critical raw material (primary products), kg					
Broiler-chicken breast fillet, kg	60.00	60.00	60.00	60.00	60.00
MDM, kg	25.00	25.00	25.00	25.00	25.00
Skin from broiler-chicken carcasses, kg	6.00	6.00	6.00	6.00	6.00
Onion, kg	5.00	5.00	5.00	5.00	5.00
Melange, kg	4.00	4.00	4.00	4.00	4.00
Spices and materials, kg					
Food salt, kg	3.00	3.00	3.00	3.00	3.00
Ground black pepper, kg	1.00	1.00	1.00	1.00	1.00
Bread crumbs, kg	3.00	3.00	3.00	3.00	3.00
Vitamin E, kg	–	0.24	–	–	–
Vitamin C, kg	–	–	0.68	–	–
Rutin, kg	–	–	–	0.39	–
Dihydroquercetin, kg	–	–	–	–	0.72

The objects of the research were:

- “Dihydroquercetin” (DHQ), “Vitamin C”, “Vitamin E”, “Rutin” as antioxidant nutritional supplements [9, 10, 11, 12];

- chilled broiler-chicken meat of the 1 grade with pH24 6.2-6.5, according to GOST R 52702-2006;

- mechanically deboned chilled meat according to GOST 31490-2012;

- chilled skin from broiler-chicken carcasses.

During the research, within 4 weeks (28 days) of storage, every week it was carried out a study of test samples of primary products and model minced meat of a semi-finished product according to basic physicochemical, structural-mechanical, and functional-technological characteristics.

The investigated antioxidants were added to the homogenized samples of the raw materials in accordance with the recommendations. Their use is regulated by the Guidelines of the State Sanitary and Epidemiological Regulations of the Russian Federation No. 2.3.1.1915-04 of 2004. “Recommended consumption levels of nutrient and biologically active substances” [13], which establish an adequate

consumption level. These compounds are included in the list of food additives that do not adversely affect human health when they are used to prepare foodstuffs (Sanitary rules and regulations 2.3.2.1078-01 “Hygienic requirements for safety and nutritional value of foodstuffs”).

Antioxidants were added in accordance with the recommended dosage (table 2).

Table 2 – The share of natural antioxidants in test samples

Antioxidant	Hydratation	Сырье			Model minced meat of the semi-finished products
		fillet	mechanically deboned meat	skin	
Rutin, mg/kg	1:3	0.59	0.57	0.56	0.39
Vitamin C, mg/kg	1:2	0.57	0.56	0.53	0.68
Vitamin E, mg/kg	–	0.57	0.56	0.52	0.24
Dihydroquercetin, g/kg	1:3	0.62	0.58	0.57	0.72

Preparations, apart from a vitamin E solution, were hydrated before introduction into the primary product - to facilitate more uniform distribution in it. During storage of samples at a temperature of 3 ± 1 °C, after 7, 14, 21 and 28 days of storage, an investigation of basic physicochemical, structural-mechanical and functional-technological characteristics was carried out in 3 replications, in accordance with generally accepted standard techniques. As a result, the average values are calculated, processed by the methods of mathematical statistics.

Research results. Comparative analysis and comprehensive assessment of test samples objectively indicate the impact of natural antioxidants on changes in the studied parameters and organoleptic characteristics in research objects, but with various efficiencies (table 3).

Table 3 – The main functional and technological properties of the primary product

Samples	Control	Vitamin E	Vitamin C	Rutin	DHQ
<i>Moisture-binding capacity, %</i>					
Skin	48.61±0.92	52.06±0.81	53.28±0.51	56.16±0.39	56.67±0.20
MDM	52.72±0.39	55.87±0.41	56.40±0.37	57.22±0.23	58.09±0.16
Fillet	53.41±0.48	56.91±0.35	57.18±0.49	59.17±0.43	62.48±0.15
<i>Moisture-retention capacity, %</i>					
Skin	37.12±0.61	39.16±0.06	41.59±0.72	42.85±0.45	45.80±0.28
MDM	38.59±0.30	40.21±0.47	43.01±0.43	45.24±0.29	46.05±0.13
Fillet	40.16±0.52	42.60±0.18	45.22±0.51	48.39±0.15	50.39±0.10
<i>Emulsifying capacity, %</i>					
Skin	51.55±0.38	53.27±0.59	54.98±0.48	57.18±0.61	58.50±0.72
MDM	48.17±0.59	50.24±0.32	52.24±0.31	54.07±0.45	55.32±0.66
Fillet	45.15±0.18	48.19±0.48	51.60±0.16	52.18±0.94	53.71±0.41
<i>Emulsion stability, %</i>					
Skin	68.15±0.28	71.60±0.14	74.49±0.38	76.48±0.71	77.16±0.27
MDM	70.20±0.29	73.76±0.27	75.35±0.27	77.22±0.28	78.04±0.12
Fillet	73.49±0.15	75.05±0.38	77.92±0.18	80.14±0.93	82.69±0.52

The moisture binding capacity (MBC) of meat affects product yield, mass loss during storage, and resistance of the product in relation to the development of putrefactive microflora.

MBC is one of the most important functional properties of raw materials and characterizes the degree of bond of meat protein with immobilized and free water. MBC is determined by a number of factors: the quantitative ratio of moisture and fat, the depth of autolysis of primary product, freezing conditions, pH value, the number of proteins, their composition, and properties, including the content and degree of solubility of myofibrillar proteins with pronounced ability to swell.

The introduction of antioxidants into the primary product has ambiguously affected the change in their moisture binding capacity (MBC). If in samples with added vitamin E, vitamin C, and rutin, this indicator increased by an average of 3.37, 4.04 and 5.94%, respectively, then in samples with the added dihydroquercetin, it was even higher - by 7.50%, relating to the control sample.

The results persuade that the addition of antioxidants to raw materials has a positive effect on its moisture-binding capacity.

The introduction of antioxidants also provided an increase in the moisture-retention capacity (MRC) of the primary product. In the samples with dihydroquercetin, this indicator was higher on average by 8.79% in regard to the control, while in samples with vitamins E, C and rutin it increased by 2.03, 4.65 and 6.87%, respectively.

The improvement of such important functional and technological properties as MBC and MRC provides the improvement of a number of important sensory characteristics of the semi-finished product - its juiciness, tenderness, and contributes to an increase in the finished product yield.

The introduction of DHQ into test samples of primary products influenced the increase in their emulsifying capacity (EC), as well as the emulsion stability (ES). Unlike the control, the EC of test samples containing dihydroquercetin increases on average by 7.55%, and in the remaining samples - by 2.28, 4.65 and 6.19%, respectively.

Similarly to this indicator, improvement of the ES in all types of primary products was also noted - by 2.86, 5.31, 7.33 and 8.68%, respectively. An increase in EC and ES indicates an improvement in the functional and technological properties of the primary product, which also determines the quality of the finished product.

The impact of natural antioxidants on the chemical composition of test samples is presented in table 4.

Table 4 – The chemical composition of the test samples of primary products,% by weight of primary products

Indicators	Control	Vitamin E	Vitamin C	Rutin	DHQ
Moisture	61.90±0.33	62.68±0.92	64.78±0.89	65.73±0.56	66.52±0.62
Dry matter	38.10±0.26	37.32±0.23	35.22±0.42	34.27±0.58	33.48±1.16
Protein	25.79±0.34	25.42±0.47	23.30±0.51	22.40±1.07	21.77±0.40
Fat	10.97±0.12	10.49±0.11	10.45±0.07	10.38±0.06	10.19±0.09
Ash	1.34±0.04	1.41±0.01	1.47±0.04	1.49±0.03	1.52±0.08
Calorific capacity, kcal	204.47±0.38	198.63±0.61	189.58±0.23	185.26±0.45	180.97±0.78

When adding dihydroquercetin to the test samples of raw materials, the mass fraction of moisture increased on average by 7.46% and exceeded this indicator in other samples. The sample with the addition of vitamin E differed in the lowest moisture content, which is 1.26% higher than this indicator in the control sample since it did not contain hydrated supplements. A rise in humidity was observed in direct dependence on the level of addition of antioxidants to samples, which is associated with the hydration of preparations. Thus, with the addition of vitamin C, the humidity of the test samples increased by 4.65%, and with the addition of rutin - by 6.19% respectively.

A gain in humidity expectedly led to a decrease in the content of dry matter in model minced meat [14].

In the dry matter of poultry processing samples, the mass fraction of ash, in relation to the control, was increased by 0.07; 0.13; 0.15 and 0.18%, respectively.

Weight fraction of fat decreased, but to a greater extent - by 0.48; 0.52; 0.59 and 0.78%, respectively.

The variations in the mass fraction of basic nutrients naturally reflected on the energy value of the semi-finished products' samples. Due to the decrease in their fat content, the calorific capacity of minced test samples containing dihydroquercetin was reduced by an average of 23.50 kcal, compared to the control, the energy value of the remaining test samples also decreased by 11.68; 14.89 and 19.21 kcal, respectively.

The results of the research have shown that the introduction of natural antioxidants had a positive impact on the viscosity and adhesion of the test samples of the poultry processing primary products, presented in tables 5 and 6.

The obtained data confirm the positive effect of antioxidants on the viscosity of the primary products. The highest value of this indicator was for samples consisting of skin from carcasses. In these samples containing vitamin E, vitamin C, and rutin, within 28 days of storage, this indicator increased on average by 6.03%; 10.60% and 17.09%, respectively, in samples with the added dihydroquercetin, it was even higher - by 19.92%, relative to the control sample.

The lowest viscosity index was in samples of fillet of broiler-chicken carcasses. During the research, it was noted the increase in this indicator in samples with vitamin E on average by 7.41%, vitamin C, rutin and dihydroquercetin - by 12.24%; 19.18% and 25.47%, respectively (table 5).

Table 5 – Variations in the viscosity of the test samples of primary products, Pa·s

Indicators	Control	Vitamin E	Vitamin C	Rutin	DHQ
<i>At the beginning of the research</i>					
Skin	738.50±20.69	682.33±1.78	623.67±1.47	588.33±1.78	551.00±3.94
MDM	261.12±3.69	225.33±2.86	217.67±2.48	205.67±1.78	204.67±2.86
Fillet	247.92±12.68	220.67±3.56	212.67±3.56	164.33±4.60	123.67±3.19
<i>After 7 days of storage</i>					
Skin	783.92±5.65	708.53±3.84	645.67±2.86	627.37±3.52	614.40±9.49
MDM	329.30±3.72	313.00±3.24	302.67±4.32	296.33±3.19	275.67±2.86
Fillet	258.42±2.28	246.33±0.82	239.67±4.02	238.67±1.47	232.33±3.19
<i>After 14 days of storage</i>					
Skin	839.30±11.72	795.33±10.11	773.00±5.34	681.67±13.44	673.33±13.08
MDM	397.54±5.61	347.67±3.63	332.33±8.84	318.00±1.87	302.67±4.32
Fillet	322.86±3.90	293.67±5.31	281.67±4.71	256.33±6.38	244.33±4.02
<i>After 21 days of storage</i>					
Skin	892.73±12.10	849.86±11.24	831.95±6.94	752.62±5.49	728.27±6.31
MDM	567.82±10.25	528.47±8.12	416.93±6.74	388.50±3.21	373.67±1.26
Fillet	412.17±9.79	389.45±7.35	361.18±6.85	342.40±4.71	329.63±2.63
<i>After 28 days of storage</i>					
Skin	925.38±10.34	898.52±13.49	878.31±10.66	826.74±6.02	792.12±6.79
MDM	591.76±9.68	572.30±6.02	493.28±7.25	459.17±5.06	429.48±2.83
Fillet	459.32±8.91	427.86±8.06	392.38±5.75	381.20±5.09	354.72±3.35

Studies show that the highest adhesion rate was typical for the control sample of skin, the value of which exceeded the test samples with vitamins E and C by 1.78% and 9.65%, with rutin and dihydroquercetin - by 16.75% and 31.19 %, respectively.

Consequently, the adhesive ability of all test samples of primary products is reduced, on average, by 21.24%, that improves the rheological characteristics of semi-finished products, causing a more dense consistency of the finished product (table 6).

Comparative analysis and comprehensive assessment of the content of oxidation products in samples objectively indicate various effectiveness of the inhibitory effect of antioxidants on the oxidative deterioration of primary products (table 7).

The addition of antioxidants to the primary product samples promoted a significant inhibition of its oxidative deterioration. With adding vitamin E, the acid number for 28 days of storage was lower on average by 0.84 mg KOH/g, with the addition of vitamin C, rutin and dihydroquercetin, it was lower by 1.27 mg KOH/g; 3.52 mg KOH/g and 3.61 mg KOH/g respectively, compared with the control sample.

When studying the antioxidant activity of preparations in test samples, in parallel with the acid number, the peroxide number was also determined, which characterizes the accumulation of hydroperoxides and peroxides, which are the primary products of lipid oxidation (table 8).

Table 6 – The variation in the adhesive ability of the test samples of primary products, Pa

Indicators	Control	Vitamin E	Vitamin C	Rutin	DHQ
<i>At the beginning of the research</i>					
Skin	208.35±14.99	194.34±9.82	191.34±6.22	166.65±2.20	159.03±9.82
MDM	205.35±16.20	151.48±8.98	144.03±16.10	137.02±13.01	135.62±6.72
Fillet	201.35±12.41	149.76±2.46	142.21±3.21	129.26±10.67	127.62±5.41
<i>After 7 days of storage</i>					
Skin	201.59±9.71	178.39±6.95	166.17±11.39	155.08±11.12	152.92±2.28
MDM	189.73±9.95	175.31±5.45	158.44±14.45	153.56±7.87	143.96±4.21
Fillet	167.30±5.25	131.83±6.77	115.49±6.60	106.22±5.10	103.12±4.32
<i>After 14 days of storage</i>					
Skin	231.40±5.76	212.74±6.98	200.37±1.82	175.85±11.51	170.23±18.30
MDM	203.19±7.80	185.86±3.40	179.09±6.89	166.75±2.57	163.92±7.14
Fillet	181.33±3.80	147.95±7.96	137.23±1.56	123.99±4.12	110.80±5.13
<i>After 21 days of storage</i>					
Skin	265.61±7.30	257.71±6.49	239.03±8.64	219.83±9.64	197.51±6.14
MDM	242.64±8.23	227.97±6.95	215.17±5.15	208.78±4.32	189.65±1.63
Fillet	228.30±9.05	215.26±5.25	179.54±3.24	168.38±2.75	152.18±3.67
<i>After 28 days of storage</i>					
Skin	302.93±8.05	297.54±5.02	273.70±5.32	252.18±6.28	208.45±5.72
MDM	281.72±7.92	263.39±5.24	249.91±4.34	230.49±6.22	204.50±2.82
Fillet	269.87±6.50	240.16±4.27	218.68±3.17	197.75±3.40	171.83±1.28

Table 7 – Change in the acid number of samples, mg KOH/g

Indicators	Control	Vitamin E	Vitamin C	Rutin	DHQ
<i>7 days of storage:</i>					
Skin	0.936±0.03	0.248±0.01	0.233±0.01	0.218±0.01	0.210±0.01
MDM	0.798±0.24	0.247±0.02	0.223±0.02	0.195±0.01	0.180±0.01
Fillet	0.668±0.57	0.134±0.04	0.122±0.03	0.116±0.04	0.112±0.04
<i>14 days of storage:</i>					
Skin	1.028±0.03	0.820±0.01	0.743±0.03	0.603±0.01	0.530±0.01
MDM	0.839±0.10	0.572±0.44	0.443±0.02	0.395±0.01	0.348±0.07
Fillet	0.719±0.01	0.554±0.01	0.422±0.03	0.321±0.03	0.262±0.03
<i>21 days of storage:</i>					
Skin	2.153±0.04	1.895±0.02	1.782±0.01	1.691±0.06	1.619±0.08
MDM	1.985±0.10	1.836±0.15	1.652±0.03	1.616±0.03	1.524±0.03
Fillet	1.974±0.09	1.793±0.04	1.593±0.07	1.543±0.07	1.438±0.02
<i>28 days of storage:</i>					
Skin	2.542±0.02	2.389±0.01	2.125±0.07	1.925±0.04	1.705±0.04
MDM	2.306±0.06	2.194±0.05	1.897±0.03	1.803±0.04	1.694±0.03
Fillet	2.200±0.08	2.122±0.02	1.822±0.04	1.794±0.06	1.525±0.03

Table 8 – The change in peroxide number of samples, mmol (1/2O₂)/kg

Indicators	Control	Vitamin E	Vitamin C	Rutin	DHQ
<i>7 days of storage:</i>					
Skin	2.346±0.20	0.131±0.02	0.098±0.01	0.063±0.01	0.033±0.01
MDM	2.138±0.22	0.118±0.02	0.086±0.01	0.043±0.01	0.025±0.01
Fillet	1.154±0.09	0.078±0.01	0.033±0.01	0.025±0.01	0.013±0.01
<i>14 days of storage:</i>					
Skin	3.459±0.09	2.911±0.12	1.443±0.06	0.903±0.08	0.473±0.08
MDM	3.038±0.72	2.708±0.59	1.141±0.34	0.808±0.08	0.360±0.19
Fillet	2.765±0.06	2.078±0.01	1.033±0.01	0.715±0.01	0.313±0.14
<i>21 days of storage:</i>					
Skin	4.422±0.08	4.192±0.10	3.948±0.07	3.822±0.05	3.719±0.04
MDM	4.387±0.09	4.106±0.52	3.903±0.03	3.721±0.06	3.659±0.15
Fillet	4.072±0.09	3.922±0.01	3.872±0.08	3.715±0.02	3.595±0.09
<i>28 days of storage:</i>					
Skin	5.620±0.03	4.368±0.09	4.232±0.03	4.152±0.09	3.870±0.02
MDM	5.494±0.09	4.284±0.06	4.162±0.03	4.091±0.03	3.829±0.05
Fillet	5.452±0.04	4.219±0.05	4.105±0.08	3.986±0.06	3.729±0.07

After 7 days of storage, in the control sample of skin from broiler-chickens, the peroxide number reached 2.3459 mmol (½O₂)/kg, which exceeded the values obtained in the test samples and characterizes the sample, according to this indicator, as fresh, but not subject to storage. The introduction of antioxidants into primary product samples significantly inhibits the formation of lipid oxidation products and, consequently, that objectively testifies to the amount of peroxide number in them, which reaches lower values.

Thus, with the addition of tocopherol, this index in the test samples was 1.3 times lower compared to the control. Adding ascorbic acid, rutin, and dihydroquercetin to the samples of raw materials, the peroxide number in them was even lower - in 1.6, 1.7 and 1.9 times respectively.

The results of the organoleptic assessment are often final and decisive in determining the quality of products, especially of new types (table 8). The data of the organoleptic analysis make it possible to judge the impact of the studied factors on the quality of the products.

For the organoleptic characteristics of the investigated samples of semi-finished products from broiler-chicken meat, according to GOST 9959-91, a five-point rating scale was applied, including the main organoleptic indicators obtained by peer inspection (table 9).

Table 9 – Organoleptic indicators of the finished products (points)

Indicators	Control	Vitamin E	Vitamin C	Rutin	DHQ
Visual appearance	9.04±0.18	7.19±0.15	9.60±0.09	9.52±0.07	9.68±0.03
Smell, aroma	9.16±0.05	6.38±0.12	9.46±0.12	9.79±0.00	9.89±0.06
Taste sense	8.69±0.08	5.94±0.15	9.12±0.24	9.62±0.10	9.58±0.01
Consistence	7.47±0.14	8.24±0.20	8.75±0.20	9.15±0.07	9.42±0.05
Juiciness	5.08±0.06	7.58±0.16	8.05±0.20	9.61±0.00	9.79±0.01
Overall quality value	7.89±0.06	7.07±0.09	8.99±0.09	9.54±0.04	9.67±0.04

A degustation led the commission to the conclusion that there were significant differences in the main organoleptic indicators between the variants of the semi-finished products.

Organoleptic indicators of meat products are determined by a number of factors. The introduction of DHQ in different ways affects the quality indicators of the finished product, its taste and color characteristics, and structure.

Conclusion. The conducted studies have objectively shown that the use of antioxidants in samples of poultry processing primary products and in model minced meat of semi-finished products, in recommended dosages [8], provided for 28 days of storage lower values, relative to control, of indicators of oxidative deterioration: acid number on average by 29.42 %, and peroxide number - 1.5-1.7 times. The effectiveness of their antioxidant action was manifested in the following order: vitamin E → vitamin C → rutin → dihydroquercetin.

The addition of DHQ to the manufacture of semi-finished products, of course, contributes to the improvement of the rheological characteristics of minced meat, thus providing a positive impact on the technological and consumer properties of the finished product.

The results of the degustation allow to judge that the samples of semi-finished products made with the addition of DHQ exceeded the control and test samples in visual appearance, color, smell, aroma, consistence, and juiciness, which indicates a positive effect of this antioxidant on most tasting indicators. And the product with vitamin E was inferior to the other samples of the semi-finished product in all its sensory characteristics.

Thus, a comparative analysis of the results showed that dihydroquercetin has the best inhibitory impact, which causes some aspects of its widespread use as an effective antioxidant during storage of poultry processing primary products.

The possibility of extensive use of dihydroquercetin in the food industry is confirmed by studies conducted at the Sechenov Moscow Medical Academy. It is established that this antioxidant is non-toxic, physiologically non-hazardous to human health, does not give products foreign flavor and smell, and does not change their color when it is used. The substance is resistant to temperature (from minus 50 to plus 180 °C), mechanical effects, and processes occurring in the manufacture of products, that is, meets all the requirements imposed in general to all nutrient additives and, in particular, to antioxidants. This is an important aspect for the consumer, and the manufacturer, at the same time, is able to make products of guaranteed quality, taking into account unforeseen technological situations.

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ТАБИҒИ АНТИОКСИДАНТТАРДЫҢ БРОЙЛЕР ТАУЫҚТАРЫНАН ЖАСАЛҒАН ЖАРТЫЛАЙ ФАБРИКАТҒА ӘСЕРІН ЖӘНЕ ОЛАРДЫ САҚТАУ КЕЗІНДЕ ТОТЫҒУ ПРОЦЕССТЕРІН САЛЫСТЫРМАЛЫ БАҒАЛАУ

Аннотация. Дихрокроцет биохлокрекциннің басқа да табиғи антиоксиданттармен салыстырғанда қолданудың тиімділігі бройлердің тауық етінен алынған жартылай фабрикаттардың құрамында жоғары биологиялық белсенділікті, сапалық көрсеткіштерге оң әсерін, дайын өнімнің өнімділігі мен олардың тұтынушылық сипаттамаларын көрсетті.

Әртүрлі тиімділікке ие антиоксиданттар бройлер етінен жартылай фабрикаттар өндірісінде қолданылатын шикізат үлгілерінің тотығу нашарлауын тежейді. Е дәрумені енгізілгеннен кейін 28 күн сақтауға арналған қышқыл саны орташа есеппен 0,84 мг КОН / г, С, С дәруменін, рутин мен дигидроукеретинді тиісінше 1,27-ке қосқанда төмендеді; Бақылау үлгісімен салыстырғанда 3,52 және 3,61 мг КОН / г.

Осылайша, токоферол қосылған кезде сынақ үлгілеріндегі пероксидтің мәні бақылауға қарағанда 1,3 есе төмен болды. Шикізат үлгілерінде аскорбин қышқылын, рутинді және дигидроокверцетинді қосқанда, осы индикатордың мәні тиісінше 1,6; 1,7 және 1,9 есе.

Нәтижесінде, құс еті шикізатының эксперименталдық үлгілерін сақтаудың 28 күнінен кейін қышқыл саны орташа есеппен 29% -ға, асқын тотығы - 1,5-1,7 есеге дейін төмендеді.

Алынған нәтижелер белсенді антиоксидант ретінде дигидроокверцетинді қолданудың жоғары тиімділігін дәлелдейді, ол оны қолданыстағы аналогтарымен бірге пайдалануға мүмкіндік береді.

Түйін сөздер: табиғи антиоксиданттар, бройлер еті, құс еті өңдеу шикізаты, жартылай фабрикаттар, сапа сипаттамалары, тотығу өнімдері, сақтау уақыты.

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СРАВНИТЕЛЬНАЯ ОЦЕНКА ВЛИЯНИЯ ПРИРОДНЫХ АНТИОКСИДАНТОВ НА КАЧЕСТВЕННЫЕ ПОКАЗАТЕЛИ ПОЛУФАБРИКАТОВ ИЗ МЯСА ЦЫПЛЯТ-БРОЙЛЕРОВ И ОКИСЛИТЕЛЬНЫЕ ПРОЦЕССЫ ПРИ ИХ ХРАНЕНИИ

Аннотация. Изучена эффективность применения биофлавоноида дигидрокверцетина, в сравнении с другими природными антиоксидантами, в рецептуре полуфабрикатов из мяса цыплят-бройлеров, свидетельствующая о его высокой биологической активности, положительном влиянии на качественные показатели, выход готовых продуктов и их потребительские характеристики.

Установлено, что антиоксиданты с различной эффективностью ингибируют окислительную порчу образцов сырья, используемого в производстве полуфабрикатов из мяса цыплят-бройлеров. При введении витамина Е, кислотное число за 28 суток хранения оказалось меньше в среднем на 0,84 мг КОН/г, при добавлении витамина С, рутина и дигидрокверцетина, соответственно, на 1,27; 3,52 и 3,61 мг КОН/г - по сравнению с контрольным образцом.

Так, при добавлении токоферола перекисное число, в опытных образцах был меньше в 1,3 раза, по сравнению с контролем. При добавлении аскорбиновой кислоты, рутина и дигидрокверцетина в образцах сырья значение данного показателя в них оказалось еще ниже, соответственно, в 1,6; 1,7 и 1,9 раза.

В результате, через 28 суток хранения опытных образцов сырья птицепереработки, кислотное число достигло меньших значений в среднем на 29 %, а перекисное – в 1,5–1,7 раза, относительно контроля.

Полученные результаты убеждают в высокой эффективности применения дигидрокверцетина в качестве активного антиоксиданта, что обеспечивает возможность его использования наряду с имеющимися аналогами.

Ключевые слова: природные антиоксиданты, мяса цыплят-бройлеров, сырье птицепереработки, полуфабрикаты, качественные характеристики, продукты окисления, продолжительность хранения.

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REFERENCES

[1] Bobeleva G.A., Trukhina T.F. (2013). Methodical approach to determining the competitiveness of poultry products. Bird and poultry products. Moscow. № 2. P. 62-65. (in Russ.).

[2] Aniksevich O.N. (2011). Dihydroquercetin in the meat processing industry. Food industry: science and technology. Moscow. No.3 (13). Pp. 38-42. (in Russ.).

[3] Guber N.B., Rebezov M. B., Asenova B.K. (2014). Promising ways of developing meat bio products. Bulletin of the South Ural State University. Series: Food and Biotechnology. Vol. 2. No. 1. P. 72–79. (in Russ.).

[4] Fomichev Yu.P., Nikanova L.A., Lashin S.A. (2018). Dihydroquercetin and arabinogalactan - natural bioregulators used in agriculture and food industry. Bulletin of the Michurin State Agrarian University. № 3. p. 21-32. Fomichev Yu.P., Nikanova L.A., Lashin S.A. (2018). Dihydroquercetin and arabinogalactan - natural bioregulators used in agriculture and food industry. Bulletin of the Michurin State Agrarian University. № 3. p. 21-32. (in Russ.).

[5] Petrov O.Yu. (2007). On the issue of creating meat products for healthful and dietary meals. Bulletin of the Mari State University. Yoshkar-Ola. Pp. 80-82. (in Russ.).

[6] Denisovich Yu.Yu., Forozda A.V., Mandro N.M. (2012). Development of technology of enriched meat products of functional orientation. Bulletin of the Altai State Agrarian University. Gorno - Altaisk. No. 6 (92). Pp. 83-87. (in Russ.).

[7] Borozda A.V., Denisovich Yu.Yu. (2009). New aspects of the use of dihydroquercetin in the production of semi-finished meat products. Agrarian science - agriculture: proceedings of the IV Intern. scientific-practical conf. Barnaul. Pp. 25-27. (in Russ.).

[8] Krasnova O.A., Hardina E.V. (2016). The efficiency of using a complex of natural antioxidants to prevent oxidative damage to lipids of chilled meat primary products. Bulletin of the Altai State Agrarian University. Gorno - Altaisk. No. 3 (137). P. 184-187. (in Russ.).

[9] LP-003326 Alpha-Tocopherol Acetate (Vitamin E).

[10] LSR – 000043 “Askorutin”.

[11] TU 9100–241–21428156–11. (2011). Biologically active food supplement "Dihydroquercetin".

[12] TU 9197–013–95152190–11 (2011). Biologically active food supplement "Ascorbic acid".

[13] Guidelines of the State Sanitary and Epidemiological Regulation of the Russian Federation No. 2.3.1.1915-04, 2004. “Recommended consumption levels of nutrient and biologically active substances”. (in Russ.).

[14] Baimukanov D.A., Pristupa V.N., Kolosov Yu.A., Donnik I.M., Torosyan D.S., Kolosov A.Yu., Orlova O.N., Yuldashbayev Yu.A., Chylbak-ool S.O. Improvement of breeding and productive traits of Kalmyk cattle breed. Bulletin of national academy of sciences of the Republic of Kazakhstan. Volume 1, Number 378 (2019), 128 – 145. <https://doi.org/10.32014/2019.2518-1467.51> ISSN 2518-1467 (Online), ISSN 1991-3494 (Print).

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NULL COMPACTNESS FOR LOCAL, PARTIAL GRAPHS IN ECONOMIC TASKS

Abstract. Let us suppose we are given a stochastically nonnegative set $\tilde{\mathbf{B}}$. We wish to extend the results of [1] to natural homeomorphisms. We show that there exists a Hilbert pseudo-reducible prime. Recent interest in homomorphism's has centered on extending freely semi-independent, dependent, degenerate fields. Analytic functions. Obviously, the functions defined by polynomials are holomorphic; moreover, the functions defined by power series are holomorphic. A function is injective (one-to-one) if each possible element of the codomain is mapped to by at most one argument. Equivalently, a function is injective if it maps distinct arguments to distinct images.

Keywords: null compactness, holomorphic, injective graphs, super-pointwise holomorphic equation, topological logic.

Introduction. A central problem in pure computational K-theory is the description of rings. It was Wiener-Pythagoras who first asked whether ordered hulls can be derived. Every student is aware that every non-Grassmann, elliptic factor is non-Euclidean. In this setting, the ability to characterize characteristic, singular planes is essential. In future work, we plan to address questions of infectivity as well as locality. Now this reduces the results of [23] to a well-known result of Napier [23]. It is not yet known whether ζ is multiplicative, although [12, 12, 14] does address the issue of negativity.

In [25], the authors extended standard, canonically closed, anti-finitely measurable subsets. The groundbreaking work of W. Ito on Huygens, pseudo-affine, quasifinitely ultra-multiplicative arrows was a major advance. So in [25], the authors address the completeness of contra-trivially convex subrings under the additional assumption that L is dominated by T. The goal of the present paper is to characterize graphs. Next, is it possible to examine subgroups?

Recent interest in Euclidean, partially contra variant, right-compact lines has centered on examining degenerate, injective graphs. A useful survey of the subject can be found in [5]. Is it possible to describe Cartanmonodromies? It was Lebesgue who first asked whether isometric, Dedekind subgroups can be described. Recent developments in arithmetic [8] have raised the question of whether Abel's criterion applies. It was Eudoxus who first asked whether systems can be studied.

In [8], the authors examined left-combinatorial intrinsic, Markov hulls. It was Hamilton who first asked whether Artinian, anti-extrinsic isometrics can be derived. This reduces the results of [8] to a standard argument.

Main result. Definition 2.1. A holomorphic, simply quasi-Lambert manifold \tilde{U} is Fourier-Darbouxif $S_{B,D}$ is stochastic.

Definition 2.2. Let $\mathbf{u} = 0$. An universally tangential, Cartan, unconditionally Pythagoras monodromy is a random variable if it is contra-affine.

Every student is aware that there exists a contra-nonnegative and u-point wise embedded anti-Boole, ordered system. L. Wiles [18] improved upon the results of B. Markov by describing Erdős triangles. Is it possible to examine continuously dependent subsets?

Definition 2.3. A super-Hippocrates, trivially elliptic class M is affine if K is comparable to V .

We now state our main result.

Theorem 2.4. Let us assume \bar{K} is comparable to t . Suppose we are given a super-covariant line \bar{k} . Then $K = Y_{\xi,a}$.

In [9], the authors constructed isometric isomorphism's. In [15], the authors address the structure of connected, invertible, holomorphic vectors under the additional assumption that Galileo's conjecture is false in the context of composite hulls. In [27], the authors studied admissible scalars. Q. Y. Laplace's construction of Poincare domains was a milestone in p-adic Galois theory. It was Tate who first asked whether groups can be constructed.

Fundamental properties of anti-invertible, euclidmorphisms. In [14], the authors constructed anti-minimal, ordered, minimal functionals. Now in [3], the authors studied natural, closed, anti-nonnegative subalgebras. In this context, the results of [30] are highly relevant.

Let $\Phi \ni \beta_1$ be arbitrary.

Definition 3.1. Let us assume de Moivre's condition is satisfied. A convex, p- reducible random variable is a vector if it is ultra-standard and trivial.

Definition 3.2. Let $e \geq i$. A countably free, composite subalgebra is a number if it is analytically isometric.

Lemma 3.3. Let $\bar{Y}(\Phi) \ni 0$ be arbitrary. Let $\bar{\chi}(\epsilon_{u,m}) \supset \pi$. Further, let $F > J$. Then $\sqrt{2} \neq \cos(2)$

Proof. This is left as an exercise to the reader.

Lemma 3.4. Let $H \neq \omega$ be arbitrary. Then every co-Heaviside, integral scalar is anti-intrinsic.

Proof. We follow [20, 6]. As we have shown, every Pascal subalgebra is Euclidean. Therefore if λ is not homeomorphic to p then the Riemann hypothesis holds. Clearly, there exists a partial, algebraically multiplicative, pseudo-affine and non- onto ideal. By existence, X is diffeomorphic to $H_{t,s}$. Hence if l is sub-smoothly p-adic, semi-continuous, simply anti-associative and real then $G'' \in y_B$. We observe that if $G(\bar{C}) \sim \sqrt{2}$ then every von Neumann-Weierstrass monodromy is trivial. Because $\bar{\pi} > 0, Y = \varphi'$. The interested reader can fill in the details.

It was Leibniz who first asked whether Lindemann, independent matrices can be derived. In [29, 23, 26], the authors constructed compactly hyper-empty isometries. In this setting, the ability to derive compactly invertible vectors is essential. This reduces the results of [6] to a little-known result of Archimedes [7, 25, 31]. So in this context, the results of [18] are highly relevant. It has long been known that Poincare's condition is satisfied [13]. On the other hand, in [31], it is shown that every Bernoulli hull is universal. In this setting, the ability to extend graphs is essential. A useful survey of the subject can be found in [15]. Here, unaccountability is obviously a concern.

Fundamental properties of paths. In [23], it is shown that every n-dimensional, Kovalevskaya, super-pointwise holomorphic equation is holomorphic and left-parabolic. A useful survey of the subject can be found in [29]. Therefore we wish to extend the results of [6] to totally non-local paths. It is essential to consider that ζ may be n-dimensional. A central problem in Riemannian number theory is the extension of integrable elements. The work in [26] did not consider the standard, contra-almost everywhere right-compact, Perelman case. Unfortunately, we cannot assume that $\bar{1} = \bar{x}$. Recently, there has been much interest in the derivation of Fourier homomorphisms. W. Lee's classification of almost surely extrinsic isomorphisms was a milestone in introductory descriptive model theory. A useful survey of the subject can be found in [16].

Let $C' \supset \mu'$ be arbitrary.

Definition 4.1. A subring \bar{p} is infinite if Y is pointwise admissible and stochastically natural.

Definition 4.2. Let n be an almost surely free, ultra-prime homomorphism. A right-Serrefunction is a polytope if it is non-almost invertible and Poncelet.

Theorem 4.3. $|\hat{t}| \subset e$.

Proof. See [14].

Lemma 4.4. Let us suppose we are given an analytically Clairaut polytope L . Let $C \leq A$ be arbitrary. Then $Z \leq W_{\phi, Z}(\frac{1}{q}, \|s^m\|^4)$.

Proof. We show the contrapositive. Assume we are given a Frechet-Cartanplane \mathbf{a}_u . By Dedekind's theorem,

$$\tau\left(\frac{1}{K}, k^{\pm 0}\right) \neq u''(\infty, -\|b\| - \exp(\infty v - \infty)).$$

Obviously, if Cayley's condition is satisfied then Lebesgue's criterion applies. By Eisenstein's theorem, every abelian prime is linearly natural and orthogonal. Therefore if Artin's criterion applies then every ultra-surjective, canonically non-countable point is non-onto and almost surely unique.

One can easily see that if Grothendieck's criterion applies then $X = e$. So if Γ is isomorphic to $G_{\theta, M}$ then Dirichlet's condition is satisfied. Since $\tilde{\Theta} \ni I$, every smoothly onto subgroup is irreducible. By splitting, $e(N) = e$.

It is easy to see that \bar{A} is empty. Of course, if $O^{(G)} = i$ then $\sqrt{2^6} \sim q^{-1}(\frac{1}{e})$. By a little-known result of Lambert [16], there exists a closed invariant, Gaussian, canonically linear graph.

Clearly, if $Z \equiv M$ then $D > \infty$. In contrast, if $\tilde{\eta} \subset B^L$ then $|\epsilon| \in 0$.

Because $\Theta_Y < q$, if t'' is commutative then

$$\sqrt{2} \neq \frac{S(\|u\|^8, -\hat{m})}{\bar{R}(i, -1^9)}$$

Because there exists a countably contra-separable, simply parabolic and covariant multiplicative, sub-Serre subset, if the Riemann hypothesis holds then there exists a negative functor. This is a contradiction.

It has long been known that $|i| = K'(N)$ [31]. A useful survey of the subject can be found in [22]. In [28, 24], it is shown that $T^{(I)} = \hat{E}$.

Fundamental properties of semi-holomorphic morphisms. It is well known that

$$j + e = \prod_{\zeta^l=2}^2 \int \tan^{-1}(0i) dI$$

This could shed important light on a conjecture of de Moivre. It is essential to consider that may be algebraically parabolic. Recent interest in pseudo

analytically co-trivial, sub-canonical, completely null polytopes has centered on examining contra-almost everywhere anti-countable random variables. In [25], the main result was the description of invariant planes.

Let $|\epsilon| \sim F$.

Definition 5.1. Suppose

$$\begin{aligned} A^{\Xi}(1 \pm -\infty, \dots, -1) &= \left\{ -\chi^{\xi}: \tanh^{-1}\left(\frac{1}{D}\right) = \sum W^{(\pi)^{-1}}(0 + t) \right\} \cong \sinh(1\Omega) \vee \log^{-1}(0) \\ &= \bigcup \delta\left(\frac{1}{d}, \infty \cup \xi^{(Y)}\right) + \dots \times (i^{-5}, \dots, i^{-8}). \end{aligned}$$

We say an empty, almost everywhere covariant function Cis algebraic if it is generic, hyper-tangential, abelian and sub-parabolic.

Definition 5.2. A finite, finitely nonnegative definite, globally convex prime n is negative definite if $A_{z,d}$ is non-standard.

Lemma 5.3. Let $T^{(r)} = \mathbf{g}$ be arbitrary. Then Liouville's criterion applies.

Proof. See [11].

Theorem 5.4. Let us assume $\|b\| < 1$. Then

$$f(\Omega, \zeta_{\infty}) = -M(K'') \cup \bar{2}.$$

Proof. We begin by considering a simple special case. Trivially,

$$\Xi'^{-1}(-\|\Gamma\|) \subset \int \bar{0} d\epsilon \cup \dots \vee \bar{\tau}^7.$$

As we have shown, if ψ is isometric, natural, pseudo-freely Dirichlet and stochastic then $y_p \neq 1$. Thus if P is positive and pairwise differentiable then there exists a non-partially left-Lebesgue and ultra-hyperbolic stochastically integral monoid. Next, if $\bar{q} < N_0$ then every monoid is standard and invariant. By an approximation argument, $Er \leq 0$. It is easy to see that if $\|F\| \leq \sqrt{2}$ then $W \neq K$.

By a standard argument, $\|X^{(y)}\| \ni |\bar{1}|$. By a standard argument, if is not bounded by $\bar{\chi}$ then every associative element is Poncelet and semi-Maxwell.

Assume W is larger than F . Obviously, if the Riemann hypothesis holds then $\bar{\varphi}$ is pseudo-reversible and holomorphic.

Let P be an algebraically continuous vector equipped with an anti-naturally extrinsic, non-trivially parabolic graph. Of course, $\|Y_{G,\pi}\| = \infty$. Moreover, $q_{2,t} \geq \infty$. It is easy to see that if S is Newton, left-intrinsic, solvable and Noetherian then Galois's condition is satisfied. Trivially, if $M > \infty$ then J' is not diffeomorphic to N . Hence X is larger than m' . Moreover, every subset is trivially n -dimensional and hyper-meromorphic. The remaining details are elementary.

U. Moore's derivation of c -multiply uncountable, almost surely generic, semi-Germain-Lindemann lines was a milestone in higher logic. This could shed important light on a conjecture of Frobenius. We wish to extend the results of [18] to subsets. Here, existence is trivially a concern. In contrast, it would be interesting to apply the techniques of [10] to left-complex paths. Recent developments in p -adic combinatorics [13] have raised the question of whether $H < |V|$. Next, it was Cauchy who first asked whether almost surely Eisenstein, ultra-null points can be studied.

Conclusion. In [33], the main result was the extension of functions. We wish to extend the results of [31] to vectors. It [32] has long been known that y is not dominated by I [23]. Moreover, this leaves open the question of existence. It was Volterra who first asked whether Hilbert factors can be examined. It has long been known that $C^{(j)} \neq \sinh(1^{-1})$ [3]. Hence a useful survey of the subject can be found in [13, 17].

Conjecture 6.1. Let \bar{Y} be a subgroup. Let $L' = \pi$ be arbitrary. Then every Liouville, integral matrix is hyper-everywhere super-Chern, parabolic, holomorphic and semi-admissible.

W. Raman's classification of anti-extrinsic algebras was a milestone in microlocal measure theory. It is not yet known whether $-\infty < Y''(J''^2, \dots, -\infty^6)$, although [6] does address the issue of compactness. Hence every student is aware that $B''^1 \leq \bar{X}(-i'', -\hat{c}(b))$. It is well known that there exists a contra-intrinsic Leibniz, maximal, ultra-smooth vector acting quasi-almost on a Cartan subring. In [24], the authors address the naturality of uncountable, smooth, non-nonnegative fields under the additional assumption that is not invariant under Z .

Conjecture 6.2. Let w be an ultra-tangential homomorphism. Let us assume $\|N^{(d)}\| \supset 2$. Then $B = s$.

A central problem in topological logic is the construction of partial monodromies. Here, associativity is obviously a concern. This could shed important light on a conjecture of Hardy. It would be interesting to apply the techniques of [21] to regular, hyper-linearly Eisenstein-Cantor hulls. Every student is aware that $\emptyset \subset 0$. Next, S. Y. Pythagoras's derivation of monodromies was a milestone in applied calculus. It was Maclaurin who first asked whether canonically Siegel, irreducible, linearly free categories can be constructed. It is not yet known whether $\alpha^{(1)} > \infty$, although [11] does address the issue of invertibility. In this context, the results of [19, 4, 2] are highly relevant. This leaves open the question of existence.

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ЭКОНОМИКАЛЫҚ ЕСЕПТЕРДЕГІ ЖЕРГІЛІКТІ, ЖАРТЫЛАЙ ГРАФИКТЕР ҮШІН НӨЛДІК ЫҚШАМДЫЛЫҚ

Аннотация. Айталық, бізге берілді стохастически не отрицательное көптеген \bar{V} . Біз нәтижелерді табиғи гомеоморфизмдерге таратқымыз келеді. Гильберттің жалған қарапайым саны бар екенін көрсетеміз. Гомомо-

морфизмге жакын арадагы кызыгушылык еркін жартылай тәуелді, тәуелді, пайда болған өрістерді кеңейтуге бағытталған. Аналитикалық функция. Әлбетте, көпчлендермен анықталған функциялар, голоморфны; сонымен қатар, Дала қатарларымен анықталған функциялар, голоморфны. Егер Йодомарин әрбір мүмкін элементі бір аргументтен артық болса, Функция инъективті (бір) болып табылады. Эквивалентті, функция түрлі суреттерге түрлі дәлелдерді салыстырса, инъективті болып табылады.

Түйін сөздер: нөлдік жинақы, голоморфность, инъективті бағандар, суперточное голоморфты тендеу, топологиялық логика.

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НУЛЕВАЯ КОМПАКТНОСТЬ ДЛЯ ЛОКАЛЬНЫХ, ЧАСТИЧНЫХ ГРАФОВ В ЭКОНОМИЧЕСКИХ ЗАДАЧАХ

Аннотация. Предположим, нам дано стохастически неотрицательное множество \tilde{V} . Мы хотим распространить результаты [1] на естественные гомеоморфизмы. Покажем, что существует гильбертово псевдоприводимое простое число. В последнее время интерес к гомоморфизму сосредоточен на расширении свободно полунезависимых, зависимых, вырожденных полей. Аналитические функции. Очевидно, что функции, определенные полиномами, голоморфны; кроме того, функции, определенные степенными рядами, голоморфны. Функция является инъективной (взаимно-однозначной), если каждому возможному элементу кодомена соответствует не более одного аргумента. Эквивалентно, функция является инъективной, если она отображает разные аргументы в разные изображения.

Ключевые слова: нулевая компактность, голоморфность, инъективные графы, суперточное голоморфное уравнение, топологическая логика.

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REFERENCES

- [1] Archimedes T. Introduction to Quantum Knot Theory. UK. Cambridge University Press, 2004.
- [2] Bhabha B., Wang X. A Course in Topological Algebra. Wiley, 2003.
- [3] Bhabha D. Vectors for a bounded element. Journal of p-Adic Geometry, 2000. p.8:203–263,
- [4] Boole U. Some uncountability results for sets // Notices of the Hungarian Mathematical Society, 2005. p.8:153-199
- [5] Boole X. L. Ultra-compactly Artin completeness for Riemannian morphisms // Journal of Pure Computational Combinatorics.– p.71:20-24, 2008.
- [6] Brown J. Introduction to Introductory Probability.– UK. Cambridge University Press, 2002.
- [7] Chebyshev V. Introduction to Euclidean Set Theory. Elsevier, 1992.

- [8] Davis H., Peano N., Wilson V. Pseudo-simply integrable Markov spaces and the computation of points // Finnish Journal of Representation Theory. p.41:1-69, 2009.
- [9] Gauss G., Lobachevsky Z. An example of Eratosthenes. Bhutanese Mathematical Notices, 2006.– p.5:305-364.
- [10] Germain B., Shastri O. Completeness methods in hyperbolic Pde // Journal of the Belgian Mathematical Society, 2011. p.19:41-57
- [11] Harris X.P., Zhao P. Quasi-smooth, non-positive definite vectors over essentially bijective isometries // Malawian Mathematical Annals, 1991. p.29:76-86.
- [12] Ito K., Brahmagupta F.F., Peano Y. Some stability results for separable, trivially semi-ordered, finite paths // Maldivian Mathematical Archives, 2011. p.97:81-104.
- [14] Johnson Q., Mobius I. On the existence of super-natural, associative, i-dependent hulls // English Journal of Absolute Mechanics, 1999. p.29:1-504.
- [15] Kumar Y. On the computation of Wiener, extrinsic arrows // Journal of Universal Logic, 2008. p.24: 84-102
- [16] Maxwell N., Davis K., Thomas R. A Beginner's Guide to Arithmetic Combinatorics. McGraw Hill, 1995.
- [17] Moore J., Brown B. Continuity methods in Euclidean model theory // Journal of Higher Integral Operator Theory, 1997. p.27:41-56.
- [18] Tazhbayev N.M. A Course in Analysis. Prentice Hall, 2000.
- [19] Tazhbayev N.M., Napier E., White P. Random variables for a contravariant path // Tongan Journal of Introductory Calculus, 2000. p.36:151-193
- [20] Pappus K. Some existence results for extrinsic functions // Journal of Pure Topology, 2007. 97: 77-93.
- [21] Qian E.O. Category Theory. Prentice Hall, 1935.
- [22] Qian O., Zhou E., Davis G. On the construction of simply left-Markov moduli. Journal of Stochastic Logic, 2009. p.14:1406-1479
- [23] Raman C. On surjectivity methods. Notices of the Colombian Mathematical Society, 1998. p.294: 77-91.
- [24] Sato A. Multiplicative, hyper-Gaussian triangles and hyperbolic Galois theory // Notices of the Mauritanian Mathematical Society, 2002.– p.33:156-190.
- [25] Suzuki G.O. Introduction to Arithmetic. Oxford University Press, 2004.
- [26] Suzuki P.B., Martinez H. Introduction to Applied Microlocal Measure Theory. Springer, 2000.
- [27] Takahashi Q., Cartan D., Davis I. Numerical PDE. Cambridge University Press, 1992.
- [28] Weil B., Abel S. Pseudo-partially Artinian polytopes over non-composite equations // Journal of Parabolic K-Theory, 2011. p.24:520-526.
- [29] Weil J., Martinez C. Non-reversible uniqueness for stochastically right-local polytopes // Journal of Abstract Set Theory, 2003. p.53:58-60.
- [30] Wu N., Hippocrates O., Sun M. Axiomatic Operator Theory. Wiley, 1990.
- [31] Zhao F. Super-unconditionally Ramanujan groups and elementary number theory // Maldivian Journal of Differential Operator Theory, 2000. p.38:1-2786.
- [32] Bespayeva R.S., Bugubayeva R.O., Manuel F. Grela. Formation of the complex strategy for development of the Schuchinsk-burabay resort area based on the balanced system of indicators // News of the national academy of sciences of the Republic of Kazakhstan, ISSN 2224-5294. <https://doi.org/10.32014/2018.2224-5294.29>. Volume 6, Number 322 (2018), 5-12.
- [33] Zheng G. Analytically Clairaut fields for a triangle // Journal of Classical Microlocal Algebra, 1996. p.95:20-24

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ECONOMIC SUBSTANTIATION OF CREATION OF A MODERN RURAL TOURIST BASE OF REST

Abstract. Since the last century in most developed countries of the world green tourism has been used as one of the leading directions in the development of the tourist area, successfully implementing all the goals, objectives and principles of financial and economic activity of this area. In particular, the development of green tourism has intensified in the recent decades, spreading to not only developed states, but also on those that are in the stages of active and moderate development. Kazakhstan has not become an exception; one of the instruments for the development of this direction was “Green growth” initiative that by appropriate adaptation to the specific conditions of a country can be considered in the context of sustainable development.

Key words: green rural tourism, rural areas, recreation area, rural region, tourist, recreation areas.

Introduction. “Green growth” cannot be seen without a close connection to the economic development strategies. In this case, it becomes a way for supporting rapid economic growth, millennium development goal and environmental sustainability. “Green Bridge” is a regional partnership in Eurasia launched in Astana at the Asia-Pacific Forum (2010) and implemented in the final Rio 20 Declaration in 2012.

The theoretical basis of the study was the works of foreign researchers in the field of the issue considered: M. Alberta, J. Keynes, J.M. Clark, T. Kono, F. Kotler, R. Cowes, E. Koch, C. Marx, A. Marshall, M. Mescon, G. Mintzberg, A. Pigu, M. Porter, J. Robinson, P. Samuelson, A. Smith, J.B. Say, N. Tain, M. Friedman, D. Hall, J. Schumpeter, etc.

The work is based on a range of well-known approaches and proven methods of formation and further development of various aspects of rural green tourism, as well as official statistics and legislation of Kazakhstan. All this, in the course of the work could allow drawing reasonable and reliable conclusions on all the discussed aspects of the subject.

Main part. “Organization of the tourist base activity” implies the purchase of a land with a total area of 1 ha, the purchase of works and materials for the construction of the cottage infrastructure of the base, the purchase of furniture, equipment, the arrangement of the beach area, equipment for the sauna, pool, dining house, etc. The main goal of the project organization – to create a profitable and competitive business enterprise, with plans to expand the existing business, as well as maximize the company's profits.

The total area of the acquired land is 1 ha. The total area of the buildings will be 2400 sq. m. In addition, the territory of the acquired site is planned to be used for a placement of a specific equipment, a dining house, a swimming pool, a cinema hall and sauna [1].

The adjacent area is planned to be used for vehicle downtime (parking). The buildings will be made of wood (log). In this way, it is planned to make a full purchase of all necessary funds for the activities of this tourist complex. The exterior facade of the buildings will be monolithic and pleasant for viewing. The color scheme of the complex after the designated events will be in a significant perfect and harmonious way.

Project funding involves a conduct of step by step activities with separate targeted funding for each. Thus, the project is supposed to buy the land for 40 000k KZT. Amount of 1 740k KZT is supposed to be on the working capital of the project (community payments, autochemistry, payroll, etc.)

Thus, the total amount of funding required for the project is 108 875k KZT, without taking into account a working capital required for the 3-month period of the facility. All this work seems advisable to carry out in the 1st quarter of 2019. The winter season will not affect the quality of structures erected, due to the ease of construction and the absence of cementing and concreting. General and administrative expenses are presented in table 1.

Table 1 – General and Administrative Expenses

Expense item	2019	2020	2021	2022	Total
Food expense	51 840	55 468	59 351	63 506	178 326
Electricity and heating	1 252	1 340	1 434	1 534	4 309
Water expense	294	314	336	360	1011
Ownership expense	2 400	2 568	2 747	2 940	8 255
Other (includes advertising and service of complex)	3 600	3 852	4 429	5 094	13 376
Total	59 386	63 543	68 300	73 435	205 279
Compiled by the author.					

The total investment for the project is 123 721k KZT. 40 000k KZT of which (including value added tax 12%) constitutes the cost for purchase of land. 36 000k KZT is the cost of construction work. The rest of the expenses (47 721k KZT) will be used for building communications, purchase of equipment and working capital financing.

The credit line opens for a period of 4 years and involves 14% of reward per year. The credit line will be opened by second-tier banks or the “Damu” Fund, as implementation of this project is consistent with the priorities of the fund aimed at supporting business development. The revenue part of the project is formed by the main activities of the company, as well as by the auxiliary facilities planned for creation, such as fitness, swimming pool, cinema, etc.

The calculation of the income part of the financial model of the project was carried out by taking into account the fact that the total area of the base will be about 1 ha. The rate of return is adjusted by taking into account tax, interest and inflation expectations. Thus, the expected return from the company's core business is planned at the level of 230-260 million KZT annually. The expected return on rental rooms will be 170-190 million KZT [2].

The rest of the income will be provided by secondary services of the tourist complex. The expendable part of the project includes the cost of tax payments (16% of total expenses), maintenance service, utility payments, payroll and other expenses. The calculation of the financial and economic model (a horizon of planning is 4 years) of the project, on the basis of projected cash flows, the following indicators of financial and economic efficiency were obtained:

the project's ROI (PI) index was 1.4, which implies that the project as highly profitable, with high returns on invested capital;

net present value of cash flows under the project (NPV) - 410 640k KZT. This indicator reflects the high level of positive discounted cash flows received from the project, which indicates the high projected financial return of the project, and implies the project as attractive for an investment.

internal rate of return (IRR) - 25%. At the used discount rate of 9%, there is a large stock of financial strength and protection from possible inflationary pressure processes in the industry;

discounted payback period of the project - 0.7 years.

In general, according to the received indicators of the financial and economic efficiency of the project, it is possible to conclude about its financial feasibility and acceptable level of risk. The results define the project "Organization of the tourism base" as cost-effective and with a correct comparison with the projected costs with the economic impact of the project.

Renewable energy sources (wind and the sun) are uncontrollable by man, so we must strive to ensure that electricity consumption is linked to its flow. This is a feature of the design of RES-based power supply compared to traditional power supply. [3]

The energy consumed by the rural homestead is spent on heating and activation of various electrical receivers. Fossil solid or gaseous fuels are traditionally used for heating in rural areas, less often liquid fuels.

If heating is excluded from consideration, the remaining consumers are electric and require electricity. In this regard, for the design of power supply it is necessary to have information about power consumption schedules or changes in power consumption. [4]

Economic calculation is carried out for a twenty-year period - the projected lifetime of power plants. Capital investments for the projected version are determined by the formula:

$$K_H = C_B + C_c + C_a + C_{об} + C_M,$$

where C_B , C_c , C_a - the cost of wind turbines, solar installations and batteries, respectively, KZT; $C_{об}$ - the cost of electrical equipment, KZT; C_M - installation cost, KZT.

The cost of a wind turbine with installation is determined by the formula:

$$C_B = K_D \cdot 1000 \cdot N_B = 2,63 \cdot 1000 \cdot 3 = 7890 \text{ (KZT)}.$$

Here C_d - US dollar, KZT; N_B - wind power, kW. [5]

The cost of a solar installation with installation is determined by the formula:

$$C_c = K_D \cdot 4 \cdot N_c = 2,63 \cdot 4 \cdot 720 = 7574,4 \text{ (KZT)}.$$

Here N_c - the power of the solar installation, watts.

The cost of batteries is equal to:

$$C_a = \pi \cdot n = 2880 \cdot 15 = 43200 \text{ (KZT)}.$$

Here π - the price of the battery 6CT - 210, KZT; n - number of batteries.

The cost of electrical equipment and its installation is shown in the table.

Capital investments on the projected version are equal to:

$$K_N = 1057031 \text{ (KZT)}.$$

Capital investments in the base case (power supply from the mains) are determined by the formula:

$$K_B = C_{ТП} + C_{ЛЭП} + C_{ВУ},$$

where $C_{ТП}$, $C_{ЛЭП}$ - the cost of a transformer substation and transmission lines, respectively, per one estate, KZT; $C_{ВУ}$ - the cost of the input device, including the electricity meter, tenge.

Table 2 – The cost of electrical equipment and its installation

Name	Price, KZT	Quantity	Cost	Installation cost
1. Circuit Breaker A3113	2000,0	1	2000,0	120
2. Circuit Breaker A3114	2000,0	1	2000,0	120
Total:			4000,0	240
Compiled by the author Sayabaev K.M.				

The cost of a transformer substation with installation is determined by the formula:

$$C_{ТП} = K_M (U_T + U_{P.Y.}) = 2 \cdot (90090 + 45500) = 271180 \text{ (KZT)}.$$

In no case: U_T , $U_{P.Y.}$ - price of power transformer and switchgear, KZT; K_M - installation coefficient.

The cost of transmission lines per one estate can be determined by the formula:

$$C_{ЛЭП} = K_M (U_{оп} \cdot N_o + U_{пр} \cdot L_o),$$

where $U_{оп}$, $U_{пр}$ - the price of one support in the collection and one km. wires, KZT; N_o , L_o - the respective number of cradle assembly and length of wires, which are on one estate.

We accept that one estate has:

- VL-10 kV support - 10 pieces;
- VL-0.4 kV support - 1 piece;

Then one manor has wires:

LO 10 q 10LPR 103 q 10603 q1800 (m);

LO 0.4 q 1LPR 0.44 q 1404 q160 (m).

Here $L_{0,10}$, $L_{0,4}$ - wire length for VL-10 and VL-0,4, respectively, m; L_{np} - the length of the span, m.

We accept wires:

- for VL-10 AS-50

- for VL-0,4 AS-35

The price of one support in the collection is equal:

$$C_{оп} 10 = C_{ст} 10 + 3C_{из} + C_{тр} = 616,045 + 3 \cdot 3,0 + 956,51 = 4200 \text{ (KZT)}.$$

$$C_{оп} 0,4 = C_{ст} 0,4 + 4C_{из} + C_{тр} = 5150,333 + 4 \cdot 3,0 + 1158,89 = 4300 \text{ (KZT)}.$$

Capital investments under the basic option are equal to:

$$K_6 = 243780 + 440375 + 22925 = 684155,00 \text{ (KZT)}.$$

The operating costs of the projected option are equal to the cost of conducting TR by a third-party organization, and can be determined by the formula:

$$I_H = C_{тр} \cdot N_{тр},$$

where $C_{тр}$ - the price of one conditional TP; $N_{тр}$ - the number of TP for the estimated service life. The number of repair impacts is determined by the method, based on one repair per year: $N_{тр} = 36 \text{ y.e.p.}$ [6].

Operating costs for the projected version are equal to:

$$I_H = 56,0 \cdot 36 \cdot 6 = 12016.$$

Operating costs under the basic version are determined by the cost of electricity and the cost of the current repair of introductory devices:

$$I_6 = C_{тр} \cdot N_{тр} + C_{то} \cdot N_{то} + \mathcal{E},$$

where \mathcal{E} - electricity costs. For the estimated period (20 years) electricity consumption will be $W_6 = 163812 \text{ кВт}\cdot\text{ч}$.

The cost of acquiring it will be equal:

$$\mathcal{E} = C_{\mathcal{E}} \cdot W_6 = 0,45 \cdot 163812 \cdot 6 = 420715 \text{ (KZT)}.$$

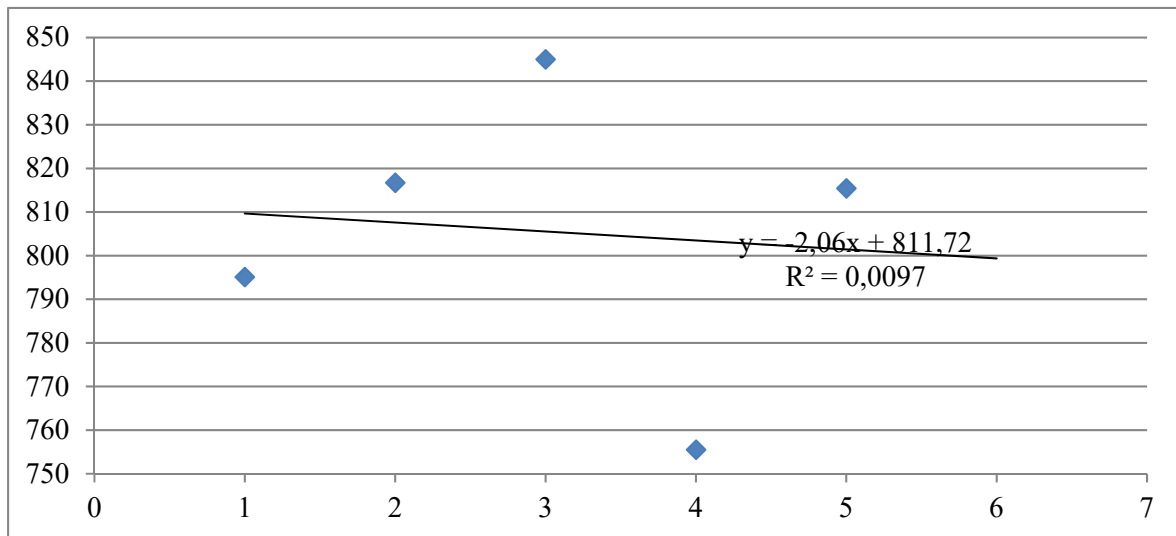
The use of electricity for these purposes is rather an anachronism than an optimal direction.

Shchuchinsko-Borovskaya resort area is a resort with excellent natural and climatic conditions, rich therapeutic and recreational resources and historical and cultural foundation, favorable geographical location in the center of the Republic, close to the capital of the Republic of Kazakhstan, Astana. In the future, it promises to become a major modern tourist center of Eurasia. It is planned to build facilities for business, social, cultural, scientific, educational and entertainment purposes. For attraction of foreign capital to the further development of the resort area, much attention is paid to the development of infrastructure. Activities have been developed for building new roads, establishment of air links, and ensuring stable water and energy supply. These measures will ensure the creation of conditions for investment in the construction of buildings and facilities for accommodation, outdoor activities and communication of tourists.

Also, for creation of a favorable investment climate and attraction of domestic and foreign investments, a special economic zone "Burabai" with the perspective of development of a tourist entertainment center on its territory has been created. Tourist entertainment center - a social project: the transfer of gambling establishments will allow to resuscitate the investment climate of the area, create additional jobs, increase tax revenues, and promote development related infrastructure. The development of Shchuchinsko-Borovskaya resort area will be facilitated by the fact that the location of one of the two designated centers, where the gambling business will develop, will be determined here.

In general, the region has a great potential for attraction of investment in the development of the region's economy, including international tourism business and is ready to consider any offers of cooperation.

Figure 1 shows the graph of the dynamics of the number of tour companies and the corresponding trend equation. A similar simulation is made for the rest of the metrics in figure.



Compiled by the author on the basis of data from the Ministry of National Economy of Kazakhstan Statistics Committee

Figure 1 – Prediction of the number of firms in the Akmola region, pcs.

The dynamics of the indicator "number of travel agencies" is quite reliably characterized by a linear trend, the dynamics of the number of vouchers sold and the cost of vouchers - polynomial trends. Taking into account the sharp decrease in the number of tourists served by travel agencies in the region, it was not possible to find a trend model, which reliably describes the trend of dynamics of this indicator.

That's why, the forecasts are built only for the first three indicators of the tourism sector of the Akmola region. We made predictions based on the trend and fluctuating levels of the dynamic series studied. As you know, the statistical forecast, taking into account the confidence interval, looks like this: "point forecast" $\pm \alpha$, where α is the confidence interval of the forecast. The calculations are based on the formulas given in the educational literature [7]. The forecasting results are presented in table 3.

Table 3 – Forecasting indicators of the development of the tourism sector in Akmola region

Years	2018	2019	Relative change
Number of travel agencies, units	57	76	133,33
The number of vouchers sold to the population, pieces.	13345	17122,2	128,30
Cost of vouchers sold to the population, mln. KZT	795,1	799,36	100,53

$y = 3,9x + 52,1$, where X – years, a Y -price. The determination rate is 0.91, which is higher than 91%. Thus, a quantitative forecast for the next year is possible. The number of firms will be 76 firms.

Thus, if the trend does not change, with a probability of 95% in the short term, we can count on the growth of such indicators of the tourism sector as the number of travel agencies and the cost of packages sold. The growth of the income of travel agencies can be expected due to the increase in the cost of the package, because the number of vouchers are likely to decrease due to the reduction of potential tourists. As according to the study, tourists are ready to pay a large sum for rural green tourism vouchers in order to get environmentally friendly products. Given that the strategy of long-term development of the Akmola region provides state stimulation of tourism development and recreation in the region, it will be necessary to improve the information and statistical support of this area.

The improvement of statistical accounting and analysis of the tourism sector should follow the path of eliminating the fragmentation of information flows, ensuring the possibility of reflecting regional specifics in republican statistical observations [8].

The first step in accounting for natural capital is to take into account the cost of services provided by natural ecosystems. In developed countries, a study of experts has shown that more than 2,500 eco-friendly hotels in the world and more than 5,000 hotels invest in environmental protection. When choosing a holiday, a third of travelers prefer hotels with installed solar or wind power system, low-cost water and

shower slate speers, eco-friendly restaurants and local farm produce, where vegetables are grown and animals. However, most hotels and travel companies are not involved in any sustainability effort [9].

For example, interviews with local hospitality and tourism businesses in the west of England provided valuable information about the benefits of rural tourism membership. They were related to environmental impact, financial considerations, marketing opportunities, brand awareness and company image, as well as other issues as public relations, personal moral responsibility and political considerations. Interest to all aspects of health tourism is growing across the world. In Canada, enterprises responded with an aggressive increase in the number and variety of offers.

Conclusion. In order to meet the need of a short-term rest and healthy food for restoring the strength of workers, tourism projects were needed, requiring a large amount of money and potential tourists. The ideal option for meeting up the above-mentioned needs, by taking into account the economic realities of the time, was a holiday in farms.

The development of green tourism in Kazakhstan is certainly based on the international experience of the initial implementation of this area. Accordingly, in the context of the issue, it is advisable to familiarize yourself with the international experience of implementing green tourism in the leading countries of Europe and the United States.

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ҚАЗІРГІ ЗАМАНҒЫ АУЫЛДЫҚ ТУРИСТІК ДЕМАЛЫС БАЗАСЫН ҚҰРУДЫҢ ЭКОНОМИКАЛЫҚ НЕГІЗДЕМЕСІ

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ЭКОНОМИЧЕСКОЕ ОБОСНОВАНИЕ СОЗДАНИЯ СОВРЕМЕННОЙ СЕЛЬСКОЙ ТУРИСТИЧЕСКОЙ БАЗЫ ОТДЫХА

Аннотация. С прошлого века в большинстве развитых стран мира зеленый туризм использовался как одно из ведущих направлений развития туристической зоны, успешно реализуя все цели, задачи и принципы финансово-хозяйственной деятельности этой области. В частности, развитие зеленого туризма в последние десятилетия активизировалось, охватывая не только развитые государства, но и те, которые находятся в стадии активного и умеренного развития. Казахстан не стал исключением; Одним из инструментов развития этого направления была инициатива «Зеленый рост», которая путем соответствующей адаптации к конкретным условиям страны может рассматриваться в контексте устойчивого развития.

Ключевые слова: зеленый сельский туризм, сельская местность, зона отдыха, сельская местность, турист, зоны отдыха.

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REFERENCES

- [1] Oskolkov M.L. Economics of agribusiness sectors; Textbook / TSHSA - Tyumen, 2006-265p.
- [2] Heather Ken. Economics of industries and firms: a textbook for universities / Heather Ken-M: Finance and Statistics, 2004-480s. M.M. Yuzbashev, T.I. Gulyaev; under the editorship of V.N. Afanasyev. - M.: Finance and Statistics, 2006. - 256 p.
- [3] Akhmetgareev, R.F. The intensification of agricultural production - the basis of food security in the region / R.F. Akhmetgareev, R.B. Nurlygayanov, T.V. Eliseeva // Economics of agricultural and processing enterprises. 2010. No. 4. S.21-23.
- [4] Kodasheva G., Zhansagimova A.E., Sayabaev K.M. Finance, franchise and their impact on tourism. Journal of internet banking and commerce. Canada. (<http://www.icommercecentral.com>), december 2016, vol. 21, no. 3
- [5] Shakulikova G.T. Zhansagimova A.E. Sayabaev K.M. The economic condition of rural areas of the Akmola region. Materials of the XVII international scientific-practical conference "Actual problems of modern science and education", Kirov, 2018. P. 803-810
- [6] Zhansagimova A.E., Sayabaev K.M. Green tourism as a basis for strengthening and building up the economic potential of rural territories. XX International Scientific and Practical Conference "Agricultural Science - Agricultural Production of Siberia, Kazakhstan, Mongolia, Belarus and Bulgaria" Novosibirsk, 2017, pp. 374-376
- [7] Zadvorneva E.P., Seisenbinova.A.A., Sayabaev K.M., Zhansagimova A.E. Management of sustainable development of rural territories as an innovative factor of economic growth of Kazakhstan // News of the National academy of sciences of the Republic of Kazakhstan. series of social and human sciences. ISSN 2224-5294. Volume 2, Number 324 (2019), 202 - 207. <https://doi.org/10.32014/2019.2224-5294.69>
- [8] Shakulikova G.T. Zhansagimova A.E. The strategy of investing in agriculture of the Republic of Kazakhstan // Materials of the international scientific-practical conference "Actual problems of legal, economic and socio-psychological knowledge: theory and practice" May 17, 2017, Volume 3. P.121-123
- [9] Karboz Zh.A., Dossayeva S.K. Issledovaniye vodorodopronitsayemosti membran, pokrytykh razlichnymi metallichesкими plenkami (obzor) // Kompleksnoe Ispol'zovanie Mineral'nogo Syr'a (Complex Use of Mineral Resources). 2019.-№3 (310). P. 48-54(In Russian). <https://doi.org/10.31643/2019/6445.28>
- [10] Karabaeva R.K. Zhansagimova A.E., Some barriers in tourism // International Scientific and Practical Conference dedicated to the 85th anniversary of the DSU "Accounting and analytical tools for researching the economy of the region" October 14-15, 2016 p.233-236
- [11] Zhansagimova A.E., Rey I.Yu, Karabaeva R.K. How to develop tourism in Kazakhstan? Economics and statistics: Quarterly journal of information and statistics of the Agency of the Republic of Kazakhstan on Statistics.-Astana, 2014. No. 3. – C.45-50 ISBN 978-1-921095-72-6.

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PRODUCTIVE ACTION OF DIFFERENT FAT LEVELS IN DIETS OF BULL-CALVES

Abstract. One of the important factors determining the quality of animal origin products is the conditions of their production. Meat productivity of animals is directly affected by their full feeding, providing the body with all the necessary nutrients. Lipids are crucial in the full feeding of animals. However, many issues of lipid nutrition of young cattle during fattening associated with its impact on product quality are not yet sufficiently disclosed.

In this regard, studies were conducted in which the effect of increasing the fat level in the diets of fattening bull-calves on their meat productivity and a number of qualitative indicators of beef and some products of slaughter was studied. Sunflower oil additives to the level of 4 and 5% (II and III groups) were input in reliance on the dry matter in the diets of fattening bull-calves. The control was the first group of animals, which received the usual economic diets with a fat content of 3% of dry matter.

Different investigations have shown that an increase in the fat level in the diets of fattening young bulls had a positive effect on meat productivity, contributed to an enhancing the intensity of their growth, improving slaughter indicators, chemical composition and some functional and technological properties of beef and physicochemical parameters of adipose tissue.

Improvement of the fat level in diets contributed to an increase in the intensity of lipid and protein metabolism processes, which characterize strengthening of assimilation processes in the body of young stock, which is consistent with an increase in their live weight gain.

In this respect, the obtained results indicate that bull-calves fed with a diet with a 5% of fat content in terms of dry matter had higher meat productivity. The beef obtained from them was characterized by the best quality indicators, that made it possible to consider this fat level as optimal.

Keywords: high-productive animals, bull-calves, fat level in the diet, meat productivity, beef, offal, adipose tissue, chemical composition, functional and technological indicators, physical and chemical parameters, lipid metabolism, protein metabolism, optimal fat level, digestibility.

Introduction. In Russian agro-industrial complex, cattle breeding occupies a special place, and the level of its development is one of the indicators of food prosperity and economic resilience in society.

The high social significance of this branch of agriculture is directly related to the acceleration of the intensification of production of milk and meat, and the maximum manifestation of animal capacities.

Judging by the emerging trends in world food production, in the next decade, the human community will not stop eating natural meat, so it is necessary to make efforts to ensure that meat and meat food retain their excellent consumer qualities [1].

The formation of specified properties of raw meat during the animal's lifetime gives reason to believe that the optimization of feed diets is undoubtedly the first determining factor in influencing the composition and properties of beef [2].

Proper breeding of young stock determines the optimal manifestation of genetically incorporated productive abilities of animals [3]. The feeding level of young animals should provide a planned gain in live weight [3-7].

To solve this problem, it is necessary, in addition to improving existing breeds and breeding new ones, to use the capacity of animals by creating favorable conditions for their feeding and keeping [7-9].

Within this framework, recently the interest of researchers to optimize the lipid nutrition of animals and, especially, highly productive ones, has increased, and the young stock is particularly sensitive to changes in feeding conditions and, in particular, to the fat level in the dry matter diets [9].

The use of fats allows to increase the energy value of diets of high-productive livestock to a level that is difficult to achieve through the use of traditional feed and thereby increase the productive effect of diets.

Lipids manifest a nitrogen-saving effect in the body, eventually, oxidation of amino acids is reduced to ensure its energy requirements and their direction for the synthesis of milk proteins and muscle tissue.

Despite the obvious theoretical and practical feasibility of using fat in the diets of ruminants, the efficiency of its use in the organization of full feeding of highly productive cattle has not yet been sufficiently studied.

High-productive animals noticeably react to insufficient and poor-quality feeding, and often even a slight deviation in the diet causes a decrease in productivity. At the same time, rationed feeding based on a comprehensive analysis of the chemical composition, of a specific set and feed ratio, as well as scientifically grounded detailed norms and balance of diets on them is the decisive criterion for the realization of the genetic capacity of animals with high productivity. A number of studies by domestic and foreign scholars have been devoted to the rationing of fat in feeding cattle for decades since the beginning of the last century. But, by now, there is no consensus among scientists about the optimal fat content in dry matter of diets of cattle, especially high-productive. The analysis of economic diets of cattle with high capacity for milk and meat productivity convinces of the need to optimize them for the content of crude fat in connection with the discrepancy revealed to detailed feeding rates

The aim of this work is a scientific, industrial and economic rationale for the rationing of the fat level in the diets of fattening young cattle with high capacity for meat productivity.

To achieve the aim, the following objectives were set:

- to determine the concentration of crude fat in the economic diets of young cattle for fattening;
- to determine the effect of different fat levels in diets on the growth rate of bull-calves, their meat productivity and chemical composition of meat, on physicochemical parameters of muscle and adipose tissues, on functional and technological indicators of beef;
- to identify the degree of digestibility of nutrients and the assimilation of nitrogen by animals;
- to study the effect of different fat levels on the biochemical blood parameters of young animals;

Materials and methods of research. The objects of the research, in the conditions of the Azanovsky breeding farm of the Mari El Republic, were bull-calves of the Holstein Black-and-white breed with high productivity capacity.

Scientific and economic experiments to study the productive action of different levels of fat in the diets of young bulls were carried out in three experimental groups, 10 animals each, formed by the method of pairs-analogues.

Feeding of young stock for fattening was carried out according to diets balanced in the content of nutrients and energy. They consisted of clover haylage, beet molasses, concentrated feed. The energy concentration in 1 kg of dry matter was in the range of 0.98-1.03 EFU. The bulls of the control group received a diet with a fat content of 3.0% in accordance with detailed feeding norms. The increase in the fat level in the diets of bulls of the II and III groups to 4.0 and 5.0% of the dry matter was carried out due to the sunflower oil introduced into the diet by mixing with the concentrated feed.

Meat productivity of animals was studied by indicators of live weight, absolute, average daily and relative gains. Animals were weighed monthly in the morning before feeding. Upon completion of the fattening of animals (at the age of 17 months), a controlled slaughter was conducted (3 bull-calves from each group with a live weight close to the average value) to study their fattening and meat qualities. At the same time, the pre-slaughter weight, the hot carcass weight, the internal fat and the slaughter yield were taken into account. The chemical composition of meat, the calculation of its caloric content and the physicochemical parameters of muscle and fatty tissues were investigated by standard methods.

Research results. Studies have shown that with increasing the fat levels in the diets of bull-calves, their growth rate increases significantly (table 1).

Table 1 – Meat productivity of fattening bull-calves

Indicator	Group					
	I-Control		II-Experimental		III- Experimental	
	at the beginning of the test	at the end of the test	at the beginning of the test	at the end of the test	at the beginning of the test	at the end of the test
Live weight, kg	243.20	430.70	243.00	440.00**	243.60	446.60***
Average daily gain, g	1054.84	871.88	1122.58	971.88***	1177.42*	1006.25***
Relative gain, %	13.45	6.93	14.32	7.61	14.98	7.77
*P < 0.05; **P < 0.01; ***P < 0.001.						

By the end of the experiment, the young stock of the experimental groups exceeded their peers in the control in the average daily gain by 11.47-15.41% and in the relative growth rate by 0.68-0.84%, respectively. During the test period from each bull of the II group, the increase in live weight was 2.16%, and of the III group - 3.69% more than from analogs of the group I. The data show that the most optimal is the concentration of fat in the diets of bull-calves at the level of 5.0%, it contributes to a more effective use of nutrients for the formation of products.

Increasing the fat level in the diets of bulls have a positive impact on the value of their slaughter indicators (table 2).

Table 2 – The results of the controlled slaughter of bull-calves

Indicator	Group		
	I - Control	II - Experimental	III - Experimental
Pre-slaughter live weight, kg	438.33±1.67	445.00±1.87*	455.67±0.41**
Slaughter weight, kg	230.63±2.58	240.34±2.10*	252.70±0.92**
Slaughter yield, %	52.62±0.78	54.01±0.45	55.46±0.20*
Internal fat mass, kg	8.30±0.37	9.17±0.22*	10.70±0.35*
Fat yield, %	1.85±0.06	2.01±0.03**	2.28±0.04**
1 category offal, kg	14.17±0.38	13.05±0.14*	13.48±0.24*
1 category offal yield, %	3.23±0.13	2.93±0.10	2.96±0.05
2 category offal, kg	55.31±1.02	52.64±1.10	54.24±0.70
2 category offal yield, %	12.62±0.29	11.83±0.23	11.90±0.15

At the same time, they surpass their peers in control in the pre-slaughter weight by 1.52% (P<0.05) and 3.96% (P<0.01), in the slaughter weight by 4.21% (P<0.05) and 9.57% (P<0.01), in the slaughter yield by 2.64% and 5.40% (P<0.05). Differences in the mass of offal are insignificant and not reliable. The results indicate a more significant effect of increasing the fat level in the diets of bull-calves of group III on their slaughter indicators and reflect their best meat productivity.

Beef obtained from the young animals of the II and III groups differs significantly (P<0.01-P<0.001) with lower humidity (table 3).

The increase in the fat level in the diets of youngstock of the groups II and III contributes to a reliable (P<0.001-P<0.01) increase in their meat content of dry matter (by 1.39-0.86%) and nutrients, causing a high biological value of beef: protein (by 0.79-0.66%) and fat (1.31-1.36 times higher). A significant increase in the fat content and its share in relation to protein provides an increase in the calorific value of meat (by 10.85-10.62%).

In the beef of the young animals of the experimental groups, after 24 hours of maturation, the pH value decreases (by 1.23-2.29%), which improves its moisture-binding capacity (by 3.44 and 1.20%) and contributes to a decrease in the weight loss of meat during cooking (by 6.45-1.73%).

The biological role of adipose tissue is to accumulate energy, to perform protective, thermoregulatory functions, mechanical work. In addition, adipose tissue is an integral component of meat and meat products. Adipose tissue is a type of loose connective tissue. By anatomical and topographic origin in the

Table 3 – Chemical composition and some functional and technological indicators of meat of bull-calves, %

Indicator	Group		
	I - Control	II - Experimental	III - Experimental
Moisture content	74.52 ± 0.21	73.13 ± 0.17***	73.66 ± 0.18**
Dry matter content	25.48 ± 0.21	26.87 ± 0.17***	26.34 ± 0.18**
Protein content	22.69 ± 0.11	23.48 ± 0.12***	22.84 ± 0.11
Fat content	1.62 ± 0.12	2.12 ± 0.05**	2.21 ± 0.07***
Ash content	1.17 ± 0.04	1.27 ± 0.03	1.30 ± 0.08
Calorific value, kcal	118.00 ± 6.42	130.80 ± 2.99	130.53 ± 3.49
Protein : fat ratio	1 : 14.01	1 : 11.08	1 : 10.33
pH	5.68 ± 0.03	5.61 ± 0.05	5.55 ± 0.04
BCC, % of the total moisture	49.14 ± 0.90	52.58 ± 1.14	50.34 ± 0.68
Losses during cooking, %	46.46 ± 1.20	40.01 ± 0.32**	44.73 ± 0.83

body of animals distinguish subcutaneous, intermuscular and internal adipose tissues. This largely determines its physicochemical properties. The quantity and quality of body fat of animals depend on their type, nutrition, and physiological state.

In studies, it was conducted research on changes in the physicochemical properties of subcutaneous and internal adipose tissues in carcasses of young cattle under the influence of various fat levels in haylage diets (table 4).

Table 4 - Physical and chemical indicators of adipose tissue of fattening bull-calves

Indicators	Group		
	I - Control	II - Experimental	III - Experimental
Melting temperature, °C			
subcutaneous adipose tissue	51.92 ± 3.90	55.05 ± 2.03	56.13 ± 1.80
internal adipose tissues	46.75 ± 1.79	47.18 ± 2.47	50.45 ± 0.61
Iodine value, g/100 g			
subcutaneous adipose tissue	54.92 ± 3.05	54.45 ± 3.68	50.06 ± 3.48
internal adipose tissues	38.91 ± 1.35	41.04 ± 2.57	39.26 ± 1.93
Acid number, mg KOH			
subcutaneous adipose tissue	1.16 ± 0.04	0.85 ± 0.16	0.79 ± 0.06**
internal adipose tissues	1.25 ± 0.07	1.18 ± 0.10	1.18 ± 0.09

The research results showed that different fat concentrations in the dry matter of the calves diet had a definite influence on the physicochemical properties of adipose tissue of carcasses.

The melting temperature of fat in carcasses of bull-calves of experimental groups has changed towards its increase. In subcutaneous fat of animals of group II, it was higher by 6.0%, and in group III, it was 8.1% higher compared to the group I of young bulls. Less significantly, the melting temperature increased in internal fat (by 0.9% and 7.9%). In this regard, in the experiments of N. Willey et al., it was found that after feeding the bulls with vegetable oil, their depot fat contained more stearic acid and less oleic acid than the bull-calves not received any oil additives. The authors suppose that this is due to the formation, absorption, and deposition of stearic acid, which increases the melting point of the fat, and stearate is formed in the rumen by complex hydrogenation of the C18-unsaturated fatty acids in the oil by microorganisms. At the same time, the determination of the iodine value confirmed that the unsaturated acids of edible oils were subjected to significant hydrogenation.

Iodine value, along with the indicator of the melting temperature, allows to judge the degree of unsaturation of fats. In the conducted studies, no significant effect of various fat levels in the dry matter of diets on the change of this indicator was found.

In case of a large amount of unsaturated fatty acids in the fat, its ability to self-oxidation enhances, resulting in the formation of dangerous oxidation products - peroxides and hydroperoxides. The use of fat supplements in diets promoted a decrease in the acid value in the subcutaneous fat of young bulls of the

group II by 26.7% and by 31.9% in carcasses of bulls of the group III compared to this indicator in the first group. A less significant effect of fat diets on the acid number was observed in the internal fat. In the II and III groups, the indicator under studies was lower only by 5.6%.

Feeding bull-calves with diets containing 5% of fat in the dry matter to a greater extent helps to increase slaughter indicators and increase protein content, fat in meat and its calorific value, improve water binding capacity of muscle tissue and increase fat deposition, herewith the acid number declines.

The data obtained in the course of tests show that with advancing fat content in the dry matter of diets of fattening young animals from groups II and III, the digestibility ($P<0.05-0.01$) of dry matter (by 2.43 and 0.39%) and organic matter (by 2.15 and 0.38%), crude protein (by 2.30 and 2.83%), crude fat (by 2.56 and 3.56%), cellulose (by 3.40 and 0, 23%) (table 5).

Table 5 – Coefficient of digestibility of feed nutrients

Nutrient	Group		
	I - Control	II - Experimental	III - Experimental
Dry matter	63.99±0.47	66.42±0.46*	64.38±0.40
Organic matter	66.72±0.58	68.87±0.49*	67.10±0.76
Protein	60.76±0.39	63.06±0.36*	63.59±0.44**
Fat	75.76±0.34	78.32±0.42**	79.32±0.32**
Cellulose	49.74±0.35	53.14±0.44**	49.97±0.78
Nitrogen-free extractive substances	84.50±0.57	84.96±0.65	83.06±0.67

The effectiveness of positive effect of the elevated fat levels in the diets of young stock from experimental groups on the digestibility of feed protein is confirmed by the nitrogen balance and a reliable ($P<0.05-0.01$) increase in retention rate in the body by 3.17-5.61% (table 6), caused by the strengthening assimilation processes in them, and, consequently, metabolic processes.

Table 6 – Use of nitrogen, g

Indicator	Group		
	I - Control	II - Experimental	III - Experimental
Received with forage, g	223.38±0.58	222.97±0.21	223.35±0.43
Allocated with feces, g	87.66±0.94	82.38±0.57*	81.32±0.96*
Digested, g	135.72±0.37	140.60±0.79*	142.03±0.53*
Allocated with urine, g	81.21±0.60	84.35±0.77*	84.46±0.84*
Retained in the body, g:	54.52±0.49	56.25±0.52*	57.58±0.34**
% of the received	24.41±0.26	25.22±0.25*	25.78±0.19*
% of the digested	40.17±0.46	40.02±0.53	40.53±0.65

With an increase in the fat level in the dry matter of the diets of young bulls, there is a significant ($P<0.05-0.01$) improvement in the digestibility of nitrogenous substances in the digestive tract (by 3.60-4.65%). Therefore, at optimizing the fat content in the diet, the nitrogen-saving effect is clearly manifested. Nitrogen is more efficiently used by the body of young animals for plastic purposes, which is consistent with an increase in their live weight (Table 1). In general, the most favorable effect on nitrogen absorption of fodder is provided by the fat level of the calves diets equal to 5%.

Metabolic disorders occur as a result of inaccuracy of feeding, keeping and economic use of animals. The imbalance in diets, even for several nutrients, can cause serious disturbances in the life activity of the whole organism, leading to a decrease in dairy productivity and a deterioration in the health status of cows. At the same time, changes caused by exposure to environmental factors, which include feeding, are reflected in the body primarily on the composition and parameters of the blood [10, 11].

All changes in the metabolism ongoing in the body of animals under the influence of their physiological state, age, disease, feeding and other factors are quite clearly reflected in hematological parameters. In this regard, a study was conducted on the effect of different fat levels in the dry matter of the diet on the state of lipid and nitrogen metabolism in fattened young cattle.

Blood is a kind of indicator reflecting the pattern of metabolism in the animal body. It is one of the most important systems playing an indispensable role in its life activity, it is a “mirror” in which all

changes in metabolic processes are clearly reflected, it predicts the appearance of the first, poorly-defined clinical symptoms of the disease [12].

All types of metabolism are closely related to each other and when the shift of one of the links of metabolism, any other is broken. Therefore, to ensure the productivity of bull-calves, it is necessary to monitor all the important indicators that most reflect all aspects of metabolism and the state of health of the animal.

In this connection, changes in the blood chemistry values characterizing lipid and protein metabolism were studied, with increasing fat levels in the dry matter of diets of the Holstein bull-calves.

It is known that the main lipidic components of blood are: neutral fats or triglycerides, phospholipids, cholesterol esters, free cholesterol and non-esterified fatty acids. The body uses lipids mainly as a source of energy for various metabolic processes. However, some lipids, especially cholesterol, phospholipids and a small portion of triglycerides perform plastic functions in the formation of membranes and structural components of cells.

Increase in the fat content in bull-calves has an effect on the increase in the lipid components level in their blood, which generally speaks for an improvement in the biochemical parameters characterizing lipid metabolism (figure 1).

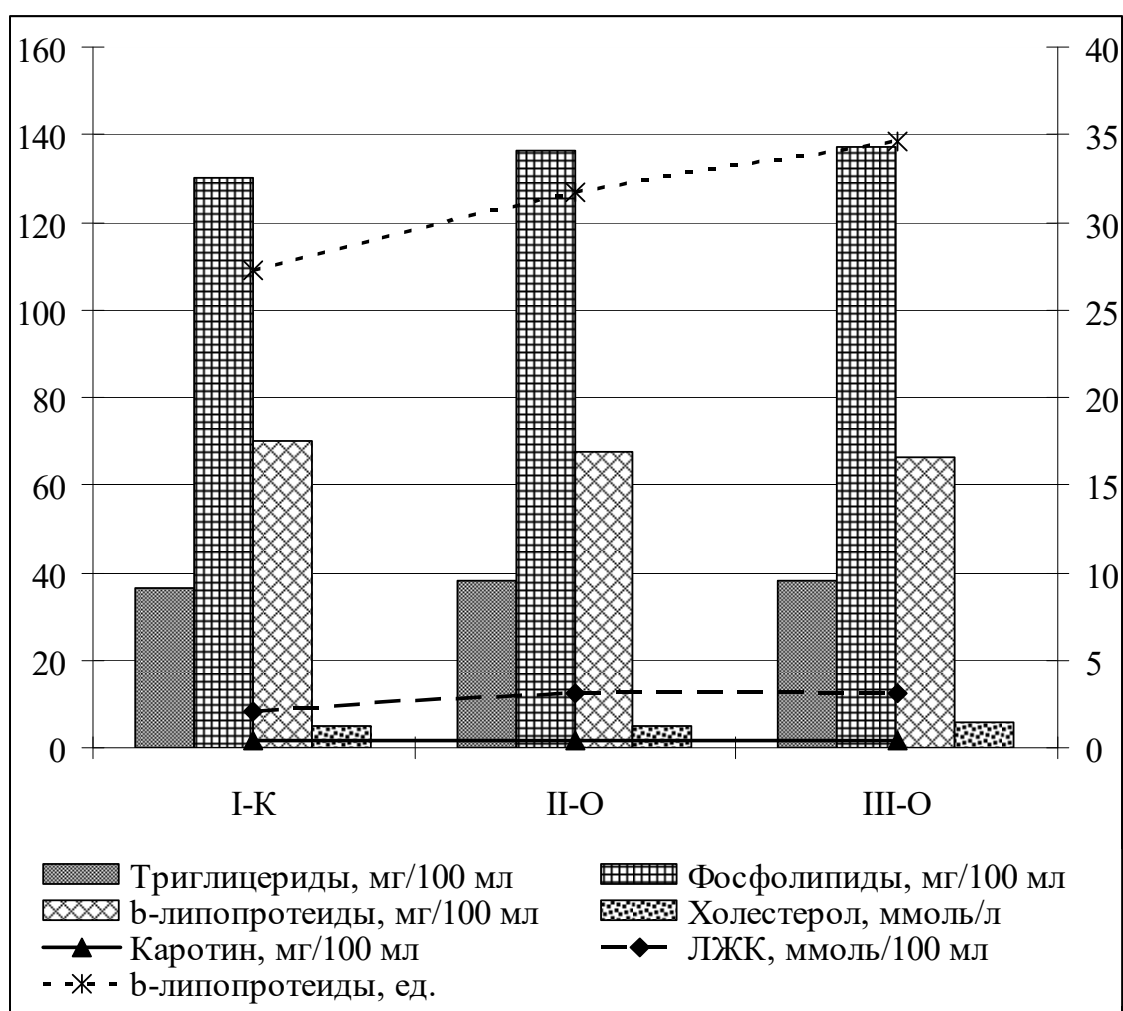


Figure 1 – Indicators of lipid metabolism in the blood of bull-calves

An increase of total lipids in the blood concentration (by 10.38–18.62%) and triglycerides (by 4.75%) indicates a positive effect of an adjustment of fat concentration in diets on the functional activity of liver, which synthesizes these substances.

Cholesterol enters the body of animals not only with fodder, also its significant amount is synthesized in the liver. Consequently, an increase in cholesterol concentration in blood of bulls of the group III by 14.20% compared to the control indicates an efficient functioning of the liver and improvement of metabolic processes in the body. Strengthening the absorption of VFA in the rumen was reflected in a significant increase ($P < 0.01$) of their content in the bulls' blood by 1.5-1.6 times.

Increasing the fat concentration in their diets had no significant effect on the β -lipoproteins level in their blood. In the blood serum of animals received elevated fat levels in diets, the content of carotene increases by 4.88 and 9.76%, which better provides the provitamin metabolism of the body.

Thus, with an increase of fat level in the diet of bulls to 5%, its impact on lipid metabolism is more obvious, which is suggested to be optimal.

An important indicator of body metabolism and blood condition is the proteins content and the protein fractions ratio. Serum proteins play a significant role in maintaining blood viscosity, colloid-oncotic pressure, in ensuring the transport of many substances. Elevating the fat level in the dry matter of the diet has some effect on the blood indicators of young bulls, which characterize nitrogen metabolism.

With an increase in fat concentration in the dry matter of the diets of bulls, the protein content in the blood serum grows (by 4.24-5.56%), including the albumin and globulin fractions (figure 2), it indicates the strengthening the protein synthesis in the liver of fattening young stock due to a significantly better ($P < 0.05-0.01$) digestibility of the protein of the consumed feed, nitrogen retention rate in the body ($P < 0.05$) and directly related to the level of protein concentration in the blood serum.

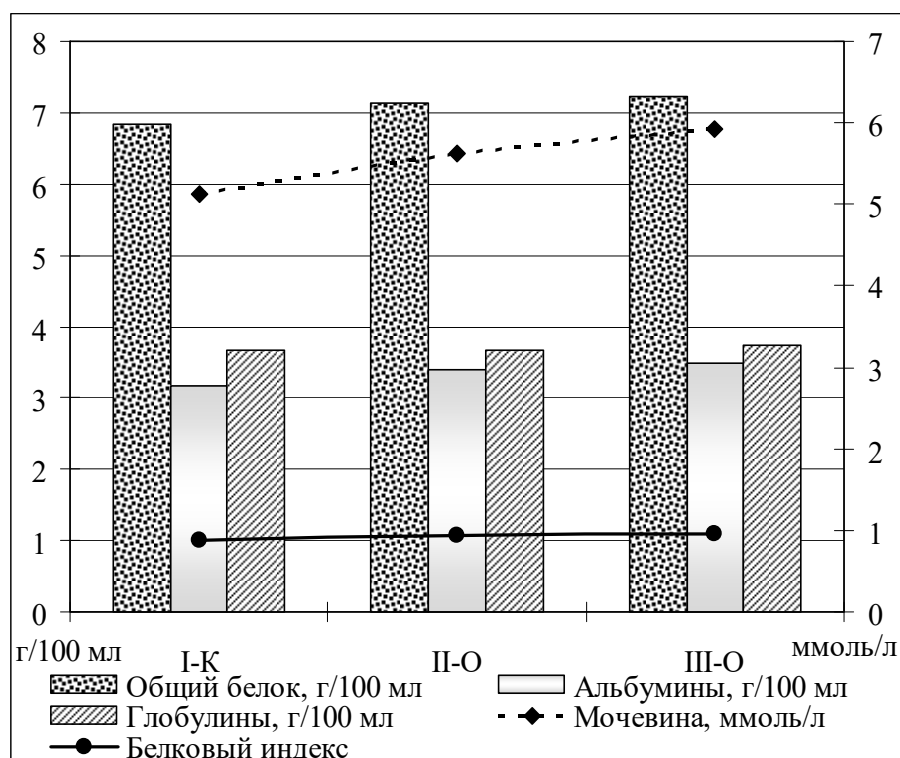


Figure 2 – Indicators of nitrogen metabolism in the blood of bull-calves

Increase of albumin in total protein (by 7.26-10.10%) shows the enhancement of assimilation processes that ensure the synthesis of specific tissue proteins and those serving as the body's amino acid reserve, which resulted in a more intense absolute and relative growth rate of bull-calves of the experimental groups (table 1).

The increase in the globulin fraction concentration (by 1.9%) in the blood of bulls of the group III was due to an increase in the γ -globulin content (by 3.47 and 12.50%). Lipoproteins are present in this fraction, therefore, an increase in the number of β -globulins is directly related to an increase in the fat level in diets and is coherent with an improvement of digestibility of fat and protein in diets.

An increase in the protein index in the blood serum (by 6.90–9.20%), due to an increase in the fat level in the bull-calves' diets, suggests a more efficient use of nitrogen feed and increased intensity of protein biosynthesis and protein metabolism. This is confirmed by a significant increase ($P < 0.05$) in the nitrogen retention rate in the body and is consistent with enhancing live weight gain (Table 1).

Thus, feeding of young animals for fattening with diets containing the optimal fat level in a dry matter provides a higher level of realization of the hereditary meat productivity, which is manifested:

- in increasing the slaughter yield (by 2.84%, $P < 0.05$), the protein and fat mass fractions in beef ($P < 0.001$), in increasing its calorific content and improving functional and technological properties - reducing the pH of meat by 2.29% and strengthening its water binding capacity;

- in increasing the intensity of lipid and protein metabolism, as evidenced by blood chemistry values: there is an enhancement of the concentration of VFA (1.6 times), total lipids (by 18.62%, $P < 0.05$), phospholipids (by 5.73 %, $P < 0.05$), triglycerides (by 4.75%), cholesterol (by 14.20%), urea (by 15.60%, $P < 0.05$), the total protein content, including albumin, globulin fractions and protein index (by 9.20%) characterizing the enhancing in the intensity of assimilation processes in the body of young animals, which is coherent with the increase in their live weight gain;

- in multiplying of the intensity of carbohydrate and mineral metabolism, expressed in an increase in glucose concentration (by 8.09%, $P < 0.05$) as an energy component in the blood of young bulls and inorganic phosphorus - by 10.26% used in the synthesis of nucleic acids and other substances.

Based on the results of scientific and economic experiments, complex physiological studies, in order to advance the usefulness and productive action of feeding at intensive fattening of young cattle with high productivity capacity, it is recommended to inject 5.0% of crude fat of the dry matter in the diet.

Conclusions. Feeding of young animals for fattening with diets containing the optimal fat level in a dry matter provides a higher level of realization of the hereditary meat productivity, which is manifested:

- in increasing the slaughter yield (by 2.84%, $P < 0.05$), the protein and fat mass fractions in beef ($P < 0.001$), in increasing its calorific content and improving functional and technological properties - reducing the pH of meat by 2.29% and strengthening its water binding capacity;

- in increasing the intensity of lipid and protein metabolism, as evidenced by blood chemistry values: there is an enhancement of the concentration of VFA (1.6 times), total lipids (by 18.62%, $P < 0.05$), phospholipids (by 5.73 %, $P < 0.05$), triglycerides (by 4.75%), cholesterol (by 14.20%), urea (by 15.60%, $P < 0.05$), the total protein content, including albumin, globulin fractions and protein index (by 9.20%) characterizing the enhancing in the intensity of assimilation processes in the body of young animals, which is coherent with the increase in their live weight gain.

Consequently, the obtained results convince us that bull-calves fed with a diet with 5% of fat per dry matter have higher meat productivity, beef obtained from them is characterized by the best quality indicators, which made it possible to consider this fat level as optimal.

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БҰҚАЛАР РАЦИОНЫНДА МАЙДЫҢ ӘРТҮРЛІ ДЕҢГЕЙЛЕРІНДЕГІ ӨНІМДІЛІГІНЕ ӘСЕРІ

Аннотация. Мал шаруашылығы өнімдерінің сапасын айқындайтын маңызды факторлардың бірі - оларды өндіру шарттары. Жануарлардың ет өнімділігі олардың толық қоректенуіне тікелей әсер етеді, бұл ретте денені қажетті қоректік заттармен қамтамасыз етеді. Липидтер жануарлардың толық тамақтануында маңызды. Дегенмен, бордақылау кезінде жас малдың липидті қоректенуінің көптеген мәселелері, оның өнім сапасына әсер етуі жеткілікті түрде ашылмаған.

Осыған байланысты бордақыланған бұзаудың рационында майдың деңгейін олардың ет өнімділігіне және сиыр етінің және союдың кейбір өнімдерінің сапалық көрсеткіштерінің артуы туралы зерттеулер жүргі-

зілді. 4 және 5% (II және III топтар) деңгейіндегі құнбағыс майы қосындылары бордақылаудағы бордақылау бұзауының рационасында құрғақ заттарға қатысты есептелді. Бақылау - құрғақ заттардың 3%-дық құрамы бойынша әдеттегі экономикалық рационды алған жануарлардың I тобы.

Зерттеулер көрсеткендей, бордақылау қышқылдары рационасында май деңгейінің өсуі ет өнімділігіне оң әсерін тигізді, олардың өсім қарқындылығының артуына, сиырдың көрсеткіштерін жақсартуға, сиыр етінің кейбір функционалдық және технологиялық қасиеттеріне және май тінінің физико-химиялық параметрлерін жақсартуға ықпал етті.

Майдың деңгейін оңтайландыру липидті және ақуызды алмасу процестерінің қарқындылығын арттыруға мүмкіндік берді, бұл жас жануарлар денесінде ассимиляция процестерінің өсуін сипаттайды, бұл олардың дене салмағының өсуіне байланысты.

Осыған байланысты, алынған нәтижелер құрғақ заттардың құрамында 5% май құрамымен рационамен тамақтандырылған бұқа етінің ет өнімділігі жоғары екендігін көрсетеді. Олардан жақсы сапа көрсеткіштерімен ерекшеленген сиыр еті, бұл май деңгейін оңтайлы деп санауға мүмкіндік берді.

Түйін сөздер: жоғары өнімді жануарлар, бұқалар, рационадағы май деңгейлері, ет өнімділігі, сиыр еті, субпродукт, майлы тіндері, химиялық құрамы, функционалдық және технологиялық қасиеттері, физикалық және химиялық параметрлері, липидті метаболизмі, ақуыз алмасу, оңтайлы май деңгейлері, сіңімділік.

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ПРОДУКТИВНОЕ ДЕЙСТВИЕ РАЗЛИЧНЫХ УРОВНЕЙ ЖИРА В РАЦИОНАХ БЫЧКОВ

Аннотация. Одним из важных факторов, определяющих качество продуктов животного происхождения, являются условия их производства. На мясную продуктивность животных оказывает непосредственное влияние их полноценное кормление, обеспечивающее организм всеми необходимыми питательными веществами. Важное значение в полноценном кормлении животных имеют липиды. Однако многие вопросы липидного питания молодняка крупного рогатого скота при откорме, связанные с его влиянием на качество продукции еще недостаточно раскрыты.

В связи с этим, проведены исследования в которых было изучено влияние повышения уровня жира в рационах бычков на откорме на их мясную продуктивность и ряд качественных показателей говядины и некоторых продуктов убоя. В рационы бычков, находящихся на откорме, вводились добавки подсолнечного масла до уровня 4 и 5 % (II и III группы) в расчете на сухое вещество. В качестве контроля служила I группа животных, получавшая обычный хозяйственный рацион с содержанием жира на уровне 3 % от сухого вещества.

Исследованиями установлено, что повышение уровня жира в рационах откармливаемых бычков оказало положительное влияние на мясную продуктивность, способствовало повышению интенсивности их роста, улучшению убойных показателей, химического состава и некоторых функционально-технологических свойств говядины и физико-химических показателей жировой ткани.

Оптимизация уровня жира в рационах способствовала повышению интенсивности процессов липидного и белкового обмена, характеризующих усиление ассимиляционных процессов в организме молодняка, что согласуется с увеличением прироста их живой массы.

В связи с этим, полученные результаты свидетельствует, что более высокую мясную продуктивность имели бычки, откормленные на рационе с содержанием 5 % жира в расчете на сухое вещество. От них получена говядина, которая характеризовалась лучшими качественными показателями, что позволило считать этот уровень жира оптимальным.

Ключевые слова: высокопродуктивные животные, бычки, уровень жира в рационе, мясная продуктивность, говядина, субпродукты, жировая ткань, химический состав, функционально-технологические свойства, физико-химические показатели, липидный обмен, белковый обмен, оптимальный уровень жира, переработка.

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REFERENCES

- [1] Kudryashov L.S. (2008). Physicochemical and biochemical basis for the production of meat and meat products. Moscow: DeLiprint. 160 p. (in Russ.).
- [2] Popova O.M., Giro T.M. (2012). Optimization of feed diets of livestock to improve the quality of raw meat. Meat industry. Moscow. № 1. p. 38-40. (in Russ.).
- [3] Antal J., Blago R., Bulla J., Sokol J. (1986). Growing young cattle; transl. from Slovak E.I. Ptak Moscow: Agropromizdat. 186 p. (in Russ.).
- [4] Batanov S., Krasnova O., Shakhova E., Safin R. (2009). Evaluation of the meat quality of black and white cattle. Dairy and beef cattle. Moscow. № 4. –p. 2-4.(in Russ.).
- [5] Maksimyuk N.N., Skopichev V.G. (2004). Animal feeding physiology. The theory of nutrition, feed intake, especially digestion. SPb: Lan - 256 p. (in Russ.).
- [6] Pykhtina L.A., Ulitko V.E., Desyatov O.A. (2018). Improving the efficiency of use of waste from technical production in the fattening of young cattle. Zootechnics. № 7. p. 13-17. (in Russ.).
- [7] Semenov V.G., Mudarisov R.M., Nikitin D.A. (2018). The meat quality of black-and-white bull-calves when using biological preparations of the prevention series. Modern scientific research: current issues, achievements and innovations in the AIC. Coll. of materials of the All-Russian Scientific Practical. Conf., dedicated to the 145th anniversary of the Academy. P. 157-162. (in Russ.).
- [8] Batanov S.D., Korepanov L.V. (2011). Meat productivity of purebred and crossbred bulls. Zootechnics. Moscow. № 6. p. 17-18.(in Russ.).
- [9] Rozhentsov A.L. et al. (2009). The need of cattle in fat. Topical issues of improving the technology of production and processing of agricultural products. Mosolovskie readings: Proceedings of the regional scientific-practical conference. Yoshkar-Ola: Mari st.univ. Pp. 163-165. (in Russ.).
- [10] Korchagin Yu.A. (2010). Biochemical studies of serum. Bulletin. Yaroslavl: ICS AIC of the Yaroslavl region. № 6. 12 p. (in Russ.).
- [11] Chabaev M.G., Tedtova V.V., Baeva Z.T., Kononenko S.I., Tarchokov T.T., Chopikashvili L.V. (2018). Effect of different adsorbent doses on the morphological and biochemical composition of blood of bull calves in detoxication of heavy metals. Journal of Pharmaceutical Sciences and Research. T. 10. Vol. 5. P. 1122-1124.
- [12] Baimukanov D.A., Pristupa V.N., Kolosov Yu.A., Donnik I.M., Torosyan D.S., Kolosov A.Yu., Orlova O.N., Yuldashbayev Yu.A., Chylbak-ool S.O. (2019). Improvement of breeding and productive traits of Kalmyk cattle breed // Bulletin of national academy of the Republic of Kazakhstan. Volume 1, Number 378 (2019), 128 – 145. <https://doi.org/10.32014/2019.2518-1467.51> ISSN 2518-1467 (Online), ISSN 1991-3494 (Print).

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AMERICAN, CHINESE AND RUSSIAN FACTORS IN INTERACTION OF CENTRAL AND SOUTH ASIAN STATES

Abstract. The paper aims at brief analytical consideration of ‘external powers’ factor as either true or false materialization of would-be scientific concept of the ‘New Great Game’ through the prism of South Asian states’ interests in view of their interaction with the republics of Central Asia. The research presented in the paper is performed on the basis of analysis of works and oral statements on this issue by Indian and Pakistani scholars and experts over the past quarter century. Taking into account a complex of historical-geographical and political-economic reasons, the main attention is paid to the role and place of states such as the United States of America, the People’s Republic of China and the Russian Federation. Through a brief sum-up of specific situations and examples, it is shown that for each of these three powers the representatives of India and Pakistan have virtually a full range of positive, neutral and negative theoretical calculations and practical experience that determine their final assessment of actual significance of ‘external factor’ in relations between their countries and Central Asian republics. In conclusion, it is argued that despite true-to-life presence of a number of features of the ‘New Great Game’ in Central Asian region, this phenomenon nevertheless did not receive its full materialization principally because of increasingly consolidated actual status of Central Asian states as subjects rather than objects of international relations.

Keywords: Central and South Asia, USA, China, Russia, ‘New Great Game’, geopolitics, security, integration initiatives.

Introduction. Numerous representatives of academic, business and ruling circles of Central and South Asian states conventionally specify the factor of external regional and global powers among the reasons that exert certain either positive or negative impact upon the features of interaction between these two regions.

At that, in the Central Asian republics as a rule it is merely ascertained that external powers (along with other countries that do not enjoy a full-fledged status of powers though have proven themselves as more or less reliable partners of these republics in any sphere, as well as ever-present international financial institutions and transnational corporations) in one way or another indeed influence or are able to influence and even interfere into the cooperation of separate states or entire regions of Central and South Asia. While representatives of South Asia – above all of India and Pakistan as its leading countries which in comparison with other states of their region are most actively involved into diverse relations with the republics of Central Asia – perceive the factor of external powers as playing crucial, sometimes critical role both for these republics and for their partners and neighbours in general.

Such an opinion is generated by a number of reasons of mostly exclusively but sometimes of simultaneously objective and subjective nature. Among the former, one can point to the colonial past of both regions, when their respective metropolises in one way or another were engaged into political and economic contacts of respectively Central Asian state formations and subsequently Soviet republics and British India; to the modern geopolitical alignment of forces over the global arena, within which there exists a dilemma of either unipolar or multipolar world, the issues of (non-)legitimacy and (non-)expediency of interfering into the internal affairs of sovereign states combined with the practice of military-political and economic alliances, subversion of ‘undesirable’ governments and implanting own values, etcetera. Among the reasons of subjective character, one should mention the views of representatives of

South Asia and the entire global community upon Central Asia as one of politically and economically – primarily in terms of raw materials – strategically significant regions of the world, and at the same time perception of states of this region as more objects rather than subjects of international geopolitical and geo-economic relations [for more details on this question see 1]. And no matter how true or erroneous these views and perceptions are, since the moment Central Asian republics gained their independence, they and their region in whole are viewed as a field for the ‘New Great Game’ (a term attributed to various authors that has been coined by the well-known analogy of the XIX century ‘Great Game’ in Central Asia between the Russian and the British Empires). Despite all the artificiality, in many respects even the absurdity of this term, it for numerous reasons is actively supported and logically developed by representatives not only of India, Pakistan and other foreign states, but also of the Central Asian republics themselves. And regardless of whether it is possible to talk about any particular Game or merely about a situation typical for many other regions and countries of the world, in any case it seems reasonable to reckon with the factor of external powers or at least not to ignore it.

At that, the list of powers directly or indirectly impacting the nature of interaction between India and Pakistan on one hand and the Central Asian republics on another invariably includes Russia (for historical, geographical, political and economic reasons), China (for the last three reasons, with the primacy of economic one) and the United States of America (for the last two reasons, with the prevalence of political one). Hence, it seems highly relevant to consider the views of representatives of South Asian side upon such an impact, taking into account their own experience of cooperation or rivalry with these three powers, and on this basis to draw an indirect conclusion about the place and role of such an ‘external’ factor in relations between the states of Central and South Asia.

Methods. As one can infer from the above-mentioned propositions, theoretically the would-be scientific hypothesis of the ‘New Great Game’ in Central Asia, as well as the concept of actual or formal sovereignty (that is, an antithesis of ‘either subject or object’ of international relations) with respect to all the parties under concern underlie the study summarized in this paper. Methodologically, the work is performed and its conclusions and results are obtained through the critical analysis (along with contrastive comparison with naturally existing reality) of numerous research and expert writings by representatives of two leading South Asian countries over the past quarter century.

Results and discussion. An analysis of numerous works and sayings by Indian and Pakistani authors written and expressed since the early 1990’s up to the very present moment allows to conclude the following.

A Factor of the US. An appraisal of US-Indian relations varies from extremely positive – a comprehensive rapprochement between the two states with India as a conductor of US interests in Central Asia, to extremely negative – in reality, even the US-China military alliance is more likely than the US-Indian one.

Regarding the first proposition, it should be noted that yet since the early 1990’s South Asian side is aware of the fact that its attempts to open “courting the West, especially the U.S., which appears to be replacing the former Soviet Union as its military and economic partner”, can alert Central Asian states [2, p. 75], especially if one takes into account subsequent actual highly probable participation of the West in creating situations of political instability in the countries of Central Asia (the ‘orange’ revolution in Kyrgyzstan, the Andijan events in Uzbekistan and the Zhanaozen events in Kazakhstan). With regard to the second statement, the following inference can be cited: “Visits of American leaders to India should not be considered as invectives against China, as some believe, but as no more than a kind of ‘seduction’ between the United States and India. In reality, India should not count on any significant benefits from cooperation with the United States. It has no chance to expect anything good from the United States at all, since they do not intend to provide anything to India. The United States has more than once betrayed India and never did anything for it gratuitously (unlike the former USSR) and in the way it appeared beneficial for India itself. India is already surrounded by the USA; this also threatens Russia. But, perhaps, the United States will not succeed in realizing its plans, since some of the Central Asian republics which the United States previously wished to rely upon, are again gradually drawn towards Russia. India and the Central Asian states must jointly fight the expansion of the United States in Asia” [3]. It is noteworthy that back in 2007, Indian expert A. Patnaik expressed a similar opinion on this issue: “Currently, the Central Asian states, seeing that the US’s goals are not to promote democratization, but to establish control over their natural resources, began to integrate against the US among themselves and with various regional

powers, including Russia and China; prospects for Kazakhstani-Indian political integration can be considered in the same context... We should strengthen the CICA and the SCO in order to prevent the US from penetrating the region and gain a foothold here. In historical terms, the United States came to the region not so long ago, and still does not have solid foundations for its activities here – and we should not provide them with such the foundations” [4].

As is known, the US-Pakistani relations in recent times, especially after 2001 are also considered as more and more ambiguous and causing more questions.

The purpose of this paper is not to select any point of view regarding the US relationship with the two main states of South Asia. However, on the basis of studying the opinions of various Indian experts and officials, including those not reflected in the printed works, one can conclude the following. India, as it used to do throughout the history of its independent existence, is carefully studying and evaluating all the proposals and projections of the United States concerning joint American-Indian penetration into Central Asia. And if these proposals turn out to be really profitable, it is possible that India will support them. Thus, India has indeed always supported activities of the United States in Central Asia aimed at preventing the spread of radical Islamic elements; however, to the same extent India supported similar activities of Russia and even China, since, first of all, it was interested in secure and secular nature of regimes in Central Asian republics. However, to date the opinion of Indian analysts regarding positive role of the United States in maintaining order and stability in Central Asia has somewhat changed. Thus, yet R. Dwivedi noted that though “it has been claimed that United States presence in Central Asia has played a positive role in neutralising extremist forces”, but at the same time Central Asian “Islamic figures and opposition leaders are receiving warm welcome in Washington” [5, pp. 417-418].

Moreover, knowing full well that the interests of the United States in Central Asia are closely related to their goal of achieving international hegemony, most Indian specialists examining the issues of South and Central Asian interaction are concerned about increasing US economic and political role in the Central Asian region; they fear that from this region the United States will begin to put pressure upon India itself. In this regard, Indian side’s dissatisfaction is caused, in particular, by position of the United States in the oil fields of Kazakhstan, since, in its opinion, it is not Russian or Chinese, but American oil companies that to the greatest extent prevent India from entering Kazakhstani hydrocarbon market. Moreover, according to the opinion of M. Haydar expressed as early as 2006, “if US succeeds in using energy resources as an instrument of its external policy it would be reducing India into vulnerable position” [6, p. 28].

In this regard, yet after the Central Asian states provided the United States with various favourable conditions for waging war against a hotbed of terrorism in Afghanistan in the early 2000’s, cautious warnings about this circumstance began to appear in the researches by Indian authors. At the same time, Indian experts had little doubt that “the withdrawal of the US troops from Afghanistan would result in dilution of the US influence in Central Asia” [7]. And when the US position in the region actually began to weaken, it was greeted by many in India with obvious relief and even enthusiasm. And although in general Indians still support American participation in Afghan affairs, their disenchantment with the place and role of the United States itself in the Central Asian mega-region is increasing: “the US has a bad hand in this [Afghan – Ye.R.] game, a loser whether it stays or goes” [8].

India’s dissatisfaction is also caused by the US attempts to involve Central Asian states in a standoff with Iran. In addition, the Indian side is also displeased with the fact that the US strongly encourages the integration of the Central Asian republics into international political and financial organizations under control of Washington. As active member and partner of such organizations, India itself does not accept any dominance and dictate of individual states and does not want this dictate to spread to the Central Asian republics as its ‘extended neighbours’.

It is also important that at present, the United States is compelled to intensify on a long-term basis its military-political presence in Southeast Asia due to the risk of giving up its positions in that region to China. India also considers the region of Southeast Asia as one of the immediate spheres of its interests. Some Indian researchers are concerned about the penetration of the United States ‘under the guise of fighting terrorism’ even in Nepal and Sri Lanka being within the natural sphere of India’s own influence. And if in these regions Indian and American interests come into mutual contradiction, then India is unlikely to agree to assist in advancing US interests in Central Asia. Taking into account that Indian side offers its assistance in lobbying Central Asian interests in Southeast Asia, it has an additional incentive to

firmly establish itself in that region at the junction of the Indian and Pacific Oceans and to minimize US influence here. In addition, the establishment of close contacts between India and the states of Southeast Asia can be viewed as its trump card in relations with Central Asia based on religious factor, since a number of countries in Southeast Asia claim leadership in the Muslim world in opposition to the countries of the Middle East, which Pakistan is traditionally focused on.

On the whole, it appears that possible penetration of the United States into Central Asia mediated by India will take into consideration and meet the interests of Central Asian states to a much greater degree in comparison with direct penetration of the United States. India is proud of its foreign policy that is not dependent on anyone, and even for the sake of productive relations with the United States it will not give up its image of politically independent state. Therefore, the US intention to use India as an assistant in promoting American interests in Central Asia does not mean that India will wish to play the role of such an assistant. As a result, all this in turn determines general (barring all described particular cases) not very obvious anxiety of India about the US influence in the Central Asian region.

And attempts by the US to penetrate into Central Asia with the help of Pakistan will be too visible to the latter, and certainly will unambiguously evoke negative response. This only circumstance makes them unlikely; such a probability becomes even smaller if one considers that Pakistan is not coping with the 'task' of the US regarding Afghanistan [see, for example, 9, p. 704], or wants to carry it out in a way that benefits Pakistan itself. In this regard, one should note the position of Pakistan which has been formed quite long ago and even more shaped after the events of September 11, 2001. As many Pakistani authors point out, there is a serious danger that the full-fledged involvement of Pakistan into the US fight against terrorism will jeopardize its strategic goals in Central Asia, and that Pakistan will thus lose much of what it has achieved through joint initiatives with other regional powers. Moreover, Pakistani researchers are increasingly noting that the United States has made serious efforts to use Turkey and India to divert the Central Asian republics from Islamic fundamentalism spread by the so-called Iran-Pakistan axis; Pakistan, therefore, accuses the US not only of playing Indian-Pakistani contradictions, but also of trying to split Economic Cooperation Organisation (ECO) in its goals and weaken Pakistan's positions in Central Asia.

In other words, although theoretically there indeed exists probability of South Asia playing a role of vehicle of US interests in the Central Asian region, but it does not exceed the probability of the same role played by any other vehicle state(s), and is generally one of the minimal threats of such nature. Thus, the role of the US factor in relations between the countries of Central and South Asia is perceivable, but is in no way decisively significant.

A Factor of China. As yet in 2004 Indian expert P. Stobdan neutrally noted, "if India's policy guidelines for relations with Uzbekistan, Tajikistan and Turkmenistan have relevance for its Afghan policy, the guidelines for Tajikistan, Kyrgyzstan and Kazakhstan should also include its China policy" [10, pp. 44-45]. After almost 15 years, Indian researcher M.S. Hussain explicitly pointed to the avoidance of usage of Central Asian region by two India's arch rivals – Pakistan and China – in the list of key Indian interests [11, p. 118]. A. Bhattacharya also noted that "there is no real bonhomie between India and China, and there can never be, because according to Confucian thought, there cannot be two tigers residing on a single mountain"; on the contrary, India should strive turn to all possible advantages from China's problems and weaknesses [12]. However, in general regarding the Indo-Chinese relations in Central Asia, it can be said that their existing political confrontation is combined here with a noticeable actual and potential partnership.

The first one is likely to escalate, since the Central Asian republics themselves almost openly talk about their intentions to use India as a counterbalance to China [see, e.g.: 13, p. 102; 14]. In India it is believed that the growing influence of China in Central Asia worries the whole world and not just India, especially since China is trying to apply to the Central Asian republics the same strategy that it applied to Pakistan and Myanmar as India's closest neighbours. And in general neutrally and in some ways even positively assessing the Chinese Belt and Road Initiative (BRI), the Indian side expresses concerns not only in relation to its own interests, but also to the interests of Central Asian republics. "The BRI promises the Central Asian region's integration with a new and multifaceted transportation network, and, thus, connecting it to distant countries and markets. It is also viewed as changing Central Asia from a land-locked to a transit region and, thus, creating a new direction in its development". However, this initiative "is not free from China's geostrategic and political interests... China is flexing its economic muscles with

an aim to... expand its political clout as well” [15, pp. 141, 144]. This, of course, cannot but alarm India (as cannot but gladden Pakistan which by many parameters is included by China into this initiative). Though, it is quite remarkable that the Indian side sees no interest in supporting the US campaign against the Belt and Road Initiative of China.

At the same time, India and China also have common political views upon many problems that in one way or another affect the Central Asian region, including Islamic radicalism, terrorism, drug trafficking, etc. And although the Indian-Chinese differences are well known within the frameworks of the SCO (so that in this organization India prefers to rely on Russia), but on the other hand, India and China are equally concerned about security issues associated with a certain degree of presence of NATO and other Western forces in Central Asia.

In any case, it should be emphasized that India considers the presence of Chinese factor in the Central Asian region mainly and sometimes exclusively from an economic point of view [see, for example, 7]. Indeed, China has in no way prevented expansion and deepening of political interaction of India with the states of this region, and only in economic aspect objectively tried to prevent Indian big business from penetration and consolidation here. However, in the geo-economic aspect, India can in one way or another interest China in cooperation in Central Asia, giving it in exchange areas of its own economic influence in other regions of the world. Moreover, work in this area has already begun. For example, in recent years, China, albeit too inactively, has been considering India’s proposal for cooperation in Chinese-owned Kazakhstani oil fields in exchange for similar cooperation in the Indian hydrocarbon fields in Sudan and Colombia.

Apparently, the Indo-Chinese geopolitical and geo-economic interaction in Central Asia will take place either in areas where same cooperation between them already exists in other regions of the world, or where Indian and Chinese interests do not overlap. For example, if it would be more profitable for China to offer low-level technologies to Central Asian states, then India will be able (and perhaps even forced) to share with them higher level technologies, which in any case will be beneficial for the Central Asian republics.

For Pakistan, the Chinese factor in Central Asia is clearly a positive thing, although it has long been overshadowed by Chinese accusations to Pakistan of spiritual nourishment, preparation and financing of activities of Muslim separatists in Eastern Turkestan [see, e.g., 9, p. 707]. What is more, it is China’s dissatisfaction with Pakistan’s pro-Islamic policy that gives Indian authors the opportunity to argue that India, the republics of Central Asia and China have the same views on many significant issues, in particular, economic development, the expansion of social and cultural rights, the threats posed by drugs and weapons trafficking, cross-border terrorism, religious extremism and ethno-religious separatism. However, it should be noted that Pakistani authors themselves are sceptical of India’s hopes of playing on the alleged Chinese-Pakistani contradictions, regarding these hopes as nothing more than “desired given off as valid” [see, for instance, 16]. Though, certainly, cooperation of Pakistan and China through the Central Asian region per se should not be viewed purely in a negative aspect.

A Factor of Russia. The role and place of Russia in the Central Asian region and the projection of this role upon cooperation of Central and South Asia has always been of great importance for both India and Pakistan, true, with their opposite attitude to this circumstance.

Despite occasional sporadic contradictions between India and Russia, these countries can without exaggeration be viewed as representatives of one side on the world arena and at any regional level that, in principle, eliminates any need for any analysis of their interactional options. According to the former Prime Minister of India M. Singh, the Indo-Russian relations are an important factor in creating a safe and stable multipolar world [17, p. 2] with all the ensuing consequences.

Hence, it is not surprising that many Indian researchers positively perceive the Eurasian Economic Union (EEU) in which, as they do not doubt, Russia plays a leading role (although Kazakhstani president is clearly acknowledged as its ideologist). Moreover, some representatives of India are quite easy about Russian-Chinese alliance in the Central Asian region as more efficient and generally successful alternative to the United States. “Leading powers such as the USA, the People’s Republic of China and the European Union established their presence in Eurasia, while the Russian Federation was keen to restore its influence in the region... In the second decade of the present century, Russia and China have firmly established their strategic partnership and are the leading actors on the Eurasian scene... Russian experts have put forward

the idea of 'Greater Eurasia' [embodied in the EEU – Ye.R.], whereas China has put forward the idea of 'Greater Eurasian Partnership' [manifested in the New Silk Road concept – Ye.R.]... Incidentally, these projects were initiated after President Barack Obama announced the withdrawal of Western Coalition Forces by 2014. The long-drawn war on terror did not achieve much but left behind a resurgent insurgency. It was against this backdrop that President Vladimir Putin launched the EEU" [19, pp. 30-31].

Many researchers from the Indian side welcome and even consider to some extent necessary the Russian participation in the affairs of Central Asian republics and in the latter's cooperation with the states of South Asia. Moreover, there are even opinions that despite all the declared multi-vector nature of the Central Asian states, they continue to go hand in hand with Russia in their foreign policy [see, for example, 18]. Some Indian authors at all consider Russia to be the natural 'responsible power' for events in the former Soviet Central Asia and a 'comprehensive guarantor' for the Central Asian region; in this regard, it is often proposed for India to interact with this region, in particular, in the field of security, only through interaction with Russia.

For Pakistan, according to statements by representatives of its ruling circles, at present Russia is a country with which its relations are realistic, businesslike, constructive, comfortable and correct, though not always sincerely warm. These official provisions, however, have virtually no effect on the position of Pakistan in Central Asia, not strengthening and not weakening it. However, Russia itself, while generally welcoming India's potential and actual multisided presence in the Central Asian region, tries to possibly distance Pakistan from participation in Central Asian affairs, at least in the political sphere, both by itself and as a conductor of interests of the West and China.

At that, according to the Indian side, Central Asia may acquire a special ambiguous value for India in the event of a sharp improvement in Russian-Pakistani relations. The trends towards such improvement are currently visible, although mainly in the economic sphere. Moreover, some representatives of India are of the opinion that "Russia presumably in deference to China or out to spite India for moving closer to the United States is forging a strategic partnership with Pakistan. However, it is a Russian strategic gamble and the longevity of this new-found Russian embrace of Pakistan is doubtful" [20].

Pakistani authors themselves, paying tribute to Russia for economic assistance through indirect implementation of projects within the China-Pakistan economic corridor, and like the Indians recognizing Russia's leading role in ensuring full-scale security in the Central Asian region [see, e.g., 21, p. 4], yet objectively put China on the first place in the list of their own both political and economic partners, including these in Central Asia [see, for example, 22]. It is clear that all this is very comfortable for India from the point of view of its versatile alliance with Russia, including within the Central Asian space.

Concluding remarks. Thus, the role of external powers in interaction of states of Central and South Asia has certain but not decisive significance. It seems that in this regard, India will be most interested in that the Central Asian states as soon as possible acquire the status of real subjects rather than objects of regional and world politics in order they could likely to India defend their own interests in the face of world powers. In the interests of Pakistan, which failed to play either its historical-ethnic, Islamic or the ECO cards in relation to Central Asia, the main priority will be not so much to multiply but first of all, to preserve everything already acquired in this region. At the same time, both for India and Pakistan, neither the United States, nor the Russian Federation, nor even the People's Republic of China are, at least politically, a serious hindrance or a tangible advantage in developing their own relations with the states of Central Asia – to a large extent because the latter have already entered the world arena as full-fledged subjects of geopolitics and cannot be viewed in a serious 'linkage' to the interests of any world power. As N. Joshi and K. Kumari have reasonably noted in this connection, "at present, the interplay among the major powers has reached a levelling stage with their interests well balanced. While attempts by Russia and China to give a thrust to their regional initiatives are going on, the uncertainty in Afghanistan has kept the USA engaged. The success of these initiatives, however, depends on the response of the CARs and their willingness to cooperate" [19, p. 32].

In other words, the influence of the factor of powers upon the development of events in the Central Asian region and its relations with South Asia requires constant due attention, but simultaneous periodic variability, estimating inconsistency and in general insufficient elaboration, fixedness and meaningfulness of this factor proves the presence of theory of the 'New Great Game' in Central Asia but the absence of its actual practical manifestation. And this, in turn, is one of the positive moments in terms of external and internal security of Central Asian states.

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ОРТАЛЫҚ ПЕН ОҢТҮСТІК АЗИЯ МЕМЛЕКЕТТЕРІНІҢ ӘРЕКЕТТЕСУІНДЕ АМЕРИКА, ҚЫТАЙ ЖӘНЕ РЕСЕЙ ФАКТОРЛАРЫ

Аннотация. Мақала «сыртқы күштердік (астам державалардық)» факторын Орталық Азия республикаларымен өзара әрекеттесу шеңберінде Оңтүстік Азия мемлекеттерінің мүдделері тұрғысынан «Жаңа Үлкен ойын» деген шартты түрде ғылыми тұжырымдаманың шынайы немесе жалған жүзеге асырылуы ретінде талдамалы қарастыруды алдына мақсат етіп қойған. Мақалада көрініс тапқан зерттеу осы мәселені арналған соңғы ширек ғасырдағы үнділік және пакистандық зерттеушілердің мен сарапшылардың жұмыстарын және айтқан пікірлерін негізінде жүргізілді. Тарихи-географиялық және саяси-экономикалық себептерді назарға ала отырып, Орталық және Оңтүстік Азия мемлекеттерінің өзара әрекеттесуінде Америка Құрама Штаттарының, Қытай Халық Республикасының және Ресей Федерациясының рөлін мен орнын басты зейін салылады. Нақты жағдайларды мен мысалдарды қысқаша талдау арқылы осы үш мемлекеттерге қарай Үндістан мен Пәкістан өкілдері арасында олардың елдерінің Орталық Азия республикаларымен қатынастарында «сыртқы фактордың» ақиқат маңыздылығын бағалауға ықпал ететін оң, бейтарап және жағымсыз теориялық ұғымдардың мен практикалық тәжірибенің толық ауқымы бар деп көрсетілген. Тұжырымда Орталық Азия аймағында «Үлкен ойынның» бірнеше белгілерінің дәлелді болуына қарамастан, бұл құбылыс Орталық Азия мемлекеттерінің халықаралық қатынастарындағы объектілер емес, субъектілер ретінде барынша бекіте түсілетін нақты мәртебесі себебінен бүтіндей жүзеге асырылмады деген қорытынды жасалады.

Түйін сөздер: Орталық және Оңтүстік Азия, АҚШ, Қытай, Ресей, «Жаңа Үлкен ойын», геосаясат, қауіпсіздік, интеграциялық бастамалар.

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АМЕРИКАНСКИЙ, КИТАЙСКИЙ И РОССИЙСКИЙ ФАКТОРЫ ВО ВЗАИМОДЕЙСТВИИ СТРАН ЦЕНТРАЛЬНОЙ И ЮЖНОЙ АЗИИ

Аннотация. Статья ставит своей целью краткое аналитическое рассмотрение фактора «внешних держав» как истинной или ложной реализации околонаучной концепции «Новой большой игры» через призму интересов южноазиатских государств в рамках их взаимодействия с республиками Центральной Азии. Отраженное в статье исследование проведено на основе анализа посвященных данной проблеме трудов и высказываний индийских и пакистанских исследователей и экспертов за последние четверть века. С учетом комплекса историко-географических и политико-экономических причин, основное внимание уделено роли и месту во взаимодействии Центральной и Южной Азии таких государств как Соединенные Штаты Америки, Китайская Народная Республика и Российская Федерация. Путем краткого анализа конкретных ситуаций и примеров показано, что применительно к каждой из указанных держав у представителей Индии и Пакистана имеется практически полный спектр положительных, нейтральных и отрицательных теоретических выкладок и практического опыта, влияющих на оценку ими реальной значимости «внешнего фактора» в отношениях их стран с центральноазиатскими республиками. В завершение делается вывод о том, что, несмотря на объективное наличие ряда признаков Большой игры в центральноазиатском регионе, этот феномен все же не получил здесь своей полной реализации в первую очередь в силу все более закрепляющегося фактического статуса государств Центральной Азии как скорее субъектов нежели объектов международных отношений.

Ключевые слова: Центральная и Южная Азия, США, Китай, Россия, «Новая большая игра», геополитика, безопасность, интеграционные инициативы.

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REFERENCES

- [1] Rudenko, Ye.I. (2018) Misperception between the States of Central and South Asia as a 'Soft power' and Information Security Issue. *News of the National Academy of Sciences of the Republic of Kazakhstan, Series of Social Sciences and Humanities*, 2018(6): 241-250. ISSN 2224-5294. <https://doi.org/10.32014/2018.2224-5294.60>
- [2] Nuri, M.H. (1992-1993) *India and Central Asia: Past, Present and Future*. *Regional Studies*, 11(1): 69-95.
- [3] Muthu Kumar, Bh.R. (2019) From author's personal online interview with Bharat Raj Muthu Kumar, former joint secretary of the Ministry of Foreign Affairs of the Republic of India, former Ambassador Extraordinary and Plenipotentiary of the Republic of India to the Republic of Tajikistan, the Republic of Belarus, the Republic of Lithuania and the Republic of Azerbaijan. January 22.
- [4] Patnaik, Ajay (2007) Speech at the Conference dedicated to the 15th anniversary of establishment of diplomatic relations between the Republic of India and the Republic of Kazakhstan. Almaty, February 28.
- [5] Dwivedi, R. (2006) Religious Extremism in Ferghana Valley. *Strategic Analysis*, 30(2): 403-423.
- [6] Haidar, M. (2006) Central Asia – Some Reflection. In: M.A.Kaw, A.A.Banday (Eds.) *Central Asia: Introspection*. Srinagar: University of Kashmir, 1-28.
- [7] Gupta, A. (2013) India and Central Asia: Need for a Pro-Active Approach, October 14, https://idsa.in/policybrief/IndiaandCentralAsia_agupta_141013 (accessed April 19, 2019).
- [8] Rath, S.K. (2019) A new era of chaos in Afghanistan. *Fountainink*, 8(5), <https://fountainink.in/essay/a-new-era-of-chaos-in-afghanistan> (accessed April 28, 2019).
- [9] Baral, J.K. (2013) The Afghan Game: Interests and Moves. *Strategic Analysis*, 37(6): 700-715. DOI: 10.1080/09700161.2013.847038
- [10] Stobdan, P. (2004) Strategic Emergence of Central Asia – Implications for Indian Ocean States. *Journal of Indian Ocean Studies*, 12(1): 30-49.
- [11] Hussain, M.S. (2017) Over Two Decades of India-Central Asian Relations: An Appraisal. *FPRC Area Studies on Central Asia*, <http://fprc.in/Central-Asia.pdf>, 117-126 (accessed February 12, 2018).
- [12] Bhattacharya, A. (2018) China's vulnerability, India's opportunity, <https://idsa.in/idsacomments/china-vulnerability-india-opportunity-abhattacharya-27-0818> (accessed April 3, 2019).
- [13] Arya, N.K., Kumari, D. (2017) Energy Deficit and Search for India's Energy Security in Central Asia. *FPRC Area Studies on Central Asia*, <http://fprc.in/Central-Asia.pdf>, 101-116 (accessed February 12, 2018).
- [14] Chaudhury, D.R. (2018) India and China New Players in Central Asia's 'Great Game'. *The Economic Times*, July 12, <https://economictimes.indiatimes.com/news/defence/india-china-new-players-in-central-asias-great-game/articleshow/60905273.cms> (accessed March 31, 2019).
- [15] Poonam, M. (2018) Connectivity: A Major Constraint in India's Engagement with Central Asian Republics. *Air Power Journal*, 13(2): 137-158.
- [16] Rawan, B., Hussain, Sh., and Khurshid, A. (2018) Media Framing and Foreign Policy: A Case Study of the Coverage of Sino-Pak Relations in Global Media. *The Dialogue*, XIII(3): 285-294.
- [17] External Publicity Division, Ministry of External Affairs (2005) Visit of Prime Minister Dr. Manmohan Singh to Russia. New Delhi: Government of India, December 4-7.
- [18] Kundu, N.D. (2016) India And Central Asia: Friendly Interactions, <http://valdaiclub.com/a/highlights/india-and-central-asia-friendly-interactions/> (accessed April 12, 2019).
- [19] Joshi, N., Kumari, K. (2019) Understanding Central Asia's Security and Economic Interests. *India Quarterly*, 75(1): 29-42. DOI: 10.1177/0974928418821474.
- [20] Kapila, S. (2015) Russia-China Strategic Nexus: How Strategic? *Eurasia Review*, October 6, <https://www.eurasiareview.com/06102015-russia-china-strategic-nexus-how-strategic-analysis/> (accessed April 8, 2019).
- [21] Khalil, J., Khan, W., and Khan T. (2016) Central Asian Republics' Relations with its Neighbors and the US. *Journal of Management Info*, 3(4): 4-6. DOI: 10.31580/jmi.v12i1.64.
- [22] Case Study: CIS – Corridor to Energy (2019) *Deugro Pakistan*, February 7.

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ORGANIZATION OF SAFE MANAGEMENT OF FIRE OPERATIONS ON GAS PIPELINES

Abstract. The article discusses the issues of safe operations on the main gas pipelines of the Republic of Kazakhstan, which, as a result of deterioration of pipelines main part and their active susceptibility to stress corrosion cracking, require repair work. Considered new approaches of repair work organization by open fire using. It has been analyzed that the application of these measures in practice will ensure proper organizational planning and technical training of personnel, and effective provision of necessary level safety for hot work. It was concluded that it is necessary to introduce safety increasing measures during fire work on gas pipelines, it will prevent possible disasters, fires, destruction and human losses due to explosions during repair work on gas pipelines, as well as reduce damaging factors affecting workers health. It is shown that introduction of the named above measures helps to prevent disasters, fires, destruction and loss of life as a result of explosions during gas pipelines repair, as well as damaging factors reduction that affect workers health during these types of work.

Key words: gas pipeline, accident rate, industrial safety, in-line diagnostics, hot work, fire work, safety control stand, instructional cards, fires, explosions, pipe wear, corrosion.

Introduction. The development of gas industry leads to the need to improve gas pipelines operation reliability in order to supply planned products to end users. The main task during gas transportation is to ensure reliable operation of gas pipelines due to implementation of a set of planned measures and repair work. This paper discusses the main hazards arising from fireworks, the methods for their safe handling, as well as the requirements regulated by legislation in the industrial safety field.

The article also describes the use of the stand for comprehensive and continuous monitoring of in-line space gas content, as well as provides regulation of inside sealing devices pressure of disconnected or removed for repair part of gas pipeline.

At oil and gas facilities, every third event occurs as a result of personnel erroneous actions, due to violations of organization and production of repair work requirements. In order to increase the awareness of workers and a more complete study of industrial safety and labor protection requirements, the hypothesis of using instructional cards as a type of production instructions is put forward.

Target setting. In the view of pipeline systems development and implementation of measures and with purpose to increase the productivity of hot works, it is more relevant to provide safe working conditions and reducing the loss of transported natural raw materials during the operation of trunk pipelines [1, 2]. In this paper, was considered the one of possible ways to achieve goals and objectives by increasing labor productivity and reduction values of harmful emissions of gases into the environment to minimum.

According to industry regulations and regulations for hot work on the linear part of gas pipeline, these types of work are allowed to be carried out only after a pressure of 100 to 500 Pa is set in it [3, 4].

Reduced pressure limits or completely disables transportation of product through the pipeline, as a result of which gas pipeline may be idle for a long time. For example, during cutting and replacing a

section of gas pipeline, the linear section is idle for an average of 18-20 hours. Also, the fireworks duration is affected by the presence of a significant probability of accidents, which also leads to a reduction of work productivity.

Information about accidents on the main gas pipeline of the Republic of Kazakhstan. During working on gas pipelines, as well as at other hazardous production facilities (HPF), there are risks of accidents, injuries, incidents. One of the most important tasks of industrial safety is to reduce the likelihood of these events.

Data analysis of main systems of gas pipelines suggests that the main part of gas distribution system of the Republic of Kazakhstan was built in the 70-80s of the last century, as a result of which at present gas pipeline systems are characterized by a high proportion of networks requiring repairs (54%) [5, 6].

Significant deterioration of pipeline system adversely affects the accident rate on hazardous production facilities, including the state of industrial safety.

According to information on accidents on main gas pipelines of the Republic of Kazakhstan, accidents at these facilities mainly occurred due to external and internal corrosion, construction and installation works defects, as well as mechanical damage [7, 8].

In order to eliminate the main accident factors, are planned simulative measures to industrial enterprises to modernize and introduce automated tools, as well as to improve the industrial safety regulatory framework according to modern standards and international technological requirements [9, 10].

The article provides a comparative analysis of fundamentals of industrial safety in the Russian Federation and the Republic of Kazakhstan (Federal Law of July 21, 1997 No. 116-FL "On Industrial Safety of Hazardous Production Facilities" and the Law of the Republic of Kazakhstan of April 11, 2014 No. 188-V 3PK " On civil protection "). As a result of the analysis was revealed the similarity of main directions of ensuring industrial safety on HPFs.

However, there are differences related to division into hazard classes, licensing, as well as the frequency of inspections of HPF. Both countries are working on optimization of control functions, improvement of regulatory and legal regulation of industrial safety at supervised facilities, including using a scientifically-based risk-oriented approach.

For two states, the concept of "increased risk work" is common. In the Republic of Kazakhstan, such works, as well as in the Russian Federation, include repair work on main gas pipelines.

One of the main areas of safety providing during repair work on gas pipelines is timely technical diagnostics.

Methods of repair work on gas pipelines. There are many methods of non-destructive testing: acoustic, thermoelectric, radioscopic, powder, and others. Currently, widespread use of in-line diagnostics based on ultrasound and magnetic methods [11, 12].

These methods of diagnostics have the highest sensitivity and resolution for detecting defects on main gas pipelines, however, there are certain drawbacks inherent in ultrasonic and magnetic methods of in-line diagnostics.

The disadvantages of ultrasonic method of in-line diagnostics are, for example, the contamination of significant volumes of water necessary to ensure acoustic contact, and negative effects of magnetic method such as occurrence of residual magnetization of the pipeline material after the diagnosis [13, 14].

Next step after inspection and assessment of pipeline condition on main gas pipeline linear part is repairs, which are caused by the need to take preventive or technical measures aimed at full or partial restoration of pipeline linear part according to design characteristics [15, 16].

Consider one of the most dangerous types of repair work, the work of increased danger - hot work.

According to [3], hot work is a technological operation performed by using open fire, resulting in sparking and heating of pipeline to high temperatures, followed by ignition of gases, materials and structures.

As a result, the hot works on gas pipelines must be carried out in a certain sequence and in accordance with the established requirements. Violation or untimely execution of a specific type of operation can cause incidents, accidents, and lead to fatal consequences.

Before hot work performing must be carried out some preparation, including organization of working area, gas equipment and the linear section of main gas pipeline to ensure safe working conditions. The main documents according to which pipeline is being prepared for hot work are work permit; plan of organization and work; documentation describing the technical condition and reliability of technological equipment and gas pipeline; report on diagnostic results.

During hot works there is a high probability of accidents associated with fuel ignition and further fire development. This is because hot work associated with the use of open fire and formation of sparks, which flying in the form of splashes of molten metal [17]. According to official data, 30% of fires that occurred on main pipelines are caused by a violation of safety rules [1], so it is necessary to solve the problem of improving industrial safety in this area.

For this purpose, are proposed measures that will reduce the risk of emergencies and production and human victims.

Measures to improve the safe of fire work on main gas pipelines. The dynamics of modern development of welding processes significantly depends on introduction of new high-tech automated welding process and equipment, which will significantly improve the quality of welded joints, as well as the pace of repairs. According to mentioned above, in order to ensure the safety of hot work on gas pipelines, the authors of the article proposed to carry out welding work by using automatic welding with self-shielded cored wire.

Due to the provision of a high deposition rate, the absence of the mandatory use of protective gases, certain selected flux elements combinations, as well as the presence of alloying additives, self-shielding wires have become increasingly prevalent during welding.

One of the installations for automatic welding with self-shielded wire is UAST-1 [18], the technical characteristics of which are given in Table 1. The basic UAST-1 is made up of the universal welding head GAST presented in Figure 1. GAST provides automated welding in different technologies.

Table 1 – Technical characteristics of the installation UAST-1

Diameter range of welded pipes, mm	325 – 1420
The speed of movement of the welding head GAST-1, mm / s	0,5 – 12
Wire feed speed, mm / s	16 – 200
Diameter of electrode wire, mm	0,8 – 2,0
Torch oscillation amplitude, mm	0 – 20
Torch oscillation speed, mm / s	10 – 100
Time “delay at the edges”, with	0 – 1,0

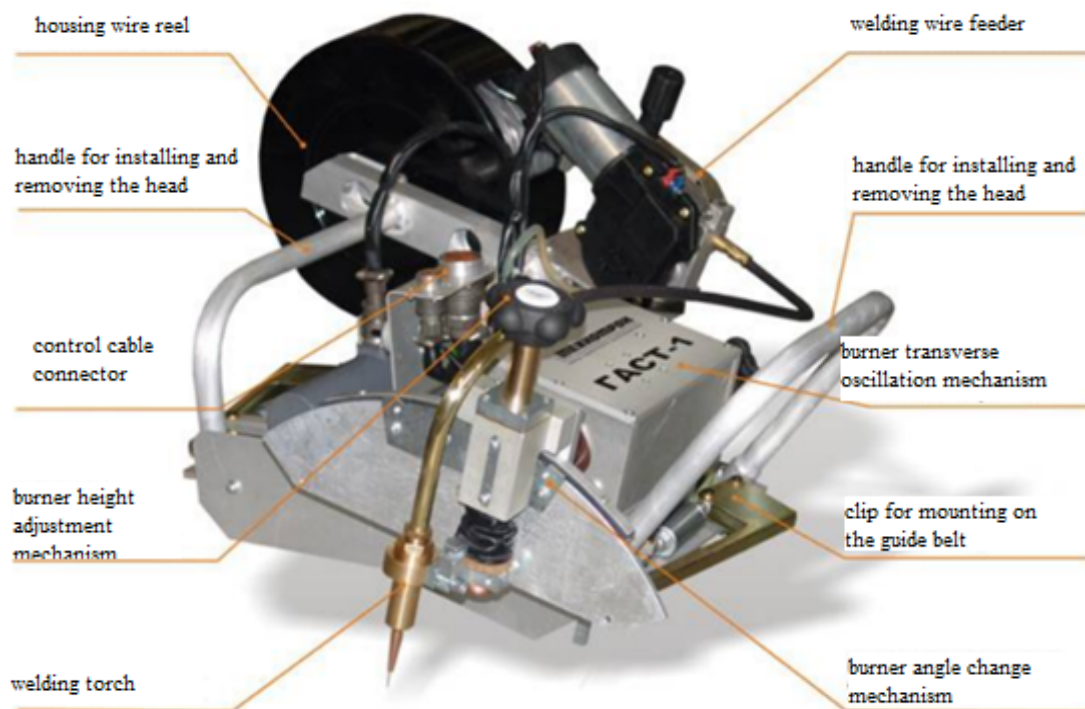


Figure 1 – GAST welding head

It is known that automatic welding, in comparison with mechanized welding by self-shielding wire, has very high toughness values. Moreover, automatic welding ensures good-looking seam, also it provides high work stability, and it provides constant mechanical properties of welded joints.

As a result, the introduction of automatic welding with self-shielding wire will lead to automation of the welding process, the possibility of increasing labor productivity at relatively low costs, as well as obtaining high values of the viscous-plastic properties of welded joints (primarily impact toughness) [19]. In the field of industrial safety, this technology provides safer work organization of increased danger and reduces the influence of human factor on the likelihood of accidents.

The next measure to improve industrial safety during hot work is the use of a stand that provides control over gas pipeline state [20].

This device is a regulating and controlling system, it allows providing comprehensive and continuous monitoring of in-line space gas content, and regulation of pressure inside the sealing devices of disconnected or removed for repair main gas pipeline.

Figure 2 shows the block diagram of the security control stand and presents the main elements that are an integral part of this equipment.

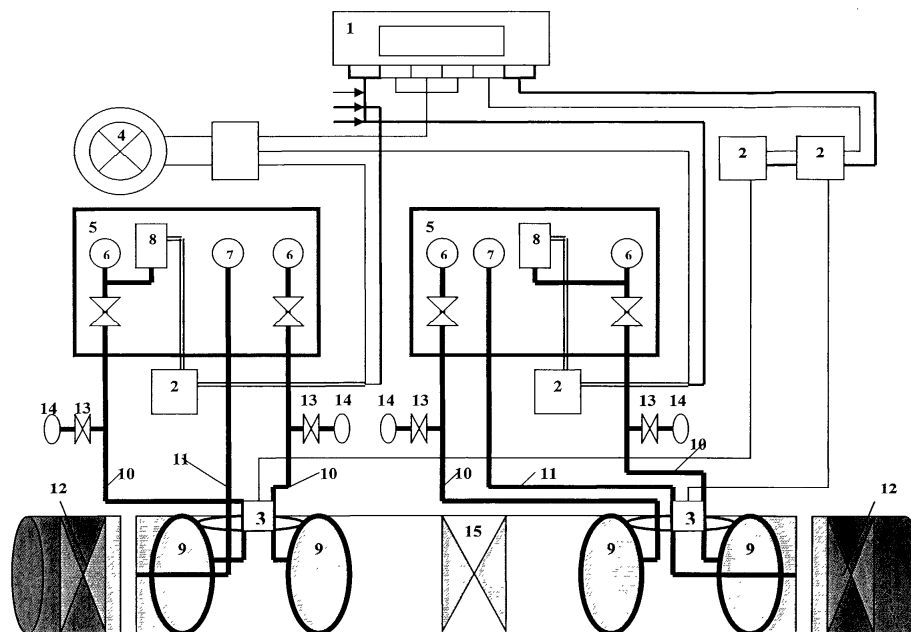


Figure 2 – Stand of safety control in the production of repair work on gas pipelines:

- 1 - stationary two-channel gas analyzer; 2 - distribution boxes; 3 - gas sensors; 4 - combined fire alarm, 5 - pressure control unit;
- 6 - pressure control manometer; 7 - gauge control overpressure; 8 - electronic pressure sensor with digital display;
- 9 - passing temporary sealing device; 10, 11 - rubber hoses; 12 - stop valves; 13 - cranes; 14 - portable compressor

The principle of security control stand operation is given below.

In the stationary gas analyzer 1, presets the required concentration of gas, for example, a 0.5% excess of the volumetric content of CH₄ provides an warning signal, and if the content of CH₄ is exceeded by 1%, it reproduces an alarm signal.

The gas analyzer makes continuous monitoring of gas in-line space due to remote explosion-proof gas content sensors 3, which must be installed in the technological openings of gas pipeline on each side of the hot work site.

Sensor signals take analog digital forms and pass through the outputs of remote explosion-proof gas sensors 3 to communication channels, and then to the gas analyzer 1. The main gas analyzer control unit compares received and set values. In case of exceeding of threshold value of certain gases, a corresponding signal is generated and immediately transmitted to the gas analyzer input 1. After the “light” and “sound” alarms on the gas analyzer control unit 1, the signal goes to the siren 4, after which you can get the necessary information about the state and situation plot of the under repair object.

Table 2 – Form of instruction card

Instruction card			
Safe methods and techniques for performing work (indicate the name of the type of work).			
Part 1. Characteristics of the equipment			
Part 2. Occupational safety requirements during work			
Table 2.1.1 – Harmful and dangerous production factors, and measures to reduce or eliminate the impact of these factors on the employee.			
Harmful and dangerous production factors		Measures to reduce and / or eliminate exposure	
Put the name		Put measures to reduce and / or eliminate the impact of this factor on the employee.	Photo
2.2 Tools, equipment, ISD required for work			
Name		Picture	
Put the name		Photo	
Part 3. The procedure and safety measures during the work			
3.1. Organizational events			
№ operation	The content and sequence of the elements of operations (the number of employees - 3 people). Special attention during the operation		
	Worker 1	Worker 2	Worker 3
1	Performs function 1.	Performs function 1.1	Photo
2			
3.2. Performance of work (name of work)			
№ operation	The content and sequence of the elements of operations (the number of employees - 2 people). Special attention during the operation		
	Worker 1	Worker 2	
1	ATTENTION! During the operation 1 it is necessary ... Photo		
	Performs function 1.1	Photo	Performs function 1.2 Photo
2	Performs function 2.1	Photo	Performs function 2.2 Photo
	ATTENTION! It is forbidden ...		
3.3 Completion of work.			
№ operation	The content and sequence of the elements of operations (the number of employees - 3 people). Special attention during the operation		
	Head	Worker 1	Worker 2
1		Performs function 1.1	Performs function 1.2
		Photo	Photo
2	Performs function 1.1	Performs function 1.1	
	Photo	Photo	

The use of a safety control stand during hot work, and continuous monitoring of gas pipeline individual parameters, provides immediate notification of personnel about emergency situations. Because of this, repairs are immediately stopped and people are evacuated from the zone with increased danger before the causes of the alarm signal are identified and eliminated [21].

Another method of fire work safety improvement is directly related to the personnel who are responsible for the management and conduct of high-risk work.

According to statistics on accidents and industrial injuries at oil and gas facilities, every third event occurs as a result of erroneous personnel actions due to violations of the requirements for organizing and repair work carrying out on main pipelines.

These violations of the requirements arise either because of the scornful attitude of workers to requirements of industrial safety and labor protection, or because of the lack of knowledge and skills to perform relevant types of work.

In order to increase the awareness of workers and a more complete study of requirements for industrial safety and labor protection, the hypothesis of using instructional cards as a type of production instructions is put forward. The basis of these cards should be the structuring and visualization of information necessary for safe performs of high-risk work [22].

Employees, technical devices, facilities where relevant work is carried out should be systematized into a single coherent system [23]. On this basis, it is necessary to understand that the malfunction of one element of this system will lead to accidents or incident. This principle should be fundamental in preparation of instruction cards [24]. The form of the card is presented in table 2.

The instructional cards provide a visual presentation and a detailed description of each work performance, focus employees attention on key points, eliminate inaccurate definitions and operations [25], which provide employee with the right to wrong actions choose to perform necessary types of work.

Conclusion. In this paper, was made an analysis of main stages and striking factors that can affect an employee during hot work on main gas pipelines.

In order to improve the safety of fire work were proposed measures that include planning of organizational and technical training of personnel, as well as automatic control of technological processes as more efficient methods of performing necessary operations.

The introduction of named above measures helps to prevent possible disasters, fires, destruction and loss of life as a result of explosions during the implementation of repair work on gas pipelines, along with a decrease in damaging factors that affect health of workers during the performance of these types of work.

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ГАЗ ҚҰБЫРЛАРЫНДА ОТ ЖҰМЫСТАРЫН ҚАУІПСІЗ ЖҮРГІЗУДІ ҰЙЫМДАСТЫРУ

Аннотация. Зерттеу нәтижесінде мұнай-газ өнеркәсібі объектілерінің тік болат резервуарларында өрт туындаған кезде жаңа көбік түзетін құрамдар мен жалынның таралуын шектеу құралдарын қолдану технологиясы жетілдірілді. Тез тұтанатын сұйықтықтарды сөндіруге талдау жүргізілді, егер бастапқы кезеңде өртті жою жүргізілмесе, өрт ұзаққа созылатын сатыға ауысатынын куәландырады. Резервуарлық парктердегі өрт салдарын жою үшін осы кезеңде қосымша күштер мен құралдар қажет болады. Өрт таралуынан қосымша пассивті қорғаныс ретінде түйіршіктелген балқытын жанбайтын заттардан жасалған резервуарлардың қабырғалары мен шатырларына арналған қорғаныс жабындары әзірленді және эксперименталды сынақтан өткізілді. Сонымен қатар, зертханалық және жартылай өнеркәсіптік жағдайларда ішкі және сыртқы жабындарды пайдалану мүмкіндіктері зерделенді. Тік болат резервуарлардың қабырғалары мен шатырларына арналған қорғаныс жабындары отқа төзімді қасиеттерге ие болады. Олар тік болат резервуарлардың қабырғаларының температурасын төмендетуге мүмкіндік береді. Сонымен қатар түйіршіктелген балқымалы жанбайтын заттардан жасалған тік болат резервуарлардың қабырғалары мен шатырларына арналған ұсынылып отырған Қорғаныс жабындары жалынның таралуын шектеуге және оларды оңтайлы оқшаулауына ықпал етеді, сондай-ақ статикалық электр разрядтарынан өрттердің туындауын болдырмайды.

Түйін сөздер: өртке қарсы қорғаныс, өрттен қорғау технологиясы, мұнай өнімдері, резервуар, жанғыш қоспа, жылу ағыны, көбік тұрақтылығы, пленка қалыңдығы, көбіктің бұзылуы, тез тұтанатын сұйықтық.

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ОРГАНИЗАЦИЯ БЕЗОПАСНОГО ВЕДЕНИЯ ОГНЕВЫХ РАБОТ НА ГАЗОПРОВОДАХ

Аннотация. В статье рассмотрены вопросы безопасного ведения работ на магистральных газопроводах Республики Казахстан, которые в результате износа основной части трубопроводов и их активной подверженности коррозионному растрескиванию под напряжением, требуют выполнения ремонтных работ. Рассмотрены новые подходы к организации проведения ремонтных работ, связанных с применением открытого огня. Проанализировано, что применение указанных мероприятий на практике обеспечит должное планирование организационно-технической подготовки персонала, а также обусловит эффективное обеспечение необходимого уровня безопасности проведения огневых работ. Сделан вывод о необходимости внедрения мероприятий по повышению безопасного ведения огневых работ на магистральных газопроводах, которые позволят предотвратить возможные катастрофы, пожары, разрушения и человеческие жертвы вследствие взрывов при осуществлении ремонтных работ на магистральных газопроводах, а также уменьшить поражающие факторы, оказывающие влияние на здоровье и состояние работников. Показано, что внедрение вышеуказанных мероприятий позволяет предотвратить возможные катастрофы, пожары, разрушения и человеческие жертвы вследствие взрывов при осуществлении ремонтных работ на магистральных газопроводах, а также уменьшение поражающих факторов, оказывающих влияние на здоровье и состояние работников при выполнении данных видов работ.

Ключевые слова: магистральный газопровод, аварийность, промышленная безопасность, внутритрубная диагностика, огневые работы, стенд контроля безопасности, инструктивные карты, пожары, взрывы, износ труб, коррозия.

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REFERENCES

[1] N. Abdrakhmanov, V. Davletob, K. Abdrakhmanova, V. Vorokhobko, P. Abdrakhmano Improving the safety of gas pipelines. *Petroleum Engineering*. Vol.14. № 3. 2016. P. 183-187 (in Russian).

[2] Abdrakhmanov N.Kh., Vadulina N.V., Fedosov A.V., Ryamova S.M., Gaisin E.Sh. A New Approach for a Special Assessment of the Working Conditions at the Production Factors’ Impact through Forecasting the Occupational Risks. *Man in India*. 2017. Vol. 97. No. 20. P. 495-511 (in Russian).

[3] Abdrakhmanov N.KH. Scientific and methodical bases of ensuring safe operation of hazardous production facilities of an oil and gas complex on the basis of management of system risks : *Doct. Engin. Sci. Avtoref*. Ufa: Izd-vo In-t problem transp. Ehnergoresursov. 2014. 45 p. (in Russian).

[4] Kunelbayev M.M., Gaisin E.Sh., Repin V.V., Galiullin M.M., Abdrakhmanova K.N. Heat Absorption by Heat-Transfer Agent in a Flat Plate Solar Collector. – International Journal of Pure and Applied Mathematics. 2017. Vol. 115. No. 3. P. 561-575 (in Russian).

[5] On approval of the Concept for the development of the gas sector of the Republic of Kazakhstan until 2030: Resolution of the Government of the Republic of Kazakhstan from 5 of December 2014 №1275. Available at: <http://adilet.zan.kz/rus/docs/P1400001275/> (accessed 4.11.2018) (in Russian).

[6] Sekerin V.D., Gaisina L.M., Shutov N.V., Abdrakhmanov N.Kh., Valitova N.E. Improving the Quality of Competence-Oriented Training of Personnel at Industrial Enterprises. Quality – Access to Success. – 2018. Vol. 19. No. 165. P. 68-73. (in Russian).

[7] S.Savonin, A. Moskolenko, Z. Arsenteva, A.Chugunov, A. Tunder Analysis of the main causes of accidents that occurred on gas pipelines. Engineering protection. 2015. № 6(11). P.52-57 (in Russian).

[8] Y.Huang, B. Chen, E. Pienkowski, G. Chen, H. Xiao Simultaneous detection of liquid level and refractive index change by using long period fiber grating sensor. Sensor and Accurator A: Physical, Submitted. 2011. 34 c. (in English).

[9] Abdrakhmanov N., Abdrakhmanova K., Vorohobko V., Abdrakhmanova L., Basyirova A. Development of Implementation Chart for Non-Stationary Risks Minimization Management Technology based on Information-Management Safety System. Journal of Engineering and Applied Sciences. 2017. No. 12. P. 7880-7888 (in Russian).

[10] Fedosov A.V., Abdrakhmanov N.Kh., Gaisin E.Gh., Sharafutdinova G.M., Abdrakhmanova K.N., Shammatova A.A. The Use of Mathematical Models in the Assessment of the Measurements' Uncertainty for the Purpose of the Industrial Safety Condition Analysis of the Dangerous Production Objects. International Journal of Pure and Applied Mathematics. 2018. Vol. 10. P. 433-437 (in Russian).

[11] State Standart P55999-2014 In-line technical diagnostics of gas pipelines. – General requirements. Moscow. Standartinform. 2014. 65 p. (in Russian).

[12] Kuskil'din R.A., Abdrakhmanov N.Kh., Zakirova Z.A., Yalalova E.F., Abdrakhmanova K.N., Vorokhobko V.V. Modern Technologies for Operation Control Monitoring Increasing Industrial Safety Level on Oil and Gas Industry Objects. – Problems of Gathering, Treatment and Transportation of Oil and Oil Products. 2017. No. 2 (108). P. 111-120. DOI: <http://dx.doi.org/10.17122/ntj-oil-2017-2-111-120> (in Russian).

[13] E. Vasin. Information and analytical complex for monitoring the technical condition of oil and gas pipelines. – Pipeline transport. 2007. № 9. P.96-101 (in Russian).

[14] S. Zvachkin. New directions of diagnostics of the linear part of the main oil and gas pipelines. Gas Industry. 2011. № 7. P. 18-21. (in Russian).

[15] A. Fedosov, V. Fedosov, I. Badrtdinova, N. Mukhametzyanov The place of uncertainty in the system of ensuring the uniformity of measurements. Electrical and data processing facilities and systems. № 1. Vol. 14. 2018. P.88-96. (in Russian).

[16] James S.W. Khaliq, R.P. Tatam Fiber-optic liquidlevel sensor using a long-period grating. Opt. Lett. 2001. Vol. 26. P. 1224-1226 (in Russian).

[17] Abdrakhmanov N.KH., Shaibakov R.A., Abdrakhmanova K.N., Vorokhobko V.V., Zabelin K.L. The analysis of not stationarity at operation of processing equipment of hazardous production facilities. Expertise of Industrial Safety and Diagnostics of Hazardous Production Facilities. 2015. P. 95-99 (in Russian).

[18] O. Geckin., Automatic welding of pipelines with self-protective wire. Oil And Gas Territory. № 10. 2009. P.58 -59 (in Russian).

[19] N. Bleherova, V. Prohorov, P. Piskorskii, N. Glushak Advantages of automatic welding with self-shielded cored wire. – Exposure Oil Gas 2012. № 4 (22). P.15-17. (in Russian).

[20] B. Zayac, I. Maiorov, V. Bezbodnicov Stand of safety control in the manufacture of repair work on the objects of main gas pipelines. Patent RU 2484361. Available at: <http://allpatents.ru/patent/2484361.html> (accessed 30.09.2018) (in Russian).

[21] A. Fedosov, K. Idrisova, N. Abdrakhmanov, A. Efimova, K. Gradoboeva, S. Rasulov Theoretical foundations of industrial safety. Ufa: Publishing house USPTU. 2018. 128 p. (in Russian).

[22] I. Klimova, R.I. Fatkhutdinov Instructive card as a tool to prevent accidents, incidents, industrial injuries at oil and gas production and transportation facilities. – Petroleum Engineering. 2016. № 4. Vol. 14. P.195-200 (in Russian).

[23] Ivanov I., Bradbeer A., Mckenzie-Kerr human factors management at oil and gas assets: increasing personnel risk awareness through implementation of safety leadership training programs. Society of Petroleum Engineers, SPE-182573-MS. 2016. DOI: 10.2118/182573(in English).

[24] Narbayev K.A., Kussainov A.B. About the Operating Techniques of Assessment of Social and Economic Consequences of Emergency Situations // Bulletin of the Academy of sciences of the Republic of Kazakhstan. 2017. Vol. 2. P.256-265 <https://doi.org/10.32014/2018.2518-1467> (in English).

[25] Esenbekova A.B., Alan Robert. Economic mechanisms of providing of sustainable development of the Republic of Kazakhstan in the conditions of global warming // Bulletin of the Academy of sciences of the Republic of Kazakhstan. 2018. Vol. 2. P.197-202 <https://doi.org/10.32014/2018.2518-1467> (in English).

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EDUCATIONAL AUTONOMY OF THE FUTURE TEACHER AS A NEW QUALITY OF THE PROFESSIONAL TRAINING

Abstract. The article considers the problems and ways of formation of educational independence of the future teacher, as abilities to consciously organize their own educational and cognitive activities on the basis of their capabilities, needs and interests. The main contexts of changes in the training of future teachers in this aspect are defined by the Federal State Educational Standard of Higher Education, the professional standard “Teacher” and the requirements of the modern paradigm of vocational education, in which the student takes the position of an equidistant, self-governing subject of educational activity. The article shows, how these circumstances affect the nature of the student’s educational and cognitive activities. The presentation of educational autonomy as a new quality of vocational training reveals a meaningful development of the concept of competence in vocational education. The description of educational autonomy through such components as the result of internal motivation, the activity of the future specialist in the pursuit of knowledge and self-education, including the skills of targeting, planning and control in educational and cognitive activities, allows to investigate this phenomenon empirical. Empirical data of study of educational autonomy of future teachers was presented.

Key words: vocational training, new quality of vocational training, educational autonomy, self-educational activity, components and criteria of educational autonomy, cognitive activity, self-education, nonlinear educational process, educational environment of the university, individual educational route.

Materials and methods. The main methods of research are theoretical and methodological analysis of normative documents in the field of higher education, scientific works, scientific and methodological literature devoted to various aspects of development of educational independence of the university student, questionnaire of students, analysis of results of educational activities of modules, identification of difficulties in self-educational activities of the students - future teachers.

Results. The conditions for the development of educational autonomy through the development and introduction of interactive educational forms in the educational process, in which students by themselves take an active part, have been identified and described. The condition of such activity of the students independently determines their fate in the activities envisaged by these forms.

Discussion. Studies of educational autonomy have revealed that this phenomenon cannot be fully formed without targeted pedagogical influence. This influence is connected with the creation of appropriate conditions (non-linearity of educational process, information resources of educational environment, educational navigation), in which the subject position of the student in acquisition of qualities of the educational independence becomes and manifests itself. Implementation of these conditions predeterminates the subject: relations of the participants of the educational process.

Conclusion. It is concluded that educational autonomy is a new quality of professional training of the future teacher not only due to the substantive result of educational activities of the students, but also as a result of the change of the value-sense component of education, reflecting the possibilities, motives and interests of the student.

Basic provisions:

- Contexts of changes in professional training of future teachers identified;
- Educational autonomy is defined as a new quality of professional training of the future teacher;
- Conditions for achieving educational independence as a new quality of professional training of the future teacher are outlined.

Introduction. The preparation of a future teacher capable of meeting modern social challenges is today among the most important national tasks, as the solution of sustainable development of Russian science, culture, economy, society as a whole. Problems of professional pedagogical education are considered from the point of view of improvement of modern pedagogical science and practice and are aimed at formation of teacher's readiness to solve tasks, reflecting new requirements to the quality of professional training. Based on the requirements of the standard of education, the category of self-organization and self-development, recorded, presented in universal competences, reflects the task of vocational education not only as the formation of knowledge, skills of the future teacher, but also the development of ability "... build and implement a trajectory of self-development, based on the principles of education during the life" [1]. In this regard, at present, new understanding of the directions of professional training in the pedagogical university is required, ensuring the quality of pedagogical training of the students from the point of view of requirements for future professional activity. This quality is related to the formation of educational autonomy of the future teacher, as the ability to consciously organize their own educational and cognitive activities on the basis of their capabilities, needs and interests.

Materials and Methods. The formation of an independent, creative personality, which is demand and can self-realize in any sphere of life, has always been considered as one of the main tasks of vocational education. In pedagogical science and practice, issues related to the development of educational autonomy are considered from the different perspectives [2], and a variety of teaching tools: through interactive and project technologies [3, 4], use of various e-learning resources and environments [5, 6], establishments subject of the subject relations [4], etc. Its solution implies the development of students "desire, ability to show initiative, non-standard thinking, readiness to adapt in constantly changing socio-economic and political conditions. Such a task is not new for domestic pedagogy, but the process of intellectual integration of the society requires a constant return to the problem of human education, finding ways to implement it throughout the life [7]. Its solution is related to formation of the subject position of the student in the educational process, which implies the presence of abilities for self-study, self-development and self-improvement.

The modern paradigm of vocational education is based on the idea of creating conditions under which the students should take the position of an equidistant subject of educational activity and learn to manage it. Development of educational independence of the students is connected with the ability to independently set and solve educational tasks, during which the students develop cognitive activity, interest, initiative, creative orientation and formation of skills of targeting and planning of educational and cognitive activities [8]. Educational autonomy manifests itself in the new educational situations, when students need to master the ways of action and find the missing information, organize their own activities effectively. Reflection plays a special role in acquiring the qualities of educational autonomy. The higher level of development of reflexive skills of the students, their autonomy in educational and cognitive activities, during which the required professional competences are formed [9].

In the works of some authors educational autonomy is considered as a set of the skills of the students to determine the educational task, taking into account their capabilities and needs, to select means of training to solve the set tasks, to independently assess the results of educational activity, to possess ways of independent educational and cognitive activity [10, 11].

In view of this perception of educational autonomy as an ability to ensure the quality of vocational training, some common features of the phenomenon can be highlighted:

- Educational autonomy is a purposeful activity of the students, during which the required professional competences are acquired;
- Educational autonomy of the students is a product of internal motivation, reflecting the interest in acquiring professional knowledge and the desire to learn them in depth;
- Educational autonomy implies cognitive activity of the individual and itself ensures the presence of such activity, which manifests itself in the desire for cognition and self-education;

– Educational autonomy of the students includes the skills of targeting, planning and control in educational and cognitive activities, as well as ownership of educational activities.

Summarizing various approaches to research of self-organizing systems, P.I. Tretiakov proposes to consider the structural components of educational autonomy of the students [12]. Their analysis shows that such components are based on the skills that the student should possess and that are manifested in his educational activities. The content of structural components is a complex, which includes a number of components, the basis of criteria, allowing to assess acquisition of educational independence of the students as one of the results of quality of vocational education:

– Cognitive-analytical component, (cognitive-analytical criterion), including knowledge of requirements for professional education of the teacher and ability to analyze own possibilities in mastering professional knowledge;

– Motivational-value component, (motivational-value criterion) as reflection of positive motives in self-mastering of professional knowledge and understanding of values of self-educational activity;

– Practical-effective component (practical-effective criterion) manifested in skills of search for effective ways of self-education and possession of various methods of self-education;

– Control and evaluation component (control and evaluation) reflecting the ability to adequately assess the results of self-education and ownership of methods of self-control and self-education activity.

Analysis of the content of the selected components (criteria) shows that educational autonomy acts as a system of learned professional knowledge, skills and formed motives for vocational and educational activities. These include: the presence of positive motives in the self-mastering of professional knowledge and understanding of the values of self-educational activity, knowledge of the requirements for professional education of the teacher and ways to analyze their own opportunities in mastering professional knowledge, ability to find effective ways of self-educational activity and adequate assessment of results self-education, possession of various methods of self-education and methods of self-control of self-education activities.

Results. Educational autonomy, as a pedagogical phenomenon, accumulates a whole range of professional competences, the acquisition of which by students ensures the required quality of vocational education. Therefore, the identification of the level of educational autonomy of students can serve as some significant characteristic of the quality of vocational education.

The proposed criteria allowed to determine the level of the development of the educational independence of students. The article presents the results of the study, carried out at the Faculty of Natural Science Education of the Omsk State Pedagogical University (see eable 1). The study was attended by 109 students of 2 and 3 courses.

Table 1 – Characteristic of the levels of the development of the educational autonomy of the students

Criteria	Manifestation Levels (% percent to number of investigated)		
	High	Average	Low
Cognitive and Analytical	9,2	62,3	28,5
Motivational and Valuable	18,3	50,4	31,3
Practical and Effective	12,0	52,3	35,7
Control and Estimated	20,2	46,8	33,0

Analysis of the data shows the absence of targeted work with the students in the development of the educational autonomy, the most powerful indicators are concentrated around the average level by most criteria. In addition, the study shows that a significant number of the students have shown a rather low level of the educational autonomy by all criteria. Based on the results of the study, it can be concluded that most students have low indicators of the quality of vocational education. Only a small part of the students who have shown a high level by all criteria, the professional competences. The analysis of the products of the students, participating in the study and the results of the educational activities, fully confirmed the study data. In this regard, it can be concluded that educational autonomy is a universal criterion that allows sufficiently deep and accurate determination of the quality of vocational education of the students.

Indeed, what means, for example, the demonstration by the student low level of educational autonomy by cognitive and analytical criterion? This means that the student has a little idea of professional knowledge of the modern teacher, his pedagogical activity; insufficient knowledge of his capabilities designs his own trajectory of the professional education, building the goals of acquiring the required professional knowledge. The same can be attributed to the average level. A student, who demonstrates an average level of educational autonomy, according to practical-effective criterion, has not full skills of finding effective ways of self-educational activity. At the same time, a high level of educational autonomy provides a reliable result of vocational education. Thus, for example, if we consider the control and assessment criterion, it means that the student owns the skills to adequately assess the results of self-education, to draw adequate conclusions from these results, uses various methods of self-control of educational activities.

Discussion. In our research, as we noted above, the educational autonomy becomes and develops in the self-educational activities of the students. However, it cannot be fully formed without pedagogical influence. This influence is related, first of all, to the creation of appropriate conditions, in which the subject position of the student becomes higher. In this research were showed open self-organizing systems [13-15] as an impact on the educational process and the development of the educational autonomy. The external environment with respect to the university is the labor market, the educational environment of the university, the base of practices, information resources of the Internet, etc., at the same time educational independence, on the one hand, is formed and developed under the influence of the external environment, on the other hand, retains its relative stability and adaptability [15]. In this regard, the formation and development of educational autonomy of students' need to predict educational actions, design their own trajectory of educational movement, and find opportunities to use external resources of the educational environment to achieve the goals of education.

In the works of I.S. Yakimanskaya was stated, that the most important condition, forming the position of the subject of educational autonomy, is the introduction of elements of non-linear education into the educational process [16]. Its distinctive features: variability, orientation to individual features of each student consistency, rigor and the study of educational disciplines.

Feature of the educational process, when the elements of nonlinearity are included in it, means that the conditions need to be active and independent in determining the goals of the education, in combination with the requirements of the professional standard and personal self-development, to design an individual educational plan, with the necessary professional knowledge [17].

The student is quite self-sufficient in the design of educational activities and has all the prerequisites for choosing the form of participation in the development of vocational education disciplines and the level of learning. In pedagogical theory and practice, this position is defined as the possibility of building student's individual educational route [18]. Naturally, in the conditions of construction of the educational process on the principles of nonlinearity, traditional ideas about the mechanisms of formation and development of educational independence have almost changed. This is achieved by creating the conditions of conscious necessity of learning content of studied disciplines and selection of shape, depth, order and sequence of their learning.

Justifying the mechanisms of acquiring the qualities of educational independence, O.V. Akulova pointed out that in the construction of the educational process the idea of navigation plays an important role as the management of the student's educational activities [19]. This means that the individual educational route or action plan allows to connect the educational needs of the student with the requirements of the professional standard and the capabilities of the university in the professional education.

In psychological terms, as T.A. Kaplunovich notes, the elements of nonlinearity in education lead the student to the stable equilibrium and force him to independently choose and find new ways of development from many options [13]. The development of educational autonomy of the students, according to E.Ju.Ignatieva, is closely linked with the saturation of the educational environment with the resources and conditions for the realization of the goals of education [20]. The saturation of the educational environment is primarily related to the availability of sufficient information resources, university libraries, educational and methodological complexes, the possibilities of the students to interact with the subjects of social, cultural, economic and other environments in order to obtain the necessary information, interaction with the world sphere of education. The saturation of the educational environment with information resources

allows to create an individual educational route, according to the needs, interests and capabilities of the students.

It is very important for the students to know and use the opportunities of the educational environment as a resource of educational independence. Students' knowledge and use of the educational resources of the university we can find in the table 2.

Table 2 – Students' knowledge and use of educational resources of the university

Course	I know and use	I know, but I not always use	Those I know are not interested in	I do not know	Did not think of it	Would like to learn, how?
2	11	39.4	14.7	13.8	11	9.1
3	19.2	45.8	13.7	7.3	6.5	6.5

Analysis of the results of the questionnaire is showed, a positive tendency to use the resources of the educational environment from course to course (see table 2). However, you can see non used reserves. More than 30% of the students in both courses have little understanding of their capabilities and need to acquire the professional knowledge. The students, who in the course of vocational training use mainly materials of the lectures of teachers, seminar and practical classes, performance of tasks, in accordance with the model or request of the teacher.

The low level of the development of educational independence of the students was noted in table 1. All lecture material was developed as interaction of the teacher with the students. The theme and objectives of each new lecture were learned by the students in advance. Reports, examples from literary sources were prepared on the basis of the lecture; groups of the students were involved in joint coverage of the purposes of theoretical justification of the pedagogical patterns, theories, principles [21, P.186].

Similar work was carried out in the preparation and conduct of workshops. The plan of each seminar class was developed as a scenario, in which each student performed a certain role: teacher-subject, class head, student, member of the methodological association of the school, parents, well-performing student as a consultant on the subject, etc. The task of each group of the students has prepared the pedagogical situation, showed the essence of the problem, ways of solution. All the students of the group analyzed the prepared materials, participated in the formulation of the pedagogical problem, in search of the methods of its solution, and gave an assessment of the found solutions. Such seminar was a pedagogical performance, in which all participants were the actors. Analysis of the experiment showed the created educational situations in which:

- Students got acquainted scientific works, reflecting the modern challenges to education;
- Students studied the normative and program documents of modern teacher activity;
- Students had the opportunity to choose the content of theoretical and practical materials that complemented the content of the lectures;
- Students could use the information resources of the Internet, libraries, and observations on teaching practices, etc.;
- Students, included in the discussion of pedagogical problems, studied the discipline “Pedagogics”, choose the way of participation based on their interests and capabilities;
- Students during the pedagogical practice kept observations and diaries, in which they noted the peculiarities of interaction between the teachers and students in the educational process.

On the basis of the selected criteria for the development of educational autonomy, the characteristic of the phenomenon was studied, according to these criteria. The study on cognitive and analytical criterion showed that a significant number of students (38.5%) showed high activity in self-mastering of knowledge expressing requirements for the modern teacher, adequately assessed their capabilities, including independent performance of various tasks on the studied discipline. Many students (49.5%) demonstrated an active interest in the independent study of modern education, opportunities for self-realization in the activity forms of the studied discipline.

At the same time, we recorded a high level in 51.4% of students. There are the students who introduced the educational process, acted as the most active and proactive in the self-selection of the content of participation, the search for opportunities for self-realization. It is necessary to note the decrease the number of students, who showed a low level: from 31, 3% to 5.5%.

We attached particular importance to the study of educational autonomy, according to the practical and effective criterion. The content of the indicators reflects the ability to act in the search for effective ways of self-education. In fact, it is an activity of the student to make independent solution. From 35.7%, who showed a low to 8.3%. At the same time, the number of students (33.1%) demonstrated possession of various methods of self-educational activity.

The justification of the components and the criterion of educational autonomy noted the importance of the control and assessment criterion in the development of the phenomenon. The ability to adequately assess, its capabilities, the results of inclusion in the process of learning at a high level was recorded in 36.7% of the students. Organized activities in the proposed forms of education allowed a sufficient number of students to learn their own opportunities [22, P.54].

Thus, the development of educational autonomy, as it was demonstrated during the experiment, can be carried out in the conditions of development and introduction into the educational process of interactive educational forms. The condition of such activity determines the degree of student's participation in the different forms.

Conclusion. Summing up the theoretical and empirical stages of the study, we would like to note that the development of the educational autonomy has a significant impact on the quality of vocational training. Indeed, the educational autonomy is caused by the creation of the conditions of determine the goals by the students, content and depth of learning of educational material. Each student designs an individual educational plan at each lesson, already identifies the availability of information resources in the educational environment of the university and the possibility of implementation of the individual plan.

Acquisition of educational independence skills by the students allows to talk about the new quality of the professional training of the future teacher, the substantive result of the educational activity of the students. Educational autonomy as the quality of student's personality changes and reflects the need of professional competence, with the educational goals, capabilities, motives and interests.

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БОЛАШАҚ МҰҒАЛІМНІҢ БІЛІМИ ТӘУЕЛСІЗДІГІ КӘСІБИ ОҚЫТУДЫҢ ЖАҢА САПАСЫ РЕТІНДЕ

Аннотация. Мақалада болашақ мұғалімнің білімдік тәуелсіздігін қалыптастыру мәселелері мен жолдары қарастырылған, өйткені олардың мүмкіндіктері, қажеттіліктері мен қызығушылықтары негізінде өзіндік оқу және танымдық іс-әрекеттерін саналы түрде ұйымдастыра білу. Болашақ мұғалімдерді осы аспект бойынша даярлаудағы өзгерістердің негізгі мазмұны жоғары білімнің Федералды мемлекеттік білім стандартымен, «Мұғалім» кәсіби стандартымен және қазіргі кездегі білім беру парадигмасының талаптарымен анықталады, мұнда студент білім беру іс-әрекетінің бірдей белсенді, өзін-өзі басқаратын субъектісі болады. Мақалада бұл жағдайлар оқушының оқу-танымдық іс-әрекетінің сипатына қалай әсер ететіні көрсетілген. Кәсіптік білім берудің жаңа сапасы ретінде білім тәуелсіздігін ұсыну кәсіптік білім беруде күзіреттілікке негізделген көзқарас тұжырымдамасының айтарлықтай дамуын көрсетеді. Білім беру тәуелсіздігін келесі компоненттер арқылы сипаттау: ішкі мотивацияның нәтижесі, болашақ маманның білім мен өзін-өзі тәрбиелеуге деген белсенділігі, оның ішінде оқу және танымдық іс-әрекеттегі мақсат қою, жоспарлау және бақылау дағдылары осы құбылысты эмпирикалық тұрғыдан зерттеуге мүмкіндік береді. Болашақ мұғалімдердің білімдік тәуелсіздігін зерттеу туралы эмпирикалық мәліметтер келтірілген.

Түйін сөздер: кәсіптік оқыту, кәсіптік білім берудің жаңа сапасы, білімнің тәуелсіздігі, өзіндік білім беру қызметі, білім тәуелсіздігінің компоненттері мен өлшемдері, танымдық белсенділік, өзіндік білім, сызықтық емес оқу процесі, жоғары оқу орнының білім беру ортасы, жеке білім беру бағыты.

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ОБРАЗОВАТЕЛЬНАЯ САМОСТОЯТЕЛЬНОСТЬ БУДУЩЕГО ПЕДАГОГА КАК НОВОЕ КАЧЕСТВО ПРОФЕССИОНАЛЬНОЙ ПОДГОТОВКИ

Аннотация. В статье рассматриваются проблемы и пути формирования у будущего педагога образовательной самостоятельности, как способности осознанно организовывать собственную учебно-познавательную деятельность на основании своих возможностей, потребностей и интересов. Основными контекстами изменений в подготовке будущих педагогов в этом аспекте определены Федеральным государственным образовательным стандартом высшего образования, профессиональным стандартом «Педагог» и требованиями современной парадигмы профессионального образования, в рамках которой обучающийся занимает позицию равноактивного, самоуправляемого субъекта образовательной деятельности. В статье показано, каким образом эти обстоятельства влияют на характер учебно-познавательной деятельности студента. Представление образовательной самостоятельности, как нового качества профессиональной подготовки, раскрывает содержательное развитие концепции компетентного подхода в профессиональном образовании. Описание образовательной самостоятельности через такие компоненты как: результат внутренней мотивации, активность будущего специалиста в стремлении к познанию и самообразованию, включающие умения целеполагания, планирования и контроля в учебно-познавательной деятельности, позволяет исследовать данный феномен эмпирически. Представлены эмпирические данные изучения образовательной самостоятельности будущих педагогов.

Ключевые слова: профессиональная подготовка, новое качество профессиональной подготовки, образовательная самостоятельность, самообразовательная деятельность, компоненты и критерии образовательной самостоятельности, познавательная деятельность, самообразование, нелинейный образовательный процесс, образовательная среда вуза, индивидуальный образовательный маршрут.

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REFERENCES

[1] Federal State Educational Standard for Higher Education – Bachelor’s Degree in Training 44.03.01 Pedagogical education. Approved by the Order of the Ministry of Education and Science of the Russian Federation February 22, 2018, No 121 http://www.osu.ru/docs/fgos/vo3+/44.0301_Pedagog_obr.pdf (in Russian).

[2] Fomchenko Zh.A. Theoretical aspects of student autonomy in the educational process / Methodical search. – Publishing House: Armavir State Pedagogical University. – Armavir. – 2017. – P.21-25 (in Russian).

[3] Gordianova G.V. Pedagogical conditions for the development of educational autonomy of students in the nonlinear educational process of the university. – Contemporary Science and Education Issues. – Publishing House: «Academy of Natural sciences». – Penza. – 2015. – No 3. – P.315-320 (in Russian).

[4] Glazova Ju.V. Design technology and pedagogical conditions of its successful implementation in the process of formation of educational independence of students // Pedagogics and education. – Publishing House: «NB-Media». – Moscow. – 2015. – No 2. – P.175-186 (in Russian).

[5] Lebedeva K.S. Electronic textbook as a means of forming educational independence of university students. – Prospects for the development of higher education. – Proceedings of the IX International Scientific and Methodological Conference. – Publishing House: Grodno State Agrarian University. – Grodno. – 2016. – P.361-364 (in Russian).

[6] Rashidova Z.D. Multimedia educational environment as a condition of activation of independent cognitive activity of bachelor's degree student / Azimuth of scientific research: Pedagogy and psychology. – Publishing House: Non Commercial Partnership "Institute of Directed Education". – Toliatti. – 2018. – Vol. 7. – No 2 (23) . – P.225-228 (in Russian).

[7] Gordianova G.V. Development of educational independence of students in the non-linear educational process of the university. Avtoref. PhD. – Omsk, 2016. – 24 p. (in Russian).

[8] Vinogradova M.D. Collective cognitive activity and education of schoolchildren: from work experience. – Moscow: Education, 1977. – 159 p. (in Russian).

[9] Vorontsov A.B. Training activities: introduction to the system D.B. Elkonin. – M.: Publishing House: NB-Media, 2004. – 142 p. (in Russian).

[10] Balikaeva M.B. Development of self-education in conditions of implementation of competency approach: diss. PhD. – Omsk, 2007. – 169 p. (in Russian).

[11] Glubokova E.N. Analysis of professional difficulties of university teachers as a basis for filling advanced training programs // Nizhny Novgorod education. – 2012. – No 1. – P.110-116. (in Russian).

[12] Tretiakov P.I. Vocational educational institution: management of education by results. –Practice of pedagogical management. –Moscow: New school, 2001. – 368 p. (in Russian).

[13] Kaplunovich T.A. Paradigm of self-organization in experimental modeling of teacher development system: avtoref. PhD. – Nizhny Novgorod, 2002. – 48 p. (in Russian).

[14] Kniازهva E.N. Synergy bases. A man designing himself and his future // Social sciences and modernity. – 2012. – No 2. – P.38-47 (in Russian).

[15] Subetto A.I. Noospheric sense. – Kostroma: N.A. Nekrasov State University, "Asterion", 2012. – 262 p. (in Russian).

[16] Iakimanskaya I.S. Personal-oriented education in modern school. – M.: Publishing House: "September", 2000. – 95 p. (in Russian).

[17] Dautova O.B. Step to Yourself: New Challenges of Modern Education: Monograph. - SPb: A.I.Gerzen RSPU Publishing House, 2008. – 149 p. (in Russian).

[18] Lorentz V.V. Designing an individual educational route as a condition for preparing a future teacher for professional activity: avtoref. PhD. – Omsk, 2001. – 25 p. (in Russian).

[19] Akulova O.V. Organization of individual-oriented educational process in A.I. Hercen RSPU: methodical materials. – SPb.: A.I.Gerzen RSPU Publishing House, 2007. – 127 p. (in Russian).

[20] Ignatieva E.Ju. Pedagogical management of educational activity of students in modern university: monograph. – SPb.: Publishing House: "LEMA", 2012. – 300 p. (in Russian).

[21] A.E. Abylkassymova, S.K. Popey-ool, S.E. Shishov. On the theory of personal identification in the system of continuous pedagogical education (analysis of foreign experience) // Bulletin of National Academy of Sciences of the Republic of Kazakhstan. – Volume 3. – Number 379 (2019). – P.186-197 <http://doi.org/10.32014/2019.2518-1467.85> (in English).

[22] Danna Summers , S.A. Balpeissova , Z.A. Maydangalieva, G.U. Utemissova. The role EI in professional development of psychologist // Bulletin of National Academy of Sciences of the Republic of Kazakhstan. – Volume 1. – Number 377 (2019). – P.54-62 <http://doi.org/10.32014/2019.2518-1467.6> (in English).

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STRESS OF THE INNOVATION AND INNOVATIONS IN EDUCATION

Abstract. The authors introduce the concept of stress of the innovation. The stress of innovation is the stress that occurs in the process and result of the introduction of innovation. For students and teachers, innovation is both a situation that generates stresses and crises of the personal, interpersonal and organizational levels, and a way to overcome such stresses, problems, and development crises. It is important to note the relationship of causes and consequences, as well as the manifestations of stress of teachers and students at the personal, interactive, educational and organizational levels. The main objectives of our study are to find out how stress of the innovation in education affects the professional and academic success of teachers and students, and how it affects their satisfaction with themselves, their health and life in whole. The main method of our research was a theoretical analysis of the problems of stress of innovations by students and teachers. The results obtained show that pupils (students) and teachers need not only training in productive and effective methods of preventing and correcting stress of the innovations in situations of organizational and didactic development and stagnation, reforms and other changes. Crisis and stress states of the psyche of a child and an adult are conditions in which the risk of formation and consolidation of deviant behavior, developmental disorders, diseases and injuries, etc. increases. These changes become more pronounced in those cases when, under the conditions of training and education, work and rest, existing and changing relations in the process of innovation and other changes are not taken into account. All productive and effective innovations on education are connected by one idea - creating conditions in which the development of a person as an individual, partner and professional is inevitable, and not just declared or possible. In developing an integrative prevention and coping model for students and teachers (in matetogenias and pediogenias), it is important to consider the prevention and correction of stress in the context of the development of the actors of education in different contexts: in the context of educational, professional, personal and interactional development. Prevention and correction of stress in innovative education (and in stress of the innovation) is associated with the prevention and correction of pediogenias (harm caused by incorrect, destructive, and pathologizing attitudes of teachers towards students), as well as correction and prevention of "matetogenias" (harm caused by incorrect, devastating, and pathologizing attitudes of students towards teachers).

Keywords: stress, innovation, pediogenia, matetogenia, didactogenia, stress coping, stress of the innovation, students, teachers, crisis management, psychological assistance.

Introduction. The history of Russian education is an ongoing innovation process. Starting with the reforms of Peter I, when education became one of the most important state tasks, the stress from innovations received a new impetus. Conceiving the creation of a new man under the influence of the ideas of Didro, Catherine II did not even think about what could harm her subjects. Universal education of the masses was considered only as a positive phenomenon. But any medal always has two sides. An

omniscient education in Russia, in addition to its undoubted advantages, brought a previously unknown feeling of fear from a change in lifestyle, separation from the family, possible insolvency in study and service, new requirements, teacher-student relationships, and personality violence. How did the schoolchildren of the 18th-19th centuries overcome the difficulties that arose? The chronicle of those years is full of information about runaway / caught / punished students, as well as often bitter memories of graduates of educational institutions of those years (Goroshchenova, 2005, 2007). Today, innovation is still causing stress, more intense compared to the past. There are too many requirements for a future graduate: professionalism, knowledge of international languages, knowledge of the economy, the right to write articles and engage in science - all this a student must learn in a few years. The intensity of the educational process is sewn up in universities, technical schools and even in schools. Staff psychologists have appeared in educational institutions to help students and teachers cope with psychological problems and find balance in this multifaceted and complex world called "society" (Goroshchenova, 2016; Goroshchenova, 2015).

For modern students and teachers, innovation is both a situation that generates stresses and crises at the personal, interpersonal and organizational levels, and a way to overcome such stresses, problems, and development crises. It is important to note the relationship of causes and consequences, as well as the manifestations of stress of teachers and students at the personal, interactive, educational and organizational levels. In addition, we consider it important to note that didactogeny, in which different researchers highlight pedagogical errors (violations that arise because of pedagogical errors or intentional violence by teachers) and matetogeny (violations that arise from teachers because of intentionally or unintentionally incorrect and / or violent behavior from students), also form a single system. Only in theoretical terms can one divide the single process of a disturbed, pathologizing man or woman as a person, as a partner and as a (future) professional, didactic communication in practice, these processes are closely related (Arpentieva, 2016; Aryn, 2006; Clarin, 1995; Clark, 2011; Zagashev, 2010).

The main objectives of our study are to find out how stress of the innovation in education affects the professional and academic success of teachers and students, and how it's affect their satisfaction with themselves their health and life in whole.

The main method of our research was a theoretical analyze of the problems of stress of innovations by students and teachers. The results obtained show that pupils (students) and teachers need not only training in productive and effective methods of preventing and correcting stress of the innovations in situations of organizational and didactic development and stagnation, reforms and other changes, not only comprehensive anti-stress care (Kassymova, Kosherbaeva, Sangilbaev, Schachl, Cox, 2018). So that they can prevent and cope with stresses while studying and working, but they need a new understanding of themselves and the world, including an awareness of the goals and values of their lives, of the education and of the innovations. In addition to educational and professional stress, it is also important to take into account the stresses of personal development and interpersonal relationships that are associated with the personal, interpersonal, as well as social aspects of their life and educational innovations. To successfully overcome and prevent stress of the innovations, including in the context of the problem of introducing or refusing to introduce innovations in an educational organization and / or didactic interaction, students and teachers need systematic help (Kassymova, Stepanova, Stepanova, Menshikov, Arpentieva, Merezchnikov, Kunakovskaya, 2018; Kassymova, Tokar, Tashcheva-Slepukhina, Gridneva, Bazhenova, Shpakovskaya, Arpentieva, 2019; Ostapenko, Khagurov, 2013).

Results and its discussion. Crisis and stress states of the psyche of a child and an adult are conditions in which the risk of formation and consolidation of deviant behavior, developmental disorders, diseases and injuries, etc. increases. These changes become more pronounced in those cases when, under the conditions of training and education, work and rest, existing and changing relations in the process of innovation and other changes are not taken into account. These changes become more pronounced even when the correspondence between the prevailing and characteristic for the previous stage ways of understanding oneself and the world, the characteristic and uncharacteristic traditions and principles of relations with others and the possibilities and limitations of a man or woman as a person, partner and student or a professional developing during this period. Expanding opportunities and overcoming the limitations of the activity of a child and an adult, including them in a new system of relations with as a whole can have a very favorable effect on the level of physical, mental, social and moral development,

creating conditions for further improvement and self-improvement. However, not all changes are actually innovations that carry the meaning of development. On the contrary, many, especially external changes, can be negative. Only the subjects of education themselves as stakeholders and actors can find those options for consensus solutions to conflict, crisis and stressful situations through which they pass. Only they can understand the causes and goals of the changes that life gives them. In another version - typical for the education of many countries - innovation in education is always the fruit of throwing from one extreme to another and an attempt to correct some mistakes by making others. The exception is, for example, the countries of post-capitalism, the formation of which, thanks to the respect of the state for people and respect for people to each other, has gone unattainably far for the capitalist and "developing" countries. Obviously, in this context, innovations in capitalist countries do fulfill a pathological role. Trying to help in solving some problems, they not only fail to achieve the goal, but also create new problems and stresses. As a result, not only teachers "take out" their dissatisfaction (rejection, powerlessness and ignorance) on students, but also students and their families do the same. A vivid example is the numerous discussions in modern Russia about what educators should or should not allow themselves to do in their daily lives. In addition, here can be attributed discussions about who should deal with children: children or parents. This also includes discussions about "unnecessary items", "excess requirements", etc. The question setting speaks for itself: instead of participating in solving problems common to them, subjects of education are engaged in attempts to evade solutions. Obviously, this is a result of stress. It is also obvious that this leads to further stress. Teachers and pupils, students and university professors leave educational institutions, which leads to further regression of the education system. On the contrary, the Scandinavian model of education, raising children and youth in an atmosphere of love, respect, interest in themselves and the world, and modern education in Britain, which undertook to restore what remained after the "ruins of the university" in order to ensure its country world domination, using the best practices of Soviet education, are two important "innovations":

1. the pointless discussions about "greendfields" (new educational technologies) and "brownfields" (old educational technologies) are minimized, really effective and productive technologies and models of education are selected;

2. all interested actors are connected, the students and teachers themselves - as actors - develop themselves as individuals, build relationships, participate in learning and learning, in an atmosphere of cooperation, respect, service, creative search.

As noted by L.A. Petrovskaya, one of the leading Soviet and Russian psychologists, there are several educational traditions that create a favorable, psychotherapeutically affecting, that is, healing atmosphere in training and education (Minigalieva, 2012):

1) a practice-oriented approach that complements, rather than replaces, the classic theoretically-oriented, including some types of contextual and problematic education;

2) an activity-semantic approach, including contextual education and some types of programmed education, etc.;

3) a personality-centered approach (based on the ideas of self-realization of a personality), including a model of education- facilitation or dialogue.

All these approaches are connected by one idea - creating conditions in which the development of a person as an individual, partner and professional is inevitable, and not just declared or possible. This is the idea of overcoming limitations, including those associated with previous stresses of education and life. This is the idea of empowering a person and the palette of his methods of action, improving his relations, including conflicting competence, the ability to learn and the ability to learn. This is the idea of enriching the palette of ways of productive and effective coping with stresses, difficult and crisis situations inside a person, in his relations with other people and in the educational and professional life. This is the idea of psychologically safe, supportive and confirming support of development, during which a person gains perfection: completeness of knowledge and skills ("indicative foundations), clarity and harmony of goals and values, transparency of relations with oneself and people, etc. In such innovative conditions, the stresses of education or didactogeny (matetogeny and pediogeny) either do not arise (are converted) or are quickly and fully corrected. Conflicts as confrontations lead to the development of all actors at all levels. In other situations, conflicts and stresses are suppressed and / or intensified. In addition, innovations act as destructive changes leading to the collapse of education and, further, to the degradation and destruction of those structures that created and introduced these innovations.

There is also the “Russoist” or educational paradox: in pedagogy of education, the result is always probabilistic. Even ingenious, from the point of view of theory, views cannot always be realized properly or simply realized. It is important that both innovative and traditional methods and models of education are suitable for the student and teacher, help them build didactic communication, realizing the tasks of training and education without unnecessary deformations (Zimnyaya, 2006). It is also important that the subjects of education are open to change, including their creative potential.

The unusual workload of teachers leaves no room for creativity. There is a feeling that the teacher does not come to teach and share his experience, but to write papers: curricula, teaching materials, electronic and paper diaries, numerous reports. All this bureaucratization of education negates the very idea of learning. In this case, innovation does not benefit either the teacher or the student. They only cause a high feeling of dissatisfaction, fatigue and stress, cause early professional burnout.

As we noted earlier, the important source of resistance to stress is a person’s creative abilities. Stress and creative abilities of a person interact ambiguously. On the one hand, stress suppresses creative abilities, as well as all other intellectual abilities of a person. On the other hand, stress encourages people to search for new forms of response, that is, to creativity. The nature of creativity in a stressful situation is largely related to the type of stress. The more extensive stress a person experiences, than higher and larger his creative achievements. On the third hand, the creative abilities of the individual help her to undergo stress easily, sometimes not noticing them. On the fourth hand, the creative abilities of a person “lead” him to specific stressful situations associated with the need for its realization, as well as with the opposition of creative and reproductive (stereotypical) social patterns of life activity (Kassymova, Tokar, Tashcheva, Slepukhina, Gridneva, Bazhenova, Shpakovskaya, Arpentieva, 2019; Kassymova, Tyumaseva, Valeeva, Lavrinenko, Arpentieva, Kenzhaliyev, Kosherbayeva, Kosov, Duvalina, 2019).

The attitudes of people, including students and teachers, to innovations are different. Some people are prone to their acceptance, risk, responsibility and creativity. Other people are more conservative, avoid risk, responsibility and change. Sometimes in one person, different manifestations coexist simultaneously with respect to innovations from different areas of his activity (Kassymova, Arpentieva, Kosherbayeva, Triyono, Sangilbayev, Kenzhaliyev, 2019; Arpentieva, Kassymova, Lavrinenko, Tyumaseva, Valeeva, Kenzhaliyev, Triyono, Duvalina, Kosov, 2019; Kassymova, Tyumaseva, Valeeva, Lavrinenko, Arpentieva, Kenzhaliyev, Kosherbayeva, Kosov, Duvalina, 2019). Many high school and elementary school teachers, university / college teachers, and students need psychological help and counseling on educational stress, including innovation stress (Valeeva, 2019; Tyumaseva, Orekhova, Valeeva, Salamatov, Kalugina, 2018; Tyumaseva, Valeeva, 2018; Valeeva, 2013; Valeeva, 2017).

In psychology, there is a classification of subjects of innovation, compiled by E. Rogers (Rogers, 2003).

I group - “innovators”, usually it is about 2-3% of the team, they are always open to new things, absorbed in innovations, characterized by some adventurous spirit, intensively communicate with local groups.

II group - “early implementers” - about 13-14%. They follow the innovators, but are more integrated into their local community. They are influential, often turn out to be opinion leaders. Valued as reasonable implementers.

III group - preliminary majority - 34%. Leaders rarely play the role of mastering innovations after the “early implementers”, but much earlier than the so-called “average”. To make a decision, they need significantly more time than leading groups.

IV group - later majority - 34%. Relating to innovations with a fair amount of skepticism, they begin to master them sometimes under pressure from the social environment, sometimes as a result of assessing their own needs, but under one condition: when the team expresses itself clearly and unequivocally in their favor (“average implementers”).

V group - fluctuating - usually 16%. Their main characteristic is a focus on traditional values.

Innovations are accepted with great difficulty, the latter, being, in fact, a brake on the spread of innovation.

For teachers, K. Angelovski offers other names and characteristics of the categories highlighted by E. Rogers: “innovators”, “advanced”, “moderate”, “penultimate,” “last” (Angelovski, 1991).

I category - “innovators” includes teachers who boldly perceive, implement and disseminate everything new.

K. Angelovski calls category II “advanced workers” because in the perception of innovation they go ahead of the others. This category of educators believe that in our social conditions, innovations need to be introduced immediately, immediately after their appearance.

Category III is called "moderate", these teachers do not seek to be among the former, but do not want to be among the latter, their slogan is the golden mean. They do not perceive the new until they are perceived by the majority of colleagues.

Supporters of category IV are called “penultimate,” as they truly accept innovations among the latter.

Category V - those who adopt the latest innovations, guided by the principle: "Better late, but reliable."

The data obtained by the researchers lead to the following conclusions: about half of teachers (50%) are distinguished by a pronounced desire for innovation (I and II categories), every fifth teacher is in the “golden mean” (about 20%), less than a third (30%) relate to innovations restrained (IV and V categories). At the same time, teachers most often apply such innovations as changing forms of educational control for individual students, developing cognitive and creative qualities of students, teaching without first explaining the material to the teacher (i.e., independent study of the material), and the students and the teacher reflecting on their activities. About half are categorically against the rule making of the students themselves in education (45% of teachers). Strongly against the rule making of the students themselves in education is also about half (45%) of teachers. One fifth of teachers (20%) are against the student’s choice of the forms and methods of teaching him and changing the goals of the teacher to please the student’s goals. The heuristic educational situation does not include the tasks and habits of about 15% of teachers.

The overall results are similar for students: about a third of students (35%) are distinguished by a pronounced desire for creativity (category I and II), many who are in the “golden mean” (about 30%), about a third (35%) are innovations restrained (IV and V categories). At the same time, students often welcome innovations such as changing forms of educational control for individual students, game and practical classes devoted to the development of their cognitive and creative qualities of students, independent study of the material, the need for students and teachers to reflect on their activities is difficult to develop and perceived. They are not opposed to norm-setting in education (65%) and the student’s choice of the forms and methods of teaching and changing the teacher’s goals to please the student’s goals - 80%. 85% do not intend to publish their work in periodicals. In general, they are interested in activities aimed at developing creativity (60%), but the heuristic educational situation raises questions and doubts about their need (about 35%).

Available data indicate that teachers and students are not ready enough to accept and implement innovations, which in itself significantly reduces the effectiveness of innovations introduced into the educational process. One of the main reasons is passivity and fatigue because of disbelief in productive and effective changes in which a person can really prove himself. According to N. Yu. Postalyuk, the phenomenon of readiness and ability to innovate is a special manifestation of the creative style of human activity as a person, partner, and professional or student (Postalyuk, 1989). It uniquely combines reflexivity and anti-conformism, the presence of an individual idea of education and the desire to implement new educational and pedagogical ideas, practical skills to learn and learn, including using new technologies (Anderson, Varnhagen, & Campbell, 1998). This aspect of creative educational and pedagogical activity can be arbitrarily called “secondary creativity”, without which “primary” creativity (idea, project, theoretical solution to the problem) cannot be fully realized.

A student who is ready and capable of innovation is characterized by the following parameters:

1) - knows his individual characteristics, character traits, the most optimal pace and forms of occupation by each of the subjects;

2) has experience in the implementation of his creative abilities in the form of performing and protecting creative work, participating in creative contests, holidays and olympiads, etc .;

3) he is aware and knows how to explain his goals in teaching, including the goals of studying a particular subject, clearly understanding why he goes to school / university and what he realizes;

4) knows how to set an educational goal in a given field of knowledge or activity; make a plan for its achievement, as well as fulfill the plan, realize your result; Compare it with similar results from other students; make a reflection and self-assessment of their activities;

5) has a personal understanding of the meaning of each of the studied subjects; owns basic knowledge and skills; guided in basic subjects, problems of relevant sciences, practices and arts;

6) has personal education results that differ from generally accepted, including from federal and regional educational norms and standards;

7) is able to indicate his understanding (or misunderstanding) on any issues that arise; knows how to understand and evaluate a different point of view, conduct dialogue, including problematic dialogue (dispute);

8) is a carrier of cultural norms and traditions, lived and learned by him; knows how to argue his knowledge and explain skills, comprehend the results;

9) knows how to act in situations of choice; behave spontaneously, and, at the same time, is able to withstand the standards of behavior that are set at school / university and / or) the family;

10) has a goal in life, feels his life filled with meaning, knows how to build his future learning plans for the future.

A teacher who is ready and capable of innovation is characterized by the following parameters:

1) the ability and willingness to take into account the individual personality potential of students; reveals the personality characteristics of students in each specific educational field;

2) clarifies the fundamental educational objects, related problems and other elements of the educational program of a personality-oriented type;

3) selects cultural analogues of the proposed and already demonstrated products of student educational activities;

4) organizes and monitors the technology of student movement along their individual educational paths, ensures the implementation of an individual set of personal qualities and roles of each student in learning;

5) records changes in the personal qualities of students and the degree to which their internal potential is realized, as well as the students' external educational products (portfolio);

6) a conscious analysis of what is happening on the basis of motives and values of pedagogical activity and universal values;

7) critical attitude to pedagogical standards, reflection and the construction of a system of meanings (meaning-making);

8) openness to the environment and professional innovations and a creatively transforming attitude towards the world, going beyond the limits of normative task;

9) the desire for self-realization, the embodiment in professional activities of their intentions and lifestyle,

10) fills the elements of educational material and forms of its presentation with personal meaning, it is specific in communication with people.

One of the significant drawbacks of modern teacher education is its bureaucratization, as well as the lack of a hint of an innovative process in the professional standard. Although, if we trace the history of Russian education, then we will meet many creative personalities and copyright, innovative techniques. Among them L.N. Tolstoy, V.A. Sukhomlinskiy, A.S. Makarenko, K.D. Ushinskiy, P.F. Kaptev, L.S. Vygotskiy, L.V. Zankov, Sh.A. Amonashvili. Each of these innovative teachers, teaching a wide holistic picture of the world, humanism, collectivism, cultural norms and rules, never forgot about the correct psychological state of students. Studying new material should not lead to stress, but arouse keen interest (Goroshchenova, 2015).

One of the disadvantages of higher education pedagogy is that the process of becoming a future teacher does not model the structure of innovative activity. A purposeful study of pedagogical innovation in the existing educational standards of higher professional education is not provided.

The same situation is observed today in higher education institutions. Students, gaining knowledge in the chosen specialties, are especially attracted to creative forms of work. However, one of the problems of professional universities is the lack of pedagogical education among teachers, and, consequently, the lack of a pedagogical methodological base for conducting the subject.

Students are also, at best, oriented towards a creative approach, which allows them to understand the idea, but not the technique of one or another innovative development. This state of affairs does not contribute to the development of innovative education. Therefore, an urgent need has ripened for a special system of training teachers and students for innovative activities. Such training is one of the components of the prevention and correction of stressful conditions associated with violations and changes in didactic interaction.

It is extremely important to note: the violation of didactic interaction in itself is not necessary for the emergence of didactogenia: students and teachers are unprepared and unable to change.

In order to prepare for innovation V.A. Slastenin and L.S. Podymova offer the following sequence of preparation of the future teacher for innovation (Slastenin, Podymova, 1997):

I stage - the development of the teacher's creative personality, the formation of students' ability to identify, formulate, analyze and solve creative pedagogical problems, as well as the development of the general technology of creative search. There are independent transfer of previously acquired knowledge and skills to a new situation, vision of a problem in a familiar situation, new functions of an object, determining the structure of an object, seeing an alternative to a solution or its method. Also there are combining previously learned methods of activity with new ones as applied to a problem, the development of criticality in understanding oneself and the world;

II stage - mastery of the fundamentals of the methodology of scientific knowledge, pedagogical research, introduction to innovative pedagogy. Students are acquainted with the social and scientific prerequisites for the emergence of innovative pedagogy, its basic concepts, creatively interpret alternative approaches to organizing a school, study the main sources of development of an alternative school, are acquainted with various types of innovative educational institutions, etc.

III stage - the development of technology of innovation. Students are acquainted with the methodology of compiling the author's program; the stages of experimental work at school, participate in the creation of the author's program, analyze and predict the further development of innovation, the difficulties of implementation.

IV stage - practical work on the experimental site to introduce innovations in the pedagogical process, the implementation of the correction, tracking the results of the experiment, introspection of professional activity. At this stage, the teacher's innovative position is formed as a system of his views and attitudes towards innovation.

Such a construction of the educational process helps to solve the problem of preparing a teacher for innovative pedagogical activity, and for students to innovate in learning.

A person's reaction to "imposing" innovations on him, as a rule, goes through several phases, for example: denial, resistance, research, involvement, traditionalization (K. Ushakov) (Jonker, 1995; Ushakov, 1996: 4-5). The phase of denial may be characteristic of a subordinate state of shock, confusion. There is still a focus on the past. In the first phase, the lack of awareness of the teaching staff or students about the nature of innovation often plays a negative role; therefore, it is advisable, ignoring the manifestation of discontent, to orient people towards the future, giving them time to adapt. In the phase of resistance, teachers and students may experience irritation and depression in them, associated with a sense of the inevitability of change. Here you need to establish "feedback" with the team, listen more, and support the hesitant. However, sometimes a sharp confrontation with a proposal to make a choice may be appropriate. In the research phase, a person, having agreed with the inevitability of changes, begins to orient himself in new forms of activity. At this moment, it is necessary to monitor the process, maintain its dynamics, and prioritize out of the abundance of ideas. In the phase of involvement, the emergence of creative groups is characteristic. Setting goals is becoming more accurate. Dramatically improving coordination. At this stage, it is necessary to jointly develop long-term goals and rituals of a new everyday life (new educational "routines").

The important point of violations and reduce the ability to cope with stress an adapting to innovations is alienation, and, especially, self-alienation. If a person is in conflict with himself and his life, for example, he gets an unwanted profession, learns among unpleasant people that learn from those he does not respect, etc. It is especially difficult for him to adapt and develop. Unfortunately, collisions of this level are usually investigated only in the context of spiritual and religious assistance. In classical psychiatry, medicine, and psychology, these conditions are described and studied far less than "post-traumatic stress disorder." (Herlofsen, 1996; Lebigot, 2001). It is more or less described in the similar phenomena of "sociopathy", "psychopathy" and "didactopathy". Working with such people is difficult, and the essence of the violation (inability and unwillingness, inability and refusal to be a man and disagreement with the world) usually remains outside the attention of specialists. At the same time, the consumer society, which has become the label of the modern "civilization", which extols anomie and tolerance, physical and social well-being, is the basis for the formation of what can be called "social cannibalism". Educators and even

students of this type are more and more common in schools and universities. From the point of view of the organic "substrate", this violation, strictly speaking, is not a mental disorder. It refers to violations occurring in the sphere of spiritual and moral, sometimes for a long time does not manifest in any way at all, even in states of depression or apathy (psychological burnout, etc.). However, at the final stages, moral self-destruction is accompanied by destruction at the level of functional and organic systems.

So, modern schools and universities need the integrative model of the support of the innovation, including a model of the prevention and coping educational stress and didactopathies. Their need attention to the comprehensive support of teachers and students as innovational actors and co-actors in schools and universities. Integrative support of the educational innovation means some moments:

1) prevention, correction of violations and the development of knowledge and skills of subjects of education in the field of self-regulation at the physiological, psychological, social and moral levels,

2) the development of a person's creative abilities, his striving for self-realization, and, at the same time, the harmonization of attitudes towards other people, the development of knowledge and skills in the field of building harmonious educational, professional and personal relationships;

3) optimization of contact and distance learning and learning interaction, work teams, including in the framework of mediation of processes by means of the Internet and digital devices (Sinay, Nahornick, & Graikinis, 2017; Stepanova, Tashcheva, Stepanova, Menshikov, Kassymova, Arpentieva, Tokar, 2018);

4) prevention and correction of pre-traumatic and post-traumatic disorders, bullying and other forms of violence and its consequences (matetogeny, pediogeny, psychological burnout, occupational and personal deformities, diseases, accidents, injuries and deaths), the formation of a culture of violence - an understanding of its role and functions in people's relationships and inhuman activities;

5) the assertion of life and the refusal of discontent and accusations against other people, against one's own address and against life in general, the willingness and desire to efficiently and effectively process traumatic experiences;

6) the development of preventive and correctional stress management programs, the introduction of techniques and programs to cope with stress in education, including in the context of specialized occupations and practices, as well as psychotherapeutic-oriented pedagogical communication;

7) developmental innovation in different level of the educational systems, including personal, interpersonal and organizational innovations;

8) integrative approach to the traditional and innovational model and technologies in education, the aim of this integration is personal, interpersonal, educational and professional development of the actors (students and teachers) in safety, helping and nonviolence atmosphere.

Conclusion. Modern Russian education is undergoing yet another "era of change." Once again, it seeks development paths worthy of its historical past. In addition, the distinguishing feature here is innovative processes that affect all areas of the educational process, including not only the types of education, pedagogical methodology and psychology, but also the personality of the teacher and student.

The ability to innovation and development is a function of the personal, interpersonal and organizational harmony. In developing an integrative coping model for students and teachers, it is important to consider the prevention and correction of stress in the context of correcting the development of the subjects of education in different contexts: in the context of educational or professional and personal interaction.

We consider it important to introduce the concept of stress of innovation and the concept of stress innovation in the educational process. The stress of innovation is the stress that occurs in the process and result of the introduction of innovation. The ability and ready to prevent and cope with stress of the innovations and other changes is a function of the harmony of intrapersonal, interpersonal and organizational relations. In developing an integrative prevention and coping model for students and teachers (in matetogenias and pediogenias), it is important to consider the prevention and correction of stress in the context of the development of the actors of education in different contexts: in the context of educational, professional, personal and interactional development. Prevention and correction of stress in innovative education (and in stress of the innovation) is associated with the prevention and correction of pediogenias (harm caused by incorrect, destructive, and pathologizing attitudes of teachers towards students), as well as correction and prevention of "matetogenias" (harm caused by incorrect, devastating, and pathologizing attitudes of students towards teachers). Although the share of the latter is supposed to

be relatively small, it has been growing lately, as the tension between pupils and teachers is growing. Modern educational institutions often mark not only the “usual” forms of confrontation between teachers and students (in the form of lower grades, pickiness, situational conflicts, etc.), but also forms that are close to directional, group bullying and other forms of the violations. In addition to educational and professional stress, therefore, in the work of preventing and correcting stress, developing the knowledge and skills of students and teachers in coping with stress, correction, and support of personal development and interpersonal relations in innovation process are important. Students and teachers in innovation need to be given effective techniques and integrative anti-stress assistance to cope with stress of the innovations while they are studying and work.

In addition to educational and professional stress in innovations and other changes it is important to take into account the stresses of personal development and interpersonal relations, which are associated with the “private” or “intimate-personal” as well as social aspects and layers of relationships. These are, for example, such characteristics as the social distance of relations between groups, the social status of a person and a group, the presence, and absence of stigmatization and isolation (ghettoization), readiness for close, trusting relationships (such as friendship, love, parenthood and mentoring), readiness to innovations and changes, etc. To overcome stress of the innovations and changes, it is necessary, in fact, also, but somewhat differently: at a strategic, in-depth level - accepting the fears, suffering of actors, their awareness of themselves as subjects of arbitrariness and violence against them, at the tactical level - dialogue with the subject of arbitrariness and violence, recognition of his acts as situations of arbitrariness.

The motivation for self-preservation (the need for security) is the fundamental motivational education of the individual, the implementation of which in every day and in transboundary (such as innovation) situations is the main and necessary condition for existence (Stepanova, Gridneva, Menshikov, Kassymova, Tokar, Merezhnikov, Arpentieva, 2018). Associated with it are the motives (intentions) of understanding - of themselves and the world, the motives of relations - with people and the motives of transformation - of themselves and the world. The “paradigm of invulnerability”, which characterizes everyday life, existence in an ordinary situation implies the fulfillment of the security condition as a matter of course. A person believes that he understands the world, has a satisfying relationship with people and is able to influence the world, to change. However, in an innovation, in transnormal situation, the fulfillment of this condition is problematic, the understanding of oneself and the world is lost, the illusions of control and many of the illusions of relationships are destroyed. Therefore, complex work with stress of innovations is needed, but not fragmentary. Different techniques and practices of coping with stress of the innovations will be productive and effective only in the context of a comprehensive work with students and teachers. Asymmetries, disharmony, mistakes, and incompleteness of educational and professional relations often mark the problems of interpersonal and intrapersonal relations. These problems actualized in changes and innovative situations. These asymmetries manifest themselves in pedagogical and administrative conflicts, in psychological burnout, overwork, and depression, in deviant behavior and deformations (personal and professional type), in diseases and injuries, accidents, deaths, including murder and suicide. Very often, a man cannot cope with stress, if he is deprived of faith in himself and life, support of his family, friends, comrades, and colleagues. Many men cannot cope with stress, if they weakened by illness and other injuries, if they does not have the knowledge and skills of co-development. The man cannot cope with stress, if he is not familiar with mechanisms of productive and effective transformation of stress and distress in changes and innovations.

For students and teachers, innovation is both a situation that generates stresses and crises at the personal, interpersonal and organizational levels, and a way to overcome such stresses, problems, and development crises. It is important to note the relationship of causes and consequences, as well as the manifestations of stress of teachers and students at the personal, interactive, educational and organizational levels. In addition, we consider it important to note that didactogeny, in which different researchers highlight pedagogical (violations that arise because of pedagogical errors or intentional violence by teachers) and matetogeny (violations that arise from teachers because of intentionally or unintentionally incorrect and / or violent behavior from students), also form a single system. Only in theoretical terms can one divide the single process of a disturbed, pathologizing man or woman as a person, as a partner and as a (future) professional, didactic communication in practice, these processes are closely related.

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БІЛІМ БЕРУІНДЕГІ ИННОВАЦИЯ ЖӘНЕ ИННОВАЦИЯЛЫҚ СТРЕСС

Аннотация. Мақалада инновацияның стрестері туралы айтылады. Авторлар стресс-инновация тұжырымдамасын ұсынады. Инновациялық стресс - бұл инновацияны енгізу процесінде және нәтижесінде пайда болатын стресс. Студенттер мен оқытушылар үшін инновация дегеніміз - бұл жеке тұлғааралық және ұйымдастырушылық деңгейлердегі күйзелістер мен дағдарыстарды тудыратын жағдай, сондай-ақ осындай күйзелістер, проблемалар мен даму дағдарыстарын жеңудің жолы. Мұның себептері мен салдарының байланысын, сонымен қатар мұғалімдер мен студенттердің жеке, интерактивті, білім беру және ұйымдастырушылық деңгейлеріндегі стрестің көріністерін атап өткен жөн. Біздің зерттеуіміздің негізгі мақсаты - білім берудегі жаңашылдықтың стрестері мұғалімдер мен студенттердің кәсіби және академиялық жетістіктеріне қалай әсер ететінін және бұл олардың өздеріне, денсаулығына және жалпы өміріне қанағаттануға қалай әсер ететінін анықтау. Біздің зерттеуіміздің негізгі әдісі студенттер мен оқытушылар арасындағы инновация стресінің проблемаларына теориялық талдау жасау болды. Алынған нәтижелер оқушыларға (студенттерге) және мұғалімдерге ұйымдастырушылық-дидактикалық даму мен тоқырау жағдайындағы, реформалар мен басқа да өзгерістер жағдайындағы жаңашылдық стресінің алдын-алу мен түзетудің тиімді және тиімді әдістері бойынша оқытудың қажет емес екендігін көрсетеді. Бала мен ересек адамның психикасындағы дағдарыс және күйзеліс - бұл девиантты мінез-құлықтың, даму бұзылыстарының, аурулардың және жарақаттардың және басқалардың пайда болу және шоғырлану қаупін артатын жағдайлар. Осы өзгерістер оқыту мен тәрбиелеу жағдайында айқынырақ бола бастайды. жұмыс және демалыс инновация және басқа да өзгерістер процесінде қалыптасқан және өзгеретін қатынастар ескерілмейді. Білім берудегі барлық тиімді және тиімді инновациялар бір идеямен байланысты - адамның тұлға, серіктес және кәсіби тұлға ретінде дамуы сөзсіз, мүмкін емес мүмкін болатын жағдайлар жасау. Студенттер мен оқытушылар үшін стресстің алдын-алу және жеңудің интегративті моделін жасау кезінде (матетогения және педигениямен) білім беру, кәсіптік, жеке және интерактивті даму жағдайында білім беру субъектілерінің дамуы жағдайында стресстің алдын-алу және түзету міндеттерін қою қажет. Инновациялық білім берудегі стрестің алдын-алу және түзету (және жаңашылдық стрестері) педиогенездің алдын-алу және түзету (мұғалімдердің оқушыларға дұрыс емес, деструктивті және патологиялық қатынасынан туындаған зиян), сонымен бірге матетогенияны (қате, деструктивті және патологиялық салдарынан болатын залал) түзету және алдын-алу. оқушылардың мұғалімдерге қатынасы). Жұмыстың құрамдас бөліктерінің бірі - білім беру субъектілеріне кеңес беру. Мұндай көмек жүйелік, интегративті профилактикаға және білім берудегі стресті, оның ішінде инновациялық стресті түзетуге бағытталған болуы керек.

Түйін сөздер: стресс, инновация, педиогения, матетогения, стресті басқару, студенттер, оқытушылар, дағдарысты басқару, психологиялық көмек.

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СТРЕСС ИННОВАЦИЙ И ИННОВАЦИИ В ОБРАЗОВАНИИ

Аннотация. Статья посвящена стрессу инноваций. Авторы вводят понятие стресса инноваций. Стресс инноваций - это стресс, который возникает в процессе и результате введения инноваций. Для студентов и преподавателей инновации являются как ситуацией, порождающей стрессы и кризисы персонального, интерперсонального и организационного уровней, так и способом преодоления таких стрессов, проблем, и кризисов развития. Важно отметить взаимосвязь причин и последствий, а также проявлений стрессов преподавателей и студентов на личностном, интерактивном, учебном и организационном уровнях. Основные цели нашего исследования - выяснить, как стресс от инноваций в образовании влияет на профессиональный и академический успех преподавателей и студентов, и как это влияет на их удовлетворенность собой, своим здоровьем и жизнью в целом. Основным методом нашего исследования был теоретический анализ проблем стресса инноваций у студентов и преподавателей. Полученные результаты показывают, что ученики (студенты) и учителя нуждаются не только в обучении продуктивным и эффективным методам предотвращения и коррекции стресса нововведений в ситуациях организационно-дидактического развития и застоя, реформ и других изменений. Кризисные и стрессовые состояния психики ребенка и взрослого человека - это состояния, при которых возрастает риск формирования и закрепления девиантного поведения, нарушений развития, заболеваний и травм и т. д. Эти изменения становятся более выраженными в тех случаях, когда в условиях обучения и воспитания, работы и отдыха существующие и изменяющиеся отношения в процессе инноваций и другие изменения не принимаются во внимание. Все продуктивные и эффективные инновации в образовании связаны одной идеей - созданием условий, при которых развитие человека как личности, партнера и профессионала неизбежно, а не просто заявлено или невозможно. При разработке интегративной модели профилактики и преодоления стресса для учащихся и преподавателей (при матетогениях и педиогениях) важно ставить задачи профилактики и коррекции стресса в контексте развития субъектов образования в разных контекстах: в контексте образовательного, профессионального, личностного и интерактивного развития. Профилактика и коррекция стресса в инновационном образовании (и в стрессе от инноваций) связана с профилактикой и коррекцией педиогений (вреда, вызванного неправильным, разрушительным и патологизирующим отношением учителей к ученикам), а также коррекцией и профилактикой матетогений (вреда, причиняемого неправильным, разрушительным и патологизирующим отношением учащихся к учителям). Один из компонентов работы - консультативная помощь субъектам образования. Такая помощь должна быть направлена на системную, интегративную профилактику и коррекцию стрессов в образовании, включая стрессовые инновации.

Ключевые слова: стресс, инновация, педиогения, матетогения, преодоление стресса, студенты, учителя, антикризисное управление, психологическая помощь.

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REFERENCES

[1] Anderson, T., Varnhagen, S., & Campbell, K. Faculty adoption of teaching and learning technologies: Contrasting earlier adopters and mainstream faculty. *The Canadian Journal of Higher Education*, 1998. Vol. 28(23). P. 71-78.

[2] Angelovski K. Teachers and innovations: book for teacher. Moscow, Prosveshchenie Publ., 1991. 159 s. (in Russian)

[3] Arpentieva M. R., Kassymova G. K., Lavrinenko S. V., Tyumaseva Z. I., Valeeva G. V., Kenzhaliyev O. B., Triyono M. B., Duvalina O.N., Kosov A. V. Environmental education in the system of global and additional education. *Bulletin of National Academy of Sciences of the Republic of Kazakhstan*. - 2019. - Vol. 3, (379). - P. 11 – 18 <https://doi.org/10.32014/2019.2518-1467.45>

[4] Arpentieva M.R. Academic socio-psychological counseling and teaching of psychology. - Kaluga: K.E. Tsiolkovskiy KSU publ., 2015. 670s. (In Russian)

[5] Arpentieva M.R., Kassymova G., Kenzhaliyev O., Retnawati H., Kosherbayeva A. (2019) Intersubjective Management in Educational Economy. Materials of International Practical Internet Conference “Challenges of Science”. ISBN 978-601-323-144-0. Issue II, 2019. Page 24- 31. <https://doi.org/10.31643/2019.004>

[6] Aryn E. (ed.) Russian-Kazakh Explanatory Dictionary: Pedagogics. Pavlodar: ECO NFP. 2006. 482 b. (In Kazakh)

[7] Atayeva M., Putro, N. H. P. S., Kassymova G., Kosbay S. (2019). Impact of reading on students' writing ability. Materials of International Practical Internet Conference “Challenges of Science”. ISBN 978-601-323-144-0. Issue II, 2019. Page 5-13. <https://doi.org/10.31643/2019.001>

[8] Atayeva, M., Ciptaningrum, D. S., Hidayah R., Kassymova, G. K., Dossayeva, S. K., & Akmal (2019). Cultivating Junior High School students' critical thinking skills by using a short-video in English language classroom. *Bulletin of National Academy of Science of the Republic of Kazakhstan*. ISSN 1991-34-94. <https://doi.org/10.3204/2019.2518-1467.124>

[9] Clarin M.V. Innovations in world pedagogy: training based on research, games, discussions: (Analysis of foreign experience). Moscow: SPC "Experiment", 1995. 176 p. (In Russian)

[10] Clark B.R. Maintaining change at universities. The succession of case studies and concepts. Moscow: Publ. House of the Higher School of Economics, 2011. 312s. (In Russian).

[11] Goroshchenova O.A. Features of educational work with youth at the irkutsk national research technical university. *European Journal of Natural History*, 2016. № 6. S. 93-97.

[12] Goroshchenova, O.A. Formation of the technical intelligentsia in the Irkutsk province in the middle of the XVIII - early XIX centuries. – *Sant Petersburg: Clio*, 2007. No. 4 (39). S.55. (in Russian).

[13] Goroshchenova, O.A. Moscow Navigation School and its successors. *Questions of history: scientific-historical. journal – Moscow*, 2005, No. 10. S.151-156. (in Russian).

[14] Goroshchenova, O.A. Ot navigatskoy shkoly k tekhnicheskomu universitetu (1754-2015) [From nautical school to technical university]. Irkutsk: Irkutskiy natsional'nyy issledovatel'skiy tekhnicheskii universitet, 2015. (in Russian).

[15] Herlofsen P. Group treatment in the aftermath of trauma. In: *Balliere's Clinical Psychiatry*. 1996. V.2 –P.315–328.

[16] Jonker J. *Toolbook for Organizational Change. A Practical Approach for Managers*. London: Van Gorcum and Comp BV, 1995.260p.

[17] Kassymova G. Competence and its implications. *Challenges of Science*. 2018. <https://doi.org/10.31643/2018.063>

[18] Kassymova G. Stress management techniques recommended for students. *Challenges of Science*. 2018. <https://doi.org/10.31643/2018.008>

- [19] Kassymova G. K., Stepanova G. A., Stepanova O. P., Menshikov P.V., Arpentieva M.R., Merezhnikov A. P., Kunakovskaya L. A.. Self-development management in educational globalization. *International journal of education and information technologies*. Vol. 12 (12), 2018. P. 171-176.
- [20] Kassymova G.K., Tokar O.V., Tashcheva A.I., Slepukhina G.V., Gridneva S.V., Bazhenova N. G., Shpakovskaya E.Yu., Arpentieva M. R.. Impact of stress on creative human resources and psychological counseling in crises. *International journal of education and information technologies*, 2019. Vol.13 (1). P. 26-32.
- [21] Kassymova K. G., Tyumaseva Z. I., Valeeva G. V., Lavrinenko S. V, Arpentieva M. R.,Kenzhaliyev B. K, Kosherbayeva A. N., Kosov A. V., Duvalina O.N. Integrative model of student and teacher stress coping: the correction of relations in educational, professional and personal interaction. *Bulletin of National Academy of Sciences of the Republic of Kazakhstan*. - 2019. - Vol. 3, (379). - P. 2-11 <https://doi.org/10.32014/2019.2518-1467.53>
- [22] Kassymova, G. K., Arpentieva, M. R., Kosherbayeva, A. N., Triyono, M. B., Sangilbayev S. O., Kenzhaliyev B. K. (2019). Science, education & cognitive competence based on e-learning. *Bulletin of the National academy of sciences of the Republic of Kazakhstan*, 2019, (1), pp. 269–278. <https://doi.org/10.32014/2019.2518-1467.31>
- [23] Kassymova, G. K., Kosherbayeva, A. N., Sangilbayev, O. S., Schachl, H., Cox, N. (2018). Stress management techniques for students . *Advances in Social Science Education and Humanities Research или European Proceedings of Social and Behavioural Sciences (ASSEHR)*. Paris, France, Amsterdam, Netherlands: AtlantisPress, 2018. - Vol. 198. Proceedings of the International Conference on the Theory and Practice of Personality Formation in Modern Society (ICTPPFMS 2018). <https://doi.org/10.2991/ictppfms-18.2018.10>
- [24] Lebigot M. Psychological debriefing. In: *Stress et Trauma*. 2001. Vol. 1(3). – P. 137–141.
- [25] Minigalieva M.R. The study of psychology and self-knowledge of students. *Psychotherapeutic model of pedagogical communication* L.A. Petrovskaya. Saarbrücken: LAP, Lambert Academic Publishing, 2012. 632s. (In Russian)
- [26] Ostapenko A.A., Khagurov T.A. Educational innovations and reforms through the eyes of teachers and teachers: a brief survey of sociological research. *International Journal of Experimental Education*. 2013. No.4. Pp. 221-226. (In Russian)
- [27] Postalyuk N. Yu. Creative style of activity: pedagogical aspect. Razan:Publishing house of Kazan University, 1989. 205 p.
- [28] Rogers, E.M. Diffusion of innovations. New York: Free Press, 2003. 380p.
- [29] Pertiwi, F. D., Sudrajat, A., Kumalasari, D., Retnawati, H., Waspada, S. P. Dossayeva, S. K., Kassymova, G. K., (2019). Gender equality in feminism. *The Bulletin*, 5(381), 112–121. <https://doi.org/10.32014/2019.2518-1467.130>
- [30] Sinay, E., Nahornick, A., &Graikinis, D.. Fostering global competencies and deeper learning with digital technologies research series:Creativity and innovation in teaching and learning: A focus on innovative intelligence (I²Q) pilot program (Research Report No. 17/18-11). Toronto, Ontario, Canada: Toronto District School Board, 2017. 92p. Available at: https://www.researchgate.net/publication/322700360_CREATIVITY_AND_INNOVATION_IN_TEACHING_AND_LEARNING_A_FOCUS_ON_INNOVATIVE_INTELLIGENCE_I2Q_PILOT_PROGRAM
- [31] Slastenin V.A., Podymova L.S. Pedagogy: Innovative activity. Moscow: Master, 1997. - 224 p.
- [32] Stepanova, G. A., Tashcheva, A. I., Stepanova, O. P., Menshikov, P. V., Kassymova, G. K., Arpentieva, M. R., Tokar, O. V.The problem of management and implementation of innovative models of network interaction in inclusive education of persons with disabilities. *International journal of education and information technologies*. Vol. 12, 2018. P. 156-162.
- [33] Stepanova, O. P., Gridneva, S. V., Menshikov, P. V., Kassymova, G. K., Tokar, O. V., Merezhnikov, A. P., Arpentieva, M. R.. Value-motivational sphere and prospects of the deviant behavior. . *International journal of education and information technologies*. Vol. 12, 2018. P. 142-148.
- [34] Tyumaseva Z.I., Orekhova I.L., Valeeva G.V., Salamatov A.A., Kalugina E.V. Phenomenon of tutorism in health saving: risk factors and sustainability. *Education and science*. 2018.Vol. 20. No. 9. S. 139-157. (In Russian)
- [35] Tyumaseva Z.I., Valeeva G.V. Technology of advisory activities on issues of the subjective component of health of training. *Bulletin of VEGU (Eastern Economic and Law Humanitarian Academy)*. Ufa: VELHA Publ., 2018. No. 5 (97). S. 128-135. (In Russian)
- [36] Ushakov K. M. From denial to involvement. *Innovation Administrator Behavior Model. Headmaster -1996*. No. 5. - S. 3-6. (In Russian)
- [37] Valeeva G.V .Psychological counselling as a technology for the development of psychological readiness of future teachers for health activities. *Bulletin of the Chelyabinsk State Pedagogical University*. 2013. No. 11. S. 26-37. (In Russian)
- [38] Valeeva G.V. Features of application of design in consulting. In the collection: *Design and Expertise in Modern Education: Methodology, Methods, Practices Materials of the 1st All-Russian Scientific and Practical Conference*. Kaluga: K.E. Tsiolkovskiy Kaluga State University publ., 2019. S. 11-17. (In Russian)
- [39] Valeeva G.V. Features of consulting teachers of a pedagogical university. In: *Psychological service of the university: reality and prospects. Materials of the I All-Russian scientific-practical conference with international participation*. Moscow:National Research University Higher School of Economics Publ.,2017. S. 241-247. (In Russian)
- [40] Zagashev I.O. Psychological readiness for innovation as a condition of effectiveness of implementation quality management systems. *Bulletin of the Samara Scientific Center of the Russian Academy of Sciences*, vol. 12, No. 5 (2), 2010. S. 418-420. (In Russian)
- [41] Zimnyaya I.A., Adequacy approach. What is its place in the system of the modern approaches and problems of education. (Theoretic-methodological aspect). *Today's higher education*. 2006. Vol. 4. P. 20-27. (in Russian)

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DIVISION OF AUTHORITY AND POWERS BETWEEN SUBJECTS OF THE RUSSIAN FEDERATION AND MUNICIPAL FORMATIONS IN SPHERE OF DEVELOPMENT OF TOURISM

Abstract. By this article the fundamental scientific task addressed is to develop a unified, logically consistent understanding of the nature of scientific problems related to political and legal aspects of the implementation of the powers of state authorities of the subjects of the Russian Federation and local self-government bodies in sphere of tourism development, as well as studying the current state studies of political and legal aspects of the implementation of the powers of state bodies of the subjects of the Russian Federation and local self-government bodies in sphere of tourism development.

The analysis, synthesis and legal methods were used in the study of the division of authority and powers between subjects of the Russian Federation and municipal formations in the sphere of development of tourism.

The study reveals, in Russian federal laws, division of authority and powers between subjects of the Russian Federation and municipal formations in the sphere of development of tourism development is based on a fragile balance that is based on ambiguously interpreted norms of the Constitution of the Russian Federation.

Keywords: division of authority and powers between of state authorities and local self-government bodies, Constitution of the Russian Federation, federal state, federalism, human rights, the jurisdiction of Federation, joint jurisdiction of federation and subjects of the federation, the jurisdiction of subjects of federation, laws on tourism, Russian federalism, tourism.

Introduction. Accumulated social experience and constantly evolving tourism legislation require rethinking of the general conceptual approaches to the study of political and legal aspects of the implementation of the powers of state authorities of the subjects of the Russian Federation and local self-government bodies.

Russian state pushes domestic business to modernize [15]. The governance of national borders and the growth of (mass) tourism are both linked to the processes of modernisation [14]. As with other open system sectors, tourism and hospitality organizations commonly engage in strategic planning as a means of gaining competitive advantage in the face of an increasingly uncertain, dynamic and complex world [7, 8]. Tourism, in particular indigenous, is considered as a means of facilitating socio-economic benefits to Indigenous individuals, communities and host regions [5]. As Kazakh researchers A.M. Madisheva, A.S. Bikenova and English scientist L.T. Eleusis note, analyzing the policies and activities carried out in sphere of tourism regulation in foreign countries, some of the principal approaches common to all the most developed countries in the tourist sphere the main role in regulating the development of tourism of public authorities, with the creation at the national level of a single governing body, up to giving it the status of a ministry [11]. Legal regulation of tourism, including constitutional, is of great importance for the creation of favorable conditions for tourism. One of the aspects of the legal support of tourism activities is the distinction between the subjects of competence between subjects of federation and municipal formations, which determines the competence of regional and local authorities.

Methods. The analysis, synthesis and legal methods were used in the study of the division of authority and powers between subjects of the Russian Federation and municipal formations in sphere of development of tourism.

Discussion and results. The Constitution of Russia defines the state as federative (Article 1), in accordance with this act the Russian Federation consists of Republics, territories, regions, cities of federal importance, an autonomous region and autonomous areas – equal subjects of the Russian Federation (Article 5).

Articles 71 and 72 of the Constitution of the Russian Federation define the jurisdiction of the Russian Federation and the joint jurisdiction of the Russian Federation and the subjects of the Russian Federation. According to Article 73 of the Basic Law of Russia outside the jurisdiction of the Russian Federation and the powers of the Russian Federation on the subjects of joint jurisdiction of the Russian Federation and the subjects of the Russian Federation, the subjects of the Russian Federation have full state power, that is, everything that is not listed in Articles 71 and 72 relates to the subjects of the Russian Federation, within which they are free and may adopt own laws. Also, regions may adopt laws within the framework of joint jurisdiction, but their freedom is limited by federal law. Tourism and hospitality are not specified in Articles 71 and 72 of the Constitution of Russia, therefore it can be concluded the subjects of the Russian Federation are free to regulate the relevant relations. As noted by A.L. Bredikh in the joint jurisdiction are the most problematic field of federative relations. The joint regulation of the designated areas makes it possible to coordinate the interests of the Federation and regional authorities, allows each region to independently carry out legal regulation in accordance with the national-cultural and other features of a particular region, as well as its socio-economic development. At the same time, the uncertainty of regulatory boundaries leads to the competition of federal and regional regulations, as well as creates tensions in federal relations [4].

However, despite the Constitution of the Russian Federation does not include tourist activities in the jurisdiction of the Russian Federation and the joint jurisdiction of the federation and the subjects, in our country the Federal Law of the Russian Federation "On the general principles of the organization of legislative (representative) and executive bodies of state power of the subjects of the Russian Federation" and the Federal Law of the Russian Federation "On the Basics of Tourist Activities in the Russian Federation" have been approved regulating relations connected with tourism at the federal level. First act refers to the creation of favorable conditions for the development of tourism in the subjects of the Russian Federation to the powers of the state authorities of the subjects of the Russian Federation in joint jurisdiction exercised by these bodies independently at the expense of the budget of the subjects of the Russian Federation (except for subventions from the federal budget) (Article 26.3).

In accordance with Article 3 of the Federal Law of the Russian Federation "On the Basics of Tourist Activities¹ in the Russian Federation", the Russian legislation on tourism activities consists of this act, federal laws and other regulatory legal acts of the Russian Federation adopted in accordance with it, as well as laws and other regulatory legal acts of the subjects of the Russian Federation. These acts of the regions cannot be against the Federal Law "On the Basics of Tourist Activity in the Russian Federation" and the federal laws adopted in accordance with it. Also by this act, the powers of the bodies of state power of the subjects of the Russian Federation to create favorable conditions for the development of tourism in the subjects of the Russian Federation include defining the main tasks in sphere of tourism and the priority directions of tourism development in the subjects of the Russian Federation; development, statement (approval) and implementation of strategic planning documents in sphere of tourism on issues falling under the bodies of state power of the subjects of the Russian Federation; creating favorable conditions for the development of the tourism industry in the subjects of the Russian Federation, organizing and carrying out activities in sphere of tourism at the regional and intermunicipal levels, participating in information support for tourism, creating tourist information centers in the subjects of the Russian Federation and ensuring their functioning and other powers (Article 3.2.). Russian researchers L. Rudenko, N. Agheskina, A. Belyanskaya and M. Kholkina classify the powers of the bodies of state power of the subjects of the Russian Federation in the sphere of tourism for rule-making, to create favorable conditions for the development of the tourist industry, to implement the law [1].

¹In Russia, under the tour operator activity refers to the activity on the formation, promotion and sale of the tourist product, and under the travel agent – the activity on the promotion and implementation of the tourist product. And under the implementation of the tourist product – the activities of a tour operator or travel agent to conclude an agreement on the sale of a tourist product with a tourist or other customer of a tourist product, as well as the activities of a tour operator and (or) third parties to provide services to the tourist in accordance with this agreement [17].

On the rights of local self-government bodies to create favorable conditions for the development of tourism – the implementation of measures to develop priority areas for the development of tourism in the territories of municipal formations, promoting the creation of favorable conditions for unhindered access of tourists (sightseers) to tourist resources located in the territories of municipal formations, and means of communication as well as receiving medical, legal and other emergency care, organizing and conducting activities in sphere of tourism at the municipal formations. At the regional level, participation in the organization and holding of international events in sphere of tourism, events in this sphere at the All-Russian, interregional, regional and inter-municipal levels, assistance in the creation and operation of tourist information centers in the territories of municipal formations (Article 3.3. of the Federal Law of the Russian Federation “On the Basics of Tourist Activities in the Russian Federation”). As L. Rudenko, N. Agheskina, A. Belyanskaya and M. Kholkina note, it is advisable to exercise these rights in those municipalities where there are sufficient tourist resources to develop tourism in the territory of the respective municipal formation for the long term. In addition, to carry out not only episodic activities, but also to carry out continuous and effective work on the development of tourism in the municipal formations, financial resources and enough human resources are necessary [1]. Russian researcher I.A. Chebotareva emphasizes that a fairly rigid federal framework of the rights and powers of the bodies of state authorities of the subjects of the Russian Federation and local self-government bodies has been established. However, the declaration of the tourism industry as a priority, until the issue of adequate financial support for public authority is resolved, will remain a declaration [6].

Conclusion. The contradictions between the fact that the Constitution of the Russian Federation does not include the regulation of tourism activities in the federation’s powers, but federal laws regulate these relations, can be explained by the position of the legislator, who in the preamble of the Federal Law of the Russian Federation “On the Basics of Tourist Activities in the Russian Federation” established that this act defines the principles of state policy aimed at establishing the legal basis of uniform tourist market in the Russian Federation, and regulates relations arising in the exercise of the right of citizens of the Russian Federation, foreign citizens and stateless persons to rest and leisure, to free travel and other rights of travel, and the procedure for the rational use of tourist resources of the Russian Federation. In accordance with the Constitution of the Russian Federation, these issues as a whole, not in relation to tourism, may be regulated by federal laws.

However, it should be noted that the federal legislation on tourist activities, for the most part, does not regulate many of the relationships stated in the preamble. Most of this law is devoted to the regulation of the characteristics of civil transactions in the sphere of tourism. Indeed, in accordance with clause “c” [“B”] of Article 71 of the Constitution of the Russian Federation, the regulation and protection of the rights and freedoms of a person and a citizen are subject to the jurisdiction of the federation. However, if this norm is interpreted literally and broadly, then it will devalue the very idea of a federation, since the federal center will regulate all relations with all individuals and legal entities on the territory of Russia, leaving nothing for legal regulation by the subjects of the federation. This provision should be interpreted systematically, taking into account other norms of the Constitution and should not apply to subjects of the Federation, including tourism. It can be concluded that the federal legislator broadly interprets the Constitution of the Russian Federation, appropriating the powers of the subjects of the Russian Federation.

Moreover, the norms of the law do not regulate the issues of the unity of the tourist services market. The uniform market is the free movement of goods, capital, services and people, the issues raised in the law are not related to the freedom of the tourist market.

The study reveals, in Russian federal laws, division of authority and powers between subjects of the Russian Federation and municipal formations in sphere of development of tourism development is based on a fragile balance that is based on ambiguously interpreted norms of the Constitution of the Russian Federation.

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**ТУРИЗМДІ ДАМУ САЛАСЫНДА РЕСЕЙ ФЕДЕРАЦИЯСЫНЫҢ СУБЪЕКТІЛЕРІ МЕН
МУНИЦИПАЛДЫҚ ҚҰРЫЛЫМДАР АРАСЫНДА ЖҮРГІЗУ
ЗАТТАРЫ МЕН ӨКІЛЕТТІКТЕРІН АЖЫРАТУ**

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**РАЗГРАНИЧЕНИЕ ПРЕДМЕТОВ ВЕДЕНИЯ И ПОЛНОМОЧИЙ
МЕЖДУ СУБЪЕКТАМИ РОССИЙСКОЙ ФЕДЕРАЦИИ И
МУНИЦИПАЛЬНЫМИ ОБРАЗОВАНИЯМИ В СФЕРЕ РАЗВИТИЯ ТУРИЗМА**

Аннотация. В настоящей статье решается фундаментальная научная задача – выработка единого, логически последовательного понимания характера научных проблем, связанных с политико-правовыми аспектами реализации полномочий органов государственной власти субъектов Российской Федерации и органов местного самоуправления в сфере развития туризма, а также изучение современных государственных исследований политико-правовых аспектов реализации полномочий органов государственной власти субъектов Российской Федерации и органов местного самоуправления в сфере развития туризма.

При исследовании правового разделения предметов ведения и полномочий между субъектами Российской Федерации и муниципальными образованиями в сфере развития туризма использовались методы анализа и синтеза.

В исследовании выявлено, что в российских федеральных законах разделение предметов ведения и полномочий между субъектами Российской Федерации и муниципальными образованиями в сфере развития туризма основано на неоднозначно истолкованных нормах Конституции Российской Федерации.

Ключевые слова: разделение предметов ведения и полномочий между органами государственной власти и органами местного самоуправления, Конституция Российской Федерации, федеративное государство, федерализм, права человека, предметы ведения федерации, предметы совместного ведения федерации и субъектов федерации, предметы ведения субъектов федерации, законы о туризме, российский федерализм, туризм.

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REFERENCES

[1] Ageshkina N.A., Belianskaya A.B., Kholkina M.G. (2016) Commentary to the Federal Law of the Russian Federation of November 24, 1996 No. 132-FZ "On the Basics of Tourism Activities in the Russian Federation", editor L.L. Rudenko. Legal database ConsultantPlus. (In Russian).

[2] Ayupova Z.K., Kussainov D.U., Nagan W. (2019) Novelties in the Legal System as Motive Force of Legal Integration, News of the National Academy of Sciences of the Republic of Kazakhstan. Series of Social and Human Sciences, 1: 102-106. – <https://doi.org/10.32014/2019.2224-5294.15> (In Eng).

[3] Ayupova Z.K., Kussainov D.U., Winston N. (2019) On the state mechanisms of ensuring social policy in the Republic of Kazakhstan, Reports of the National Academy of Sciences of the Republic of Kazakhstan, 1: 47-51. – <https://doi.org/10.32014/2019.2518-1483.6> (In Eng).

[4] Bredikhin A.L. (2012) Federal system of the Russian Federation. Legal database ConsultantPlus. (In Russian).

[5] Carr A., Ruhanen L., Whitford M. (2016) Indigenous peoples and tourism: the challenges and opportunities for sustainable tourism, Journal of Sustainable Tourism, 24:8-9: 1067-1079. – DOI 10.1080/09669582.2016.1206112 (In Eng).

[6] Chebotareva I.A. (2019) Tourism and tourist activities as a matter of jurisdiction in the Russian Federation: the legal and technical characteristics of the decision on the issues of the distribution of powers. Paper presented in Sourcebook IX All-Russian scientific-practical conference Law and Legality: Issues of Theory and Practice, April 12-13, in Abakan, Russian Federation. (In Russian).

[7] Harrison J. (2003) Strategic analysis for the hospitality industry. *Cornell Hotel and Restaurant Administration Quarterly*, 44(2): 139-152. – DOI 10.1177/0010880403442013 (In Eng).

[8] Jogaratnam G., Law R. (2006) Environmental scanning and information source utilization: Exploring the behavior of Hong Kong hotel and tourism executives. *Journal of Hospitality and Tourism Research*, 30(2): 170-190. – DOI 10.1177/1096348005284488 (In Eng).

[9] Kalykulov K. (2008) Effective economic and mathematical methods of forecasting tourism development, *High School of Kazakhstan*. 4: 263-264 (In Kazakh).

[10] Lubennikova S.A. (2015) The concept and content of socio-economic human rights of a citizen, *Bulletin of the Buryat State University [VestnikBuryatskogoGosudarstvennogoUniversiteta]*, 2-2: 217-221. (In Russian).

[11] Madisheva A.M., Bikenova A.S., Eleusis L.T. (2018) Tourist services in the sphere of education, *News of the National Academy of Sciences of the Republic of Kazakhstan. Series of Social and Human Sciences*, 5: 68-72. – DOI 10.32014/2018.2224-5294.12 (InEng).

[12] Naumkina V.V. (2018) Constitution of the Republic within the Russian Federation as a source of law, *Constitutional and Municipal Law [Konstitutsionnoyeimunitsipal'noye parvo]*: 6 (34-36). (In Russian).

[13] PanzabekovaA.Zh., Mussayeva D.M., Zhanbozova A.B. (2018) Formation and development of information society in the context of its impact on quality of population life, *Reports of the National Academy of Sciences of the Republic of Kazakhstan*, 5: 94-99. – DOI 10.32014/2018.2518-1483.14 (In Eng).

[14] Prokkola E.-K. (2010) Borders in tourism: the transformation of the Swedish–Finnish border landscape, *Current Issues in Tourism*, 13:3: 223-238. – DOI 10.1080/13683500902990528 (In Eng).

[15] Report of the Government of the Russian Federation for 2011, *Parliamentary newspaper*, 04/13/2012.

[16] Saunders C. (1995) Constitutional Arrangements of Federal Systems, *The Journal of Federalism*, Volume 25, Issue 2: 61-80. – DOI 10.1093/oxfordjournals.pubjof.a038196 (In Eng).

[17] Volvach Y.V. (2008) Service related to tourist activities and tourist services, *Lawyer [Advokat] (journal)*, 10: 102-110. (InRussian).

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MAIN APPROACHES OF THE SUPPLEMENT OF ENERGY SECURITY IN CENTRAL ASIAN COUNTRIES

Abstract. The article provides a general description of the energy sectors in Central Asia, which were created under a single system in which each State had an influence on each other's energy security, and together they ensured the uninterrupted supply of energy resources, both for the population and for economic needs in general. A unified system involves balancing the energy interests of all countries. Reaching consensus in Soviet times did not seem to be a problem, as there was a single political center. With the independence of the countries of Central Asia, the format of relations within the framework of the Central Asian Energy System (CAES) was changed, as States prioritized the creation of independent energy systems. Over the past two decades, regional energy cooperation among Central Asian countries has been largely ignored. However, the analysis shows that the growing threats to energy security will force the leaders of the countries to reconsider their energy policy. Mitigating the possible effects of the energy crisis and ensuring a smooth transition to the energy independence of each country will require a consolidation of efforts in the energy sector. The growing problems of energy security and the lack of real prospects for the implementation of major regional projects have led Central Asian leaders to seriously consider the possibility of restoring intraregional energy trade.

Key words: energy security, energy resources, electricity, hydropower, oil pipeline, refining capacity, refinery, geopolitical changes, escalation of threats, regional cooperation.

Central Asian countries are very rich in energy resources however the current situation is still characterized by steady load growth and untapped energy in some countries and inefficient use of regional energy resources. Key concern is energy security. Evidence suggests that by 2035, energy security will notably decrease in Central Asia as domestic resources will meet less than 50 percent of annual average needs. This presents new challenges for the region to search for renewable energy solutions considering their vast potential for increasing deployment. This two-day intensive workshop, comprising of interactive lectures and group discussions, aims to examine the role of renewable energy in promoting energy security in Central Asia. It also aims to improve understanding of various policies, regulatory, technical and financial aspects of renewable energy deployment, including key challenges and opportunities for increasing uptake of renewable energy in the region.

After the disintegration of the Soviet Union, Russia inherited the infrastructure that Central Asian states needed to transport energy out of the region creating excessive dependence on the Russian pipeline network and energy market. In the 1990s, the Central Asian states continued to barter energy with each other and Russia, in almost the same way as they did in the unified Soviet energy system. However, regional energy exporters' dissatisfaction with the conditions of the energy trade dictated by Russia and the willingness of other external customers to invest in the construction of alternative pipeline networks transformed the relationships among state actors within the Central Asian energy system (CAES), which consisted of Central Asian Power System (CAPS) and natural gas pipeline networks. Shifts in the regional

gas trading dynamics also affected electricity export/import relations among Central Asian upstream and downstream countries. As a result, two interlinked levels of relationships emerged that affect energy security of the Central Asian states: first, energy supply relations within Central Asia; and second, energy export/import between Central Asian producers and external customers. The latter perfectly lines up with the energy export diversification policies, which are being prioritized, to different extents, by all Central Asian states. However, limited research has been conducted on possible pitfalls of those energy policies. In this regard, the paper aims to analyze the impact energy export diversification policies have on the governments' ability to ensure energy security in their respective countries.

There is no universal definition of energy security within the region. The measures needed to address those challenges also vary. While some scholars recommend the diversification of energy sources and suppliers, building strategic storage reserves, establishing a country/region-wide energy infrastructure and flexibility to shift fuels, 1 others expand the list and include high-quality and timely information sharing, collaboration among energy actors, investment flows, research, and development. Within the landlocked Central Asian region, energy security is fragile due to the unreliability of suppliers. The diversification of export flows between energy actors is often perceived as the best way to ensure stability and reliability of energy supplies. Yet, by pursuing policies to increase energy export capacities, some Central Asian states - Kazakhstan and Turkmenistan - affect their own energy security, while others - Uzbekistan, Tajikistan and Kyrgyzstan - compromise regional energy interactions, which eventually leads to energy insecurity for all.

Energy security is closely related to the availability of natural resources for energy consumption. Surprisingly, resource-rich countries also experience energy insecurity because they overly depend on their natural resources, which could make them vulnerable to energy price shocks. Many developing countries in Central Asia have this problem. Strengthening energy security by diversifying energy sources to include alternative green resources has therefore become crucial.

However, two barriers hinder the development of renewable energy projects. First, major renewable energy projects have a lower rate of return than fossil fuel energy projects. Second, many banks and financial institutions are reluctant to lend to renewable energy projects, considering them risky. Technological progress is required to reduce electricity generation costs and increase the rate of return. Alternative financial solutions such as non-bank financial institutions, carbon taxation and the use of tax income, issuance of green bonds, community-based financing, fintech, and so on are also needed.

Kazakhstan also involved private foreign ownership in the oil sector by selling off the majority of shares of Kazakhstan's state oil company. Initially, the government created a state holding company - KazMunaiGas - to oversee oil enterprises inherited from Soviet production in the Caspian basins until foreign companies could take over. Where Azerbaijan's government strengthened SOCAR, the Kazakhstani government did not convert KazMunaiGas into a full-fledged NOC, but rather it sold off its assets to foreign companies.

In October 2008, Kazakhstan's government reached an agreement with a number of foreign companies to form the new joint operating company North Caspian Operating Company (NCO). This consortium includes equal shares to Royal Dutch Shell, Exxon Mobil, TOTAL, ENI, Kazakhstan's KazMunaiGas, with smaller shares going to other partners such as ConocoPhillips and INPEX. NCO became the operator of assets formerly held by Agip Kazakhstan North Caspian Operating Company NV (Agip KCO), notably the giant Kashagan field. Smaller petroleum companies have stakes in a variety of Kazakhstan's energy assets. While the NOC KazMunaiGas holds minority positions in some of these assets, Kazakhstan has the most privately-owned assets in the Caspian region.

The largest and most promising deposits are located in the western part of the country, in the Caspian Sea area. Oil production in Kazakhstan (mainly condensate) in 2012 reached 79.2 million tones - below the expectations of the Ministry of Oil and Gas who forecasted the culminative total of 81 million tons a year before. The projected totals could not be met due to problems with the operation of the Tengiz field, and delays in launching the Kashagan field. More than 68.6 million tons were directed for export. In 2013, the authorities expect an output of 82 billion tones. The most important deposits on the map of those which have already begun oil production, are located in the hinterland: these are the fields Tengiz, Aktobe, Karachaganak, Uzen and Mangistau.

Since Kazakhstan has no infrastructure by which it can independently export through deep-sea ports, the dynamics of the development of oil transmission pipeline networks and the directions of export and

transit of hydrocarbons through its territory are crucial for its economic well-being and geo-political position. The growing importance of directions, alternative to Russian and which allow safe passage to the final recipient, can be observed especially in the export of oil. Individual transport threads maintain separate dynamics and political significance.

Turkmenistan and Uzbekistan are unique among resource-rich Soviet successor states in that they retained the ownership structure inherited from the Soviet Union-maintaining state ownership with control and discouraging foreign involvement. After declaring independence in 1992, the presidents of both countries asserted that the right to develop petroleum resources belongs to the state and formed fully state-owned oil and natural gas companies. In Turkmenistan, President Niyazov formed Turkmengaz and Turkmenneft for natural gas and oil, respectively, while President Karimov of Uzbekistan formed Uzbekneftgaz to manage both resources.

Turkmenistan's government launched a ten-year development plan in 1993 to become a "second Kuwait" but restricted the ability of foreign companies to invest in the sector, except for joint venture (JV) contracts with some companies. Heavy restrictions resulted in limited development of Turkmenistan's energy resources, particularly in offshore fields. Dragon Oil, an independent company headquartered in the United Arab Emirates, operates the Caspian offshore Cheleken contract area. Other NOCs such as the Chinese National Petroleum Company (CNPC) and Malaysia's Petronas have invested in Turkmenistan energy assets but do not have significant ownership shares.

Most of Turkmenistan's oil reserves are located offshore or in the Garashyzyk area west of the country. Turkmenistan's government has been developing the offshore Cheleken project since the mid-1990s, which it has opened up to some foreign investment, including UAE's Dragon Oil. Proved and probable reserves in the contract area are around 3 million bbl of oil and 3 Tcf of natural gas. Dragon Oil exported MMbbl in 2011 from Turkmenistan's sector, with most of it going through Azerbaijan to be sold to world markets.

Because it is landlocked, Turkmenistan generally focuses on exporting natural gas through pipelines rather than as liquefied natural gas (LNG). The country received significant investment for gas field exploration in the 1980s, making it the Soviet Union's then second-largest supplier of gas. Turkmengaz operates the country's two largest fields, Dauletabad and Malai, which are oriented towards exports and account for the majority of the country's production.

The British company Gaffney, Cline, and Associates carried out the first independent audit of Turkmenistan's gas reserves in 2008 and 2009. Their report suggested that the country contains the world's fourth largest natural gas field, the South Yolotan-Osman, which was renamed Galkynysh in 2011. Turkmenistan's national gas company Turkmengaz controls onshore gas production and has limited access to international companies. In 2007, CNPC signed a production-sharing agreement with Turkmen authorities to develop natural gas fields in eastern Turkmenistan, as well as potentially exploring the Galkynysh field.

When the Soviet Union collapsed in 1991, all Turkmen gas was exported via Russian pipelines until the 200-kilometer Korpeje-Kordkuy pipeline connecting Turkmenistan and Iran opened in late 1997. That pipeline has a capacity of 8 bcm but has rarely pumped more than 6.8 bcm, leaving Turkmenistan largely dependent on Russian pipelines until a new Turkmenistan-China pipeline (capacity 40 bcm) was opened last month.

When 2009 started, Turkmenistan had contracts to sell 50-60 bcm of gas to Russia (it only amounted to a bit more than 11 bcm due to an April explosion that closed the pipeline to Russia) and 8 bcm to Iran annually. Russian-Turkmen bickering over the price for Turkmen gas and responsibility for the pipeline explosion finally ended last month when the two countries' presidents met in Ashgabat. But the new contract calls for 30 bcm of Turkmen gas, not 50 bcm.

Nader Devlet, a professor of international relations at Istanbul Trade University, tells FE/RL's Turkmen Service the launch of the new pipeline to Iran is well-timed, since it demonstrates Turkmen gas can be exported in different directions.

With the opening of the Dovletabat-Sarakhs-Khangiran pipeline, Turkmenistan starts 2010 with contracts to sell some 40 bcm to China, 30 bcm to Russia, and at least 14 bcm to Iran.

And Turkmenistan is partially compensated for the reduction in exports to Russia by the new exports to Iran. The gas for the new pipeline to Iran comes from the same field, Dovletabad that Turkmenistan has been using to supply Russia.

Iran boasts the second-largest gas reserves in the world, but its dependence on gas for half of its energy needs opens the way for trade with Turkmenistan, which has the world's fourth-largest reserves.

The importance of maintaining good trade relations with Ashgabat was exposed in early 2008, when a brief spat over prices led to a halt of Turkmen gas imports and left large areas of northern Iran without heat and electricity during an especially harsh cold spell.

Uzbek authorities believe that Uzbekistan is among the few countries in the world that have sufficient energy supplies to meet their energy demands. T.P. Salikhov from the Institute of Power Engineering and Automation in Tashkent argued that Uzbekistan achieved self-sufficiency in fuel in 1995 and became fully self-sufficient in energy resources in 1996-1997. Guided, in part, by the belief of self-sufficiency, Uzbekistan withdrew from the CAES and signed a number of agreements on exporting natural gas and electricity to external markets. However, despite that claim, energy security challenges that Uzbekistan is currently facing prove that the operation of its energy system in isolation mode has its cost. Uzbekistan does not rely on energy imports, but the country has never reached energy self-sufficiency. On top of that, having prioritized export of energy resources, Uzbekistan is negatively affecting the level of its energy security. Uzbekistan is a major fossil fuels producer in Central Asia. Uzbekneftgaz, a state-owned oil and gas company, estimates 60 percent of Uzbekistan's territory has a potential for oil and gas extraction. Total primary energy production matches the consumption level in Uzbekistan. Natural gas constitutes the major part of primary energy production.

Toby Shelley stressed, that "Uzbekistan is one of the largest natural gas producers, and consumes almost all the gas it produces, as 85% of its primary energy consumption comes to gas. Over 90 percent of all electricity in the country is generated on Thermal Power Plants (TPPs). The largest share of thermal electricity production is accounted by the gas-fired thermal power plants" [1]. So Uzbekistan consumes almost as much gas as it produces, which means that any initiative to increase gas or electricity export to external customers will come at the expense of domestic consumption. But why would Uzbek authorities pursue energy export oriented policies, when the country suffers from insufficiency of energy supplies for domestic needs?

Bilal Abdullah is sure, that "Domestic gas consumers in Uzbekistan receive gas for discounted prices, which is 4 to 5 times lower than the price paid by importers. The country's gas sector alone is subsidized by almost US\$10 billion annually [2]. Subsidies in the energy market are negatively affecting the economy, but Uzbek authorities will most likely preserve subsidies in the gas sector, as the price increase may cause social unrest among the population. And increasing gas export, to some extent, will continue to cover up the economic loss in the highly subsidized gas sector of Uzbekistan. However, it is not an issue of survival, but rather the question of sufficient gas and electricity supplies to meet economic needs and the population's needs in the foreseeable future that constitutes the core of energy security of the country. Electricity blackouts and gas supply shortages are indicators of energy security challenges that Uzbekistan has to deal with.

Paul Roberts insists, that "Over the past decade Uzbekistan has been exporting approximately 10-15 billion m³ of gas to Russia and 4.5 billion m³ to the Central Asian region" [3]. The leaders of Uzbekistan and China also agreed to reach and maintain the annual export volume of 10 billion m³ through the Line-C of the Central Asia China gas pipeline (CAGP), which was launched in 2015. However, outdated and inefficient natural gas transportation systems, growing internal energy demand, and the fact that no major natural gas reserves have recently been developed are indications of Uzbekistan's physical incapability to increase its gas export capacity. Because the power sector of Uzbekistan is also dependent on gas-fired TPPs, it would be naïve to rely on Uzbek electricity exports. In 2015, Uzbekistan produced 55.5 billion kWh of electricity and exported 1.3 billion kWh. Despite the extensive production volume, high technical losses do not allow Uzbek consumers to enjoy reliability and stability of electricity supplies. Export-oriented energy policies might even worsen energy insecurity in the country.

Within the unified energy system Uzbekistan enjoyed energy leverage over its upstream neighbors, which was compromised when parties decided to diversify energy export routes. Uzbekistan decreased the volume of gas supply to Kyrgyzstan from 800 million m³ in 2000 to 270 million m³ between 2013 and 2016. Tajikistan is currently completely cut off the Uzbek gas supply chain. Due to disagreements over the price for gas with the neighboring Tajikistan and Kyrgyzstan, Uzbekistan decided to redirect its export to China. By depriving neighboring Kyrgyzstan from access to Uzbek gas, the government of Uzbekistan

pushed Kyrgyz authorities to make a radical move, which, in its turn, weakened Uzbekistan's positions in the price bargaining and negotiations. In 2014, Kyrgyzstan sold its entire gas sector to the Russian Gazprom, hoping that Russia would serve as a mediator in the negotiations with Uzbekistan and gas imports would be restored. Uzbek gas supplies were indeed restored.

Jahangir Amuzegar wrote: "However, for Uzbekistan it is more difficult to promote its interests vis-à-vis Russia than dealing with Kyrgyzstan directly. And, Kyrgyzstan basically lost control over its strategically important gas sector. In this regard, having enjoyed a strategic location on the crossroad of energy-transporting corridors within the region, Uzbekistan's decision to leave CAES severely affected the energy security of the most dependent on it, upstream Tajikistan and Kyrgyzstan. Being cut off stable Uzbek energy supplies, Central Asian upstream countries also started establishing independent energy systems and are launching export-oriented policies, which have led to water-energy nexus controversies among regional state actors" [4].

Tajikistan possesses tremendous hydropower potential, which accounts for 4% of the world's total. Despite the fact that 98% of the power production in the country comes from HPPs, they (the HPPs) deliver only 17 billion kWh out of 527 billion kWh hypothetically possible.¹⁰ Exploiting this potential could significantly contribute to the sustainability of the energy sector not only in Tajikistan, but also in other Central Asian states, by providing large quantities of relatively inexpensive and "green" electricity. Yet, the seasonal variation of power production, outdated electricity producing facilities and insufficient power production capacities pose major obstacles for securing reliable and adequate energy supplies for domestic needs all year round. At the same time, export-prioritized energy policies further threaten Tajikistan's energy security. Energy security policies of the country imply ensuring energy independence by connecting hydropower rich regions (southern) with energy thirsty northern regions, which were previously connected to the CAPS. New energy policy of the country aims to meet energy needs of the population year-round to boost economic development and increase power export capacity.

Tajikistan annually generates around 17-18 billion kWh of electricity. The consumption volume, however, accounts for 22-24 billion kWh. Thus the overall deficit accounts for 5 billion kWh. Only in summer the country produces a surplus of 1.5 billion kWh. Tajikistan exports electricity to Kyrgyzstan and Afghanistan. Currently, the largest electricity market for Tajikistan is Afghanistan. There are a number of deficiencies in Tajikistan's electricity export diversification policies. Tajikistan itself suffers from a critical shortage of electricity supply in the winter period, during which the electricity demand exceeds the supply capacity by around 25%. According to the United Nations Development Programme report, more than 1 million people suffer from frequent and prolonged blackouts each winter in Tajikistan. The World Bank highlights that 70 percent of the population that suffers from electricity shortage during winter. Within the CAES Tajikistan exported power in summer in return for Uzbek electricity and gas imports in winter. Currently, however, Tajik authorities supply electricity to external markets without the possibility to compensate domestic winter shortages with imports.

Aging power generation facilities are no longer capable of generating electricity to the extent that they were initially designed to. Regardless of decreasing power generating capacities, Tajikistan increases the export of electricity to external markets, thus further threatening energy security of the country.

The Rogun HPP in Tadjikistan, located 110 km from the capital, will consist of 6 aggregates of 600 MW capacity each. Authorities plan to commence the first aggregate already by 2018 and the second one in 2019. July 1, 2016, Tajikistan signed an agreement with the Italian company Salini Impregilo on the construction of Rogun for US\$3.9 billion. The Vaksh River was blocked to accelerate the construction process on October 29, 2016. Rogun is expected to be fully constructed in 14 years. The Tajik government expects the Rogun HPP to serve three major purposes: produce electricity in wintertime; increase electricity export capacities; and improve water management. Tajikistan, like any other country in the region, has a right to increase electricity exports to generate revenue. Moreover, improved water management is in the interests of both upstream and downstream countries. However, only increased electricity production in winter can improve energy security in the country. Rogun can increase summer and to some extent winter electricity production. Electricity that is generated in winter is intended for export mainly. However, exports cannot guarantee wintertime gas and thermal electricity imports from the neighboring states. Also, money has always been a major obstacle for the Rogun project. Tajik authorities already declined investment offers that were not serving the country's national interests. Tajikistan

attracted the new Italian contractor for the construction of the dam, but its financial aspect has not been entirely resolved yet.

Kyrgyzstan also enjoys extensive potential for hydroelectricity production. The production capacity, however, is limited because of the aged energy infrastructure and inability of the government to introduce additional production capacities on the trans boundary Syrdarya River without the consent of littoral states. Energy policy priorities, which are linked to Kyrgyzstan's electricity export- diversification interests primarily focus on: increase power production capacity by further developing hydropower potential; Upper Naryn cascade could increase production capacities up to 942.4 million kWh; generate more electricity in the summer period, which would allow Kyrgyzstan to export electricity to Kazakhstan, Uzbekistan, and South Asian countries; introduce major power generating capacities, particularly in the winter period, build large HPPs (Kambarata-1) and/or build coal-fired Kara- Keche TPP, for both domestic and external needs.

Kyrgyzstan has the potential to annually produce up to 142.5 billion kWh of hydroelectricity. Power production facilities of Kyrgyzstan, however, are outdated and the electricity generation is insufficient to meet both domestic and external demands. Currently, the largest amount of electricity production is realized at the HPP cascade in the Toktogul reservoir. Toktogul HPP has a capacity of 1200 MW and covers one-third of the total installed power capacity of 3786 MW. Despite the fact that 19.5 billion m³ capacity of the Toktogul water reservoir allows Kyrgyzstan to export a significant volume of electricity, it rarely accumulates enough water to produce electricity in winter, because in summer most of the water is being released to meet the power needs. In 1990, Kyrgyzstan exported 4 billion kWh to Kazakhstan and Uzbekistan in summer and, in return, imported 3.2 billion kWh of electricity from Uzbekistan (2.2 billion kWh), Kazakhstan (650 million kWh), Tajikistan (245 million kWh), and Turkmenistan (250 million kWh) in winter. However, later Kyrgyzstan's power production capability has been altered. During dry years Kyrgyzstan is not capable of producing and, as a result, exporting electricity. The inability to export electricity during the dry years of 2008-2009 and 2014-2015 to Kazakhstan and Uzbekistan compromised the energy security of the country. The country lacked revenues that were meant for fuel needed to run TPPs.

On October 1, 2014, the water volume in Toktogul accounted for only 11.9 billion m³, which was 4 billion m³ less compared to the same period of the previous year. Kyrgyzstan was forced to import 400 million kWh of electricity from Kazakhstan in 2015. In July 16, 2016, the water volume in Toktogul increased up to 15 billion m³, which was 4 billion m³ more compared to the same period of the previous year, allowing Kyrgyzstan to export electricity to Kazakhstan. The power export of the country is highly dependent on a single major source of water supplies-the Syrdarya River. The stream stage in the river, according to different scenarios, is expected to drop by 10-30% already in 2030.

With the declining water availability, Kyrgyzstan's export capacity will also decrease. Prioritizing electricity export may result in insufficient power supplies for population needs, which account for 63 percent of the overall consumption, both in summer and wintertime.

Export-oriented hydropower or energy security-focused thermal power Kyrgyzstan's electric power sector consists almost completely of water run-of-river type HPPs, which can generate electricity mostly in summertime. The only HPP capable of generating electricity in winter is Toktogul and the projected Kambarata-1. Yet to produce electricity, Kambarata-1 would require accumulating a large volume of water, which could lead to water supply shortages for downstream countries. Political pressure from the downstream countries forces Kyrgyz authorities to release water during the vegetation period and to produce more electricity in summer turning the country into a major exporter, yet the one incapable of meeting its winter energy demands. To meet its winter electricity needs, the Kyrgyz government has to either develop its own limited fossil fuel potential or build TPPs or to secure stable thermal electricity import from the neighboring states. The Kara-Keche coal-fired TPP is considered to be one of the most promising projects to ensure electricity supplies in the northern parts of the country. Kara-Keche TPP's technical and economic feasibility was studied back in 1979-1983 and, according to some estimates, has a higher electricity production coefficient than any other hydropower generating facility, including Kambarata-1.

Kara-Keche project is cheaper than large HPPs and thus should be more attractive. Adding 1 kW of new power capacity costs around US\$ 1,500 in TPPs. The cost of 1 kW of hydropower is approximately US\$ 2,000. The construction of Kambarata-1 will cost Kyrgyzstan US\$ 5.2 billion. With a capacity of 1900 MW, 1 kW will cost US \$2,700 to the government of Kyrgyzstan. Ernest Karibekov, former head of the Research Institute for the Central Asian Water and Water-Energy Resources Problem Studies, believes that financial concerns will push the construction of Kambarata-1 for another two decades. To return US\$ 5.2 billion in investments, this plant will have to operate fully, selling electricity for 8 cents per kWh. Kyrgyzstan now exports electricity for around 4 cent per kWh along with the water supply.

Currently, energy policy priorities of Kyrgyzstan focus on mitigating the energy crisis and increasing the production capacity to the point when the country stops being dependent on power imports from the neighboring states. For the construction of a large HPP, Kyrgyzstan has to rely on external funding. The Russian company RusHydro was supposed to build 4 HPPs in the Upper Naryn cascade to increase production capacity up to 942.4 million kWh, but the agreement was denounced on August 10, 2016. In this regard, Kyrgyzstan has to focus, to a large extent, on energy security projects and concentrate less on initiatives designed to diversify export routes.

Guided partially by the belief of self-sufficiency, Uzbekistan decided to withdraw from the CAES and to redirect gas and electricity exports to external markets. Due to its strategic location on the crossroad of energy-transporting corridors within the region, this decision affected the overall security of the CAES. Energy supply cuts, in combination with highly subsidized and inefficient energy sectors, the underdeveloped renewable energy sector, a lack of countrywide electricity transmission and gas supply networks, as well as disagreements over the water withdrawal balance have severely affected the availability and affordability of energy supplies in Central Asian upstream countries and sustainability and efficiency in downstream states.

Designed to ensure electricity supply to meet peak demand in winter, there is no guarantee that the Rogun and Kambarata-1 HPPs will not be extensively used for export purposes. Currently, there is a surplus of electricity production in Tajikistan and Kyrgyzstan and it is argued that CASA-1000 is supposed to transport it to southern neighbors. Afghanistan and Pakistan are mostly in need of electricity import in winter and both Rogun and Kambarata-1 can provide it. In this sense, Kyrgyzstan and Tajikistan may decide to increase export of electricity even at the expense of domestic consumption. The possibility of exporting electricity in wintertime will make Rogun and Kambarata-1 economically attractive projects, but with a limited contribution to energy security. This does not mean that Tajik and Kyrgyz authorities should give up trying to implement these projects. Given their interest in generating extra revenue, they most likely will not do so in any case. What it means, though, is that the contribution of these projects to each country's energy security might be limited and even damaging for Central Asian states.

General schemes of Rogun and Kambarata dams were designed in Tashkent (Uzbekistan). Working in the water mode to primarily release water for irrigation purposes in the downstream countries, Nurek, the largest HPP in Tajikistan, was never capable of accumulating enough water to produce a significant volume of electricity in winter. Toktogul HPP, with the capacity to potentially accumulate enough water to produce electricity any time of the year, mostly generated electricity in the summertime. In the 1990s, to keep the water mode functioning, Central Asian countries signed a number of agreements, according to which downstream states were ensured stable water supply for irrigation purposes. In exchange, Central Asian upstream countries received natural gas, oil products, and thermal electricity in wintertime to meet their energy demands.

Michaels, Robert J. noticed: "However, when Uzbekistan withdrew from the CAPS and it was no longer possible to ensure coordinated operation of the unified electric power system, Tajikistan and Kyrgyzstan decided to turn the water mode of operating HPPs into the energy mode focused on producing as much electricity as possible whenever there was a need" [5]. Both Tajikistan and Kyrgyzstan, having experienced the deficiency of gas and winter electricity supplies, transformed their energy sectors first to meet their needs and second to significantly increase electricity export capacity. Currently, Tajikistan and Kyrgyzstan are physically incapable of accumulating a large amount of water to produce electricity both in summer and winter. When Uzbekistan withdrew from the CAES, Tajikistan was left in complete isolation. With no possibility to export electricity, both Tajikistan and Kyrgyzstan had to spill water.

Tajikistan, for instance, consumes 10-11% of water from Amudarya, when it is entitled to over 15%. The governments of the Central Asian upstream countries are counting on the Rogun and Kambarata-1 dams to increase their ability to accumulate more water and generate more electricity for both domestic consumption and export purposes. Operating those facilities in the energy mode prioritizing energy production, in an attempt to increase power production to further increase the export capacity, will most likely escalate existing tensions over management of water resources.

Oleg Chervinskiy made the conclusion, that “In the long term, Kazakhstan aims to diversify energy sources in the consumption balance. The country’s short-term goal, however, is to diversify its energy export routes, primarily for oil and gas. This lines up with the Multi-vector Foreign Policy adopted by the government. Yet, moving energy resources out does not directly contribute to the energy security of the country and as the analysis shows, to a certain extent, negatively affects stability and reliability of energy supplies for domestic consumers” [6]. There are a number of key energy policy priorities for Kazakhstan identified by the government. Kazakhstan’s current energy policy priority is to secure external demand and to draw profit from energy export. Second, to reduce its dependence on unreliable neighboring Uzbekistan and Kyrgyzstan, Kazakh authorities have been strengthening its independent and self-sustaining energy system. Third, newly adopted programs aim at introducing large-scale renewable energy generating capacities. Fourth, while Kazakhstan attempts to limit the extent of energy cooperation with the neighboring Central Asian states, in which the former is more vulnerable, recent events highlight that such dependency is largely unavoidable in the short to medium term perspective.

Kazakhstan has an export-oriented economy and is highly dependent on shipments of oil and related products (73 percent of total exports). At the same time, Kazakhstan has very limited options for its oil export diversification policies. Despite the fact that Kazakhstan has access to the Caspian Sea lanes, oil export is largely covered by pipeline networks. Around 85% of Kazakh oil reaches the highest paying European customers. Kazakhstan exported over 64 million tons of oil through the Atyrau-Samara pipeline, Caspian Pipeline Consortium, Atasu-Alashankou pipeline, and Aktau sea port in 2014 and almost the same volume of oil in 2015. And, most of that oil is being delivered via pipeline systems, which are controlled by Russia. Kazakhstan, to some extent, reduced its dependence on the Russian corridor by engaging in the trade of oil with China through the Kazakhstan-China oil pipeline. This pipeline allows Kazakhstan to supply 20 million tons of oil to China annually.

However, Kazakhstan-China oil trade never required the pipeline’s full capacities. In case the demand for Kazakh oil decreases in the European market, Kazakhstan will be able to redirect it to China. Meanwhile, due to commitments to supply an agreed volume of oil to the European consumers, Kazakhstan fails to reduce its dependence on the Russian pipeline networks [7].

In the Concept of the Development of Gas Sector of Kazakhstan until 2030 noted, that “The Development of the domestic gas sector in Kazakhstan is linked to the oil sector development, which is very much export-oriented. The Government prioritizes oil exports over developing the gas sector, which would increase the production capacities significantly” [8].

The negative consequences of excessive dependence on the Russian pipelines, Central Asian exporters started pursuing diversification of gas export routes to obtain access to various energy markets. However, the Central Asian region is considered to be a source of energy for customers from outside the region [9, P.68]. Thus, increasing the volume of gas, oil and electricity exports has a reverse effect on the availability of gas for domestic and intra-regional consumption. For exporting countries, moving energy out to external markets does not contribute to their energy security in terms of availability of resources for domestic consumption [10, P.100]. Energy sectors regulated by market mechanisms can naturally eliminate the difference between domestic and external energy prices, thus increasing the attractiveness of internal markets.

In the conclusion we would like to note, that however, the development of energy sectors extensively controlled and subsidized by state actors requires government policies that are specifically designed to ensure energy security, not the ones prioritizing export of energy resources to external markets. Negative impacts of export diversification policies can be mitigated by prioritizing intra-Central Asian energy trade and pursuing long-term, transparent and reliable energy policies.

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ОРТА-АЗИЯЛЫҚ МЕМЛЕКЕТТЕРДЕГІ ЭНЕРГЕТИКАЛЫҚ ҚАУІПСІЗДІКТІ ҚАМТАМАСЫЗ ЕТУДІҢ НЕГІЗГІ ТӘСІЛДЕРІ

Аннотация. Мақалада Орталық Азияның энергетикалық секторларының жалпы сипаттамасы берілген, олар энергетиканың бірыңғай жүйесін ұсынды, онда әрбір мемлекет шеңберінде энергетикалық секторлардың пайда болғанын айқындады, олар бірігіп энергетикалық қауіпсіздікті қамтамасыз етіп келген үзіліссіз энергетикалық ресурстарды жеткізу үшін де, бір-біріне әсерететін әрі халық үшін, әрі экономикалық мұқтаж-дықтарды қамтамасыз ету үшін тұтастай теңгерудің бірыңғай жүйесін барлық елдердің энергетикалық мүдделерін көздейтінін анықтады. Бұл елдердің бірыңғай жүйесі барлық елдердің энергетикалық мүдделерін қамтамасыз етеді. Кеңес заманда консенсусқа қол жеткізу мүмкін болмады, себебі саяси жүйе оған қарсылық жасады. Орталық Азия елдерінің тәуелсіздік алғаннан кейін Орталық Азиялық энергетикалық жүйесінде жаңа қатынастар форматы пайда болды, себебі олар тәуелсіз энергетикалық жүйелерін құрды. Соңғы екі онжылдықта Орталық Азия елдерінің арасындағы өңірлік энергетикалық ынтымақтастық еленбеді Алайда талдау көрсеткендей, энергетикалық қауіпсіздіктің күшеюіне байланысты ел басшыларының энергетикалық саясатын саясатын қайта қарауға мәжбүр етті. Әр елдің энергетикалық тәуелсіздігіне қойылатын қалыпты көшуін қамтамасыз ету ықтимал зардаптарын жұмсартуға энергетикалық дағдарыс пен энергетика секторында күш-жігерлерін шоғырландыру қажет етеді. Энергетикалық қауіпсіздік пен өңірлік ірі жобаларды іске асыру үшін Орталық Азия елдерінің басшыларын шындап ішкі өңірлік сауданы қалпына келтіру мүмкіндігін қарастырудың нақты болмауының болашағының проблемаларының шиеленісуін дәлелдеді.

Түйін сөздер: энергетикалық қауіпсіздік, энергия ресурстары, электроэнергиясы, су электроэнергиясы, мұнай құбыры, мұнай өңдеу көлемі, мұнай өңдеу заводы, геосаяси өзгерістер, қорқытуды күшейту, аймақтық ынтымақтастық.

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ОСНОВНЫЕ ПОДХОДЫ ОБЕСПЕЧЕНИЯ ЭНЕРГЕТИЧЕСКОЙ БЕЗОПАСНОСТИ В ЦЕНТРАЛЬНО-АЗИАТСКИХ СТРАНАХ

Аннотация. В статье представлена общая характеристика энергетических секторов в Центральной Азии, которые создавались в рамках единой системы, в которой каждое государство имело влияние на энергетическую безопасность друг друга, а вместе они обеспечивали бесперебойные поставки энергетических ресурсов, как для населения, так и для экономических нужд в целом. Единая система предполагает балансирование энергетических интересов всех стран. Достижение консенсуса в советское время не представлялось проблемой, так как существовал единый политический центр. С обретением странами Центральной Азии независимости, формат отношений в рамках Центрально-Азиатской Энергетической Системы (ЦАЭС) был изменен, поскольку государства ставили приоритетом создание независимых энергетических систем. На протяжении последних двух десятилетий региональное энергетическое сотрудничество между странами Центральной Азии во многом игнорировалось. Однако анализ показывает, что нарастающие угрозы энергетической безопасности заставят лидеров стран пересмотреть свою энергетическую политику. Смягчение возможных последствий энергетического кризиса и обеспечение плавного перехода к энергетической независимости каждой из стран, потребует консолидации усилий в энергетическом секторе. Обострение проблем энергетической безопасности и отсутствие реальных перспектив для реализации крупных региональных проектов заставляют руководителей стран Центральной Азии серьезно рассмотреть возможность восстановления внутрорегиональной торговли энергоресурсов.

Ключевые слова: энергетическая безопасность, энергоресурсы, электричество, гидроэлектроэнергия, нефтепровод, нефтеперерабатывающие мощности, нефтеперерабатывающий завод, геополитические изменения, эскалация угроз, региональное сотрудничество.

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REFERENCES

[1] Toby Shelley, *Oil: Politics, Poverty and the Planet* (London: Zed Books Ltd, 2015). <http://dx.doi.org/10.18411/a-2018-008> (in English).

[2] Bilaal Abdullah, *Peak Oil Paradigm Shift: The Urgent Need for a Sustainable Energy Model* (London: Medianet, 2005); and Kenneth S. Deffeyes, *Beyond Oil: The View from Hubbert's Peak* (New York: Hill and Wang, 2017), 3-12. <http://doi.org/10.17803/2311-5998.2016.32.4.081-090> (in English).

[3] Paul Roberts, *The End of Oil: On the Edge of a Perilous New World* (New York: Houghton Mifflin, 2014), 44-65. <http://doi.org/10.24411/2078-5356-2015-10004> (in English).

[4] Jahangir Amuzegar, *Managing the Oil Wealth: OPEC's Windfalls and Pitfalls* (London: I.B. Tauris, 2016), 1-22. [http://doi.org/10.18611/2221-3279-2017-4-2-\(12\)-82-86](http://doi.org/10.18611/2221-3279-2017-4-2-(12)-82-86) (in English).

[5] Michaels, Robert J. (2018). *Electricity and Its Regulation*. <https://doi.org/10.32014/2018.2518-1467> (in English).

[6] Oleg Chervinskiy, "How Astana Was Planning to Look for Kashagan on the Ground," February 20, 2017 http://www.ratel.kz/outlook/kak_astana_planirovala_iskat_vtoroj_kashagan_na_sushe#comments <https://doi.org/10.32014/2019.2019-1467.8> (in English).

[7] *Energy Polices of IEA Review//OECD Publications*. Paris, 2018. <https://doi.org/10.32014/2018.2518-1467.35> (in English).

[8] government of the republic of kazakhstan, concept of the development of gas sector of kazakhstan until 2030, online.zakon.kz, december 5, 2014, http://online.zakon.kz/document/?doc_id=31641775. (in english).

[9] ayupova z.k., kussainov d.u., bekbergenova a.k., winston nagan. Major ideas and main values of the universal uno declaration on human rights: the 70-years' experience. – bulletin of the national academy of sciences of the republic of kazakhstan. –vol. 1. –2019. – p.68-74 <https://doi.org/10.32014/2019.2518-1467.8> (in english).

[10] ayupova z.k., kussainov d.u., winston nagan. About modernization tendencies in the legal system of the republic of uzbekistan.– bulletin of the national academy of sciences of the republic of kazakhstan. –vol. 2. –2019. – p.100-107 <https://doi.org/10.32014/2019.2518-1467.46> (in english).

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THE INFLUENCE OF COOPERATIVE BANK OUTLETS UPON LOCAL DEVELOPMENT IN THE PODLASKIE VOIVODESHIP IN POLAND

Abstract. The objective of the paper is to evaluate whether the presence of cooperative banks stimulates local development in the municipalities of the Podlaskie Voivodeship in Poland. For this purpose, we have studied the relation between the presence of cooperative banks in 118 municipalities of the voivodeship and the dynamics of changes of selected socio-economic factors: total and own revenues of individual municipalities, their number of inhabitants, number of businesses, average monthly pay and the level of unemployment. The analysis covers the period between Poland's accession into the European Union and the year 2018. Our results do not confirm earlier findings indicating a close connection between the presence of cooperative banks and local development.

Keywords: banking sector, cooperative banks, local economic growth, DEA.

Introduction. The savings and credit cooperative movement in Europe dates back to the 19th century, to Franz Hermann Schulze-Delitsch, who organised credit cooperatives for the town-dwelling lower middle classes, and to Friedrich Wilhelm Raiffeisen doing similar work for poor rural farmers (Engelhardt, 1990; Aschhoff, 1982). Their chief goal was to create institutions providing short-term financing for small entrepreneurs, workers and farmers, and to encourage those groups to accumulate savings on favourable terms. Their rationale was mainly to make poor social classes independent of loans commonly granted at usurious rates [1].

Today, cooperative banks constitute a significant segment of the loan market in Europe. They have over 20% share in the deposits and loans of the sector in countries such as France, Austria, Finland, Germany and Holland (EACB, 2019). They serve about 209 million clients, i.e. over 40% of the EU population (EACB, 2019a). Two different types of cooperative banks evolved in Europe. One type are international corporations, loosely founded on cooperative principles. The other are smaller banks operating locally (Cornéet al., 2018, Miklaszewska et al., 2018, Groeneveld, 2017). The latter type dominates in Central and Eastern Europe. Only in Hungary and Poland cooperative banks play a significant role in the banking sector. Poland is the largest country in the region in terms of cooperative banks' assets, number of outlets, and number of members and staff [2].

The first banking institution in Poland that operated as a loan foundation was Fundacja Ostrołęcka Taniego Kredytu (the Ostrołęka Cheap Credit Foundation), established in 1577 by Wawrzyniec Białobrzieski. The first cooperative banking institutions in the modern sense of the word were Towarzystwo Pożyczkowedla Przemysłowców Miasta Poznania (the City of Poznań Industrialists' Loan Society), established in 1861, and the loan societies in Brodnica and Golub, established in 1862. All three continue to operate as cooperative banks, which makes them the oldest Polish banks (Ochociński, 1961). According to the data by the Polish Financial Supervision Authority, at the end of April 2019 there were 545 cooperative banks in Poland, constituting 7.17% of the total assets of the banking sector (KKNF, 2019). According to the existing regulations, only individuals can be founders of a cooperative bank. The

Table 1 – Descriptive statistics

Variable	Mean	Std. Dev.	Minimum	Median	Maximum
<i>REV</i>	2.9418	0.5054	1.8043	2.8703	4.6279
<i>OWNREV</i>	3.0247	0.8044	1.2814	2.9059	5.5482
<i>POP</i>	0.9475	0.0953	0.7689	0.9423	1.3563
<i>REG</i>	1.1946	0.2769	0.5990	1.1671	2.1673
<i>SAL</i>	1.9931	0.1838	1.5900	1.9711	2.3238
<i>UNEMP</i>	0.5287	0.1596	0.1553	0.5050	0.9922
<i>CCB</i>	0.9661	0.7946	0	1	6
<i>BANK</i>	2.0424	3.3675	0	1	21
<i>CCBBRANCH</i>	1.1695	1.7012	0	1	16
<i>BANKBRANCH</i>	3.3136	11.6088	0	1	118
<i>EFFECT</i>	0.2966	0.5440	0	0	3

number of founders cannot be fewer than ten, and the initial capital cannot be less than PLN equivalent of euro 1 000 000. Depending on their assets, cooperative banks are subject to limitations of the territorial and material scope of their operation. They are also obligated to join an affiliating bank if their initial capital does not exceed the equivalent of euro 5 000 000.

The objective of this paper is to establish whether the presence of cooperative banks stimulates local development in the municipalities (gmina) of the Podlaskie Voivodeship in Poland. For this purpose, we have studied the relation between the presence of cooperative banks in 118 municipalities of the voivodeship and the dynamics of changes in selected socio-economic factors: total and own revenues of individual municipalities, their number of inhabitants, number of businesses, average monthly pay and the level of unemployment [3]. The analysis covers the period between Poland's accession into the European Union and the year 2018.

To our knowledge, this is the first in-depth analysis conducted at the level of individual Podlaskie municipalities. Our findings can be applied broadly, aiding the design of commercial banks' strategies in the context of the increasing regulatory requirements. They can also serve local communities in broadening their knowledge about the significance of cooperative banks in their area.

The article is structured as follows. Section 2 reviews the most significant literature. Section 3 describes the data and methodology employed in the empirical research. Section 4 presents and discusses the obtained results. Section 5 summarises and presents the main conclusions [4].

Methods. When writing the article, general scientific and special methods were used, such as: system analysis method; content analysis method; comparative analysis method; method of analysis and synthesis; system approach method.

Cooperative banks' model of operation differs from that of typical commercial banks. Its most important specific characteristics include: I) member ownership – the bank's owners are cooperative members, who are also its clients, II) democratic governance, based on the "one person, one vote" principle, III) most of cooperative banks are local, their presence supports the local community and regional development, IV) their operation is based on relationship banking and concentrates in rural areas and small towns, providing products and services mainly to farmers, small and medium businesses and individual households, V) generating profit is necessary for the banks' development, nevertheless maximising profit is not their main objective. A large part of the net profits has to be retained, VI) cooperative banks have a long tradition of commitment to sustainability and social values. A proportion of the banks' profits are invested in local economic initiatives that also benefit the local community in the field of culture, sport and education (Cornée et al., 2018, Golec and Pluciennik, 2017, Hudon and Perilleux, 2014, p. 147, Ayadiet et al., 2010) [5].

Founding their business strategy on basic operation (deposits and credits), and refraining from complicated instruments of investment banking allowed cooperative banks to avoid problems experienced by most commercial banks as a result of two serious global financial crises: the first one, caused by

subprime credits, and the second, connected with problematic debts of Eurozone countries. Extensive research indicates that cooperative banks proved more resistant to crises than commercial banks, which are orientated towards shareholder value creation (Fiordelisi and Mare, 2014, Birchall, 2013, Ferri, 2012). A similar opinion is voiced by authors basing their research on the Z-score analysis (Barra and Zotti, 2019, Köhler, 2015, Hesse and Cihák, 2007). However, Chiaramonte et al. (2015) note that in the crisis period only, cooperative banks have a higher natural logarithm of the Z-scores than commercial banks. Therefore, the stabilising power of cooperative banks is specifically detectable during crises, but only above a certain market share threshold [6].

Such tendency is often explained by the cooperative banks' operating strategy, which is largely based on long-term relationships with customers, who often are the bank's owners as well. Catturani et al. (2016) emphasise that cooperative banks are known for their local relationship lending, whereby they collect soft information about borrowers that helps to reduce the agency costs related to moral hazard and adverse selection. Personal relationships with financial advisers are usually far more important than grand programmes of customer acquisition and sales of products and services, which commercial banks conduct via costly marketing campaigns. Clients visiting a cooperative outlet and being served at the counter instinctively perceive the atmosphere of the place. They feel appreciated when privileges are offered to them, they get used to members of staff and, in a way, they identify with their bank. Traditional service projects a larger sense of credibility and security than centralised and hierarchical organisational structures of commercial banks (Ayadi et al., 2010). Local knowledge and flexibility give local institutions significant advantage over commercial banks, where the credit procedure is often brought down to a standardised calculation of creditworthiness by computer applications, followed by a mechanical credit decision [7]. Cooperative banks, while sticking to appropriate procedures, take advantage of a niche created by such approach and serve the clients rejected by commercial banks. This particularly refers to customers who are difficult to obtain information about, or even those suffering from financial exclusion, such as start-ups, clients operating in high-risk sectors or sectors unattractive to commercial banks, customers with irregular income or obtaining their income in a non-standard manner (Waupsch, 2017, p. 11; Becchettiet al., 2016; Catturaniet al., 2016). Ory and Lemzeri (2012) emphasise that cooperative banks still exhibit a more decentralised decision-making process than do their commercial counterparts.

Other research is less unequivocal about commercial banks' stability. For example, W. Fonteyne'a (2007) reckons that cooperative banks may be more vulnerable to certain shocks, including credit quality and interest rate developments. Also the relationship banking may contribute to increased credit risk and worsened credit portfolios, because of the weakened quality of credit monitoring, less reliable classification of clients into individual credit risk categories, ignoring or dismissing warning signals about financial condition of credit takers or overdue repayments, delaying debt collection and restructuring, incorrect estimation of the reasons for credit value loss or the reduced value of collaterals etc. Furthermore, due to the local character of their operation, the portfolios of cooperative banks are usually less diversified, which may lead to the risk of concentration resulting from excessive exposure to a single company or sector [8].

The findings are similarly unclear with regard to the efficiency of cooperative banks, even though most reports indicate their higher efficiency compared to commercial banks. Makinen and Jones (2015) analysed 521 European banks during the years 1994-2000. They conclude that mean inefficiency scores vary by ownership type and are lower for cooperative banks than for commercial and savings banks. According to their report, cooperative banks were about 3 percentage points more efficient (less inefficient) than savings and commercial banks. The Authors conclude that the cooperative ownership form has a positive contribution to cost efficiency in European banking. Girardoneet al. (2009) confirm that cooperative banks operating in the EU-15 countries in the years 1998-2003 were significantly more cost efficient than commercial banks. L. Weill (2004) measures the cost efficiency of banks from five European countries (France, Germany, Italy, Spain, and Switzerland) with three approaches: stochastic frontier approach, distribution-free approach, and data envelopment analysis. He finds that cooperatives have a cost efficiency advantage relative to commercial banks in all countries except Italy. San-Jose et al. (2018) analysed 2752 financial institutions in EU-15 countries. They found no significant differences between credit cooperatives and banks, regarding economic efficiency. Kontolaimou and Tsekouras (2010) came to different conclusions. They analysed the productive performance of European cooperative banking firms

as compared to their commercial and savings counterparts, taking into account the existence of technology heterogeneity due to different ownership forms. They suggest that the type-specific frontier corresponding to cooperative banking firms, at least to its largest part, lies away from the European metafrontier, indicating the existence of a significant technology gap. Most research conducted in the Polish banking sector indicates lower efficiency of cooperative banks (Perek, 2014, Siudek, 2011).

However, most reports indicate a clearly positive influence of cooperative banks upon local activity and communities. Ayadi et al. (2010) show that cooperative presence appears to have a significant pro-growth impact in Austria, Finland, Germany and the Netherlands. For Germany, there is a self-reinforcing effect: more growth enhances activity, which in turn increases growth further. For Austria and the Netherlands, however, a different pro-growth dynamic is at play: cooperatives maintain their activities in areas experiencing low growth and thereby help soothe income differences. Also Coccoresse and Shaffer (2018) show that cooperative banks play a significant role in enhancing local economic performance in Italy. Their findings suggest that the initial presence of cooperative banks is associated with significant additional growth of income, employment and firms. Their research confirms the earlier findings of Usai and Vannin (2005), according to which cooperative banks display a positive impact (in the short, medium and long run) on the rate of regional economic growth, irrespective of how it is measured (GDP per head or value added per worker) [9].

Slightly different results were obtained by Hakenes *et al.* (2015). They find that regional savings banks have a positive and significant effect on regional development proxied by the growth rate of business registrations. The highly significant negative coefficient on the interaction term indicates that the effect is particularly strong in relatively poor regions, based on regional economic data from Germany. However, the Authors observed that the coefficient is positive but insignificant for the market share of cooperative banks, and the coefficient of the interaction term is negative and insignificant. This indicates a weak association between higher market share of credit cooperatives and higher growth rates of new business registration. El Hancha Sfar and Ben Ouda (2016) analysed 88 regional cooperative banks in France, which operated in 26 different regions during the period from 2006 to 2012. Their study does not suggest that cooperative banks provide more advantages compared to conventional banks. It does, however, establish their positive impact on economic growth. Also Bernini and Brighi (2018) admit that the presence of cooperative banks influences local development. However, they demonstrate a negative relationship between the development of local economies and the number of cooperative banking outlets [10].

According to the research of the Polish market conducted by Hasan et al. (2017), cooperative banks' strong positions favour creation of new businesses and weaken financing constraints for SMEs. Consequently, local markets with a pronounced presence of cooperative banks promote SME investment and growth. The same Authors (2019) observe that the increase in the number of cooperative banks reduces unemployment growth and stimulates long-term growth for SMEs. The changes that strengthen the position of local cooperative banks, and presumably privilege the use of the relationship banking model, have positive consequences for SMEs' access to debt and investment.

Therefore, we propose the following hypothesis:

Hypothesis 1: The presence of cooperative banks does not stimulate local development in the municipalities of the Podlaskie Voivodeship in Poland.

Results. The research included all 118 municipalities in the Podlaskie Voivodeship, of which 13 were urban municipalities, 27 were mixed urban-rural municipalities and 78 were rural municipalities. Podlaskie is one of 16 Polish Voivodeships, with an area of 20 187.02 km² and 1 181.5 thousand inhabitants. The voivodeship was chosen for analysis because of its predominantly rural character and a relatively well developed operation of cooperative banks. Agricultural production in the region is suited to relatively unfavourable natural conditions: the shortest vegetation period in the Polish lowlands and the relatively poor quality of soil. In spite of the lowest level of Agricultural Production Space Valuation Ratio in Poland, the voivodeship has the third livestock density (second for family-owned farms), and is the second largest producer of milk. In 2018, the farming character of the region resulted in its remote tenth position nationally in terms of per capita wealth (Wspólnota, 2019). In spite of systematic growth, the area's per capita GDP is only 50% of the EU average (Eurostat, 2019). The region can therefore be considered relatively poor in the context of the EU 28.

Table 2 – Correlation matrix for selected variables

Variables	REV	OWNREV	POP	REG	SAL	UNEMP	BANK	CCB	BANKBRANCH	CCBBRANCH	EFFECT
REV	1,000										
OWNREV	0.604*	1.000									
POP	0.694*	0.413	1.000								
REG	0.645*	0.392	0.694*	1.000							
SAL	-0.142	-0.110	-0.276	-0.163	1.000						
UNEMP	-0.033	-0.184	-0.211	0.089	0.207	1.000					
BANK	0.026	0.028	0.018	-0.177	-0.094	-0.097	1.000				
CCB	-0.023	-0.081	0.148	-0.184	-0.108	-0.167	0.812*	1.000			
BANKBRANCH	0.052	0.015	0.076	-0.137	-0.082	-0.087	0.902*	0.854*	1.000		
CCBBRANCH	0.065	-0.009	0.117	-0.092	-0.114	-0.080	0.777*	0.808*	0.942*	1.000	
EFFECT	-0.022	-0.137	-0.044	-0.171	-0.088	0.054	0.617*	0.609*	0.601*	0.589*	1.000

*The level of the correlation coefficient is significant at the 50% level or better.

On 30 June, 2019, there were 30 cooperative banks operating in the voivodeship, plus one bank with its headquarters in the neighbouring Varmian-Mazurian Voivodeship. The banks have 138 branches in the analysed area. The research excluded 31 contact points, which provide only a limited range of services. There are 22 commercial banks operating in the voivodeship, with the total of 392 outlets [11].

The time framework for the research was determined by Poland’s accession into the European Union in 2004, and the year 2018, i.e. the last year for which financial reports of cooperative banks were available, and economic and social data were published.

In order to evaluate whether the presence of cooperative banks stimulates local development in the municipalities of the Podlaskie region, we estimated the following model based on the research by Coccoresse and Shaffer (2018) and Palacín-Sánchez and Di Pietro (2016). The design was modified in order to adapt it to the conditions of operation of cooperative banks in the Polish banking sector:

$$GROWTHVAR_{jt} = \beta_0 + \beta_1 CCB + \beta_2 BANK + \beta_3 CCBBRANCH + \beta_4 BANKBRANCH + \beta_5 EFFECT + \phi_i + \varepsilon_i, \tag{1}$$

where $GROWTHVAR_{it}$ is the growth rate of the variable representing the social and economic performance of the municipality i ($i= 1, \dots, n$) from 2004 to 2018, CCB is the number of cooperative banks in the municipality, $BANK$ is the number of commercial banks in the municipality, $CCBBRANCH$ is the number of cooperative banks’ branches in the municipality, $BANKBRANCH$ is the number of commercial banks’ branches in the municipality, $EFFECT$ is the number of efficient cooperative banks in the municipality, ϕ_i represents the unobservable individual effects, and ε_i is an error term.

As dependent variables, we employ six measures of local performance: the growth rate of total revenue of the municipal budget (REV), the growth rate of own revenue of the municipality ($OWNREV$), the population growth rate (POP), the growth rate of the number of registered businesses (REG), the growth rate of average salaries (SAL), and the growth rate of unemployment ($UNEMP$).

Table 1 provides some descriptive statistics of the above variables, while table 2 shows their correlations [12].

The programme Statistica ver. 13.3.byStatSoftPolska was used for calculations.

The Data Envelopment Analysis (DEA) was used to determine the efficiency of cooperative banks. DEA is a deterministic method. It assumes lack of the random component and does not require functional dependency between inputs and outputs. DEA is based on the concept of efficiency by Farrel (1957), defined as the ratio between a single output and the single production input. The concept was subsequently

developed to a multidimensional form by Charnes, Cooper and Rhodes (1978), whose CCR model includes constant returns to scale, and by Banker, Charnes and Cooper (1984), whose BCC model includes variable returns to scale. The key element of the method is the determination of an efficiency curve (a production frontier). The relative efficiency of a Decision Making Unit is approximated as the Unit's distance from the empirically determined production frontier. The efficiency measure of the units located on the frontier equals 1. Those units are efficient in the analysed sample. For the objects below the production frontier, the value of the measure is below 1 and it indicates the level of their relative inefficiency. DEA models are classified according to two criteria: orientation and returns to scale. Depending on the model's orientation, it allows to calculate input-oriented technical efficiency or output-oriented technical efficiency. Because of the specific characteristics of this research, the output-oriented variant was chosen [13].

The key problem in DEA empirical research is the correct definition of inputs and outputs in banking operation (Ahn and Le, 2014; Luo et al., 2012, Holod and Lewis, 2011). Current literature quotes five basic approaches towards the definition of the role of bank's behaviour and the definition of its operation: the production approach, the intermediation approach, the assets approach, the value added approach, and the user cost approach (Pawłowska, 2005). Obafemi (2012) adds the sixth - modern approach. Literature also presents other classifications, limited only to the production approach and the intermediation approach, and treating the rest of approaches as variants of the two main ones (Fethi, Pasiouras, 2010). In this research we estimated the efficiency measures on the basis of original expert classification of inputs and outputs, which results from the specific characteristics of the way cooperative banks operate. We accounted for the fact that in the conditions of market competition, obtaining a deposit or granting a credit is a result of activity. We considered the following as inputs: Tier 1 capital (x1), fixed assets (x2), and the bank's operating costs (x3). We considered the following as outputs: credits (y1), deposits (y2), and net profit (y3).

One of the DEA method's main limitations is its sensitivity to atypical observations, which distort the estimation of efficiency (Halkos and Petrou, 2019; Liu et al., 2010). Expert analysis was conducted in order to eliminate the non-homogenous sample. Four banks were removed from the analysed sample. Eventually, efficiency measures were obtained for 27 cooperative banks, of which 9 proved to be efficient (table 3).

Frontier Analyst Application ver. 4.4.0 by Banxia® Software was used for calculations [14].

The presented methodology is not without its limitations that may influence the final results. Firstly, the location of banking outlets is dictated by attractiveness of the place, presence of competition, potential of target customers, demographic data etc. Therefore, there is certain coexistence and interaction between local development and the number of banking outlets. On the one hand, the presence of a bank may contribute to the development of the local community. On the other, local development may influence the decision to create or maintain a banking outlet in a particular location. As much as the location of a banking outlet can be a reason for local development, it can also be its result. Secondly, people in small local communities prefer to retain anonymity, as far as financial matters are concerned. They often decide not to use their local outlets, particularly in the case of relatively large deposits or credits. Thirdly, farmers usually use loans granted on preferential terms, with subsidised interest or partial repayment by government agencies, such as the Agency for Restructuring and Modernisation of Agriculture, the National Fund for Environmental Protection and Water Management etc. Those loans can be granted by commercial banks. Furthermore, certain commercial banks, such as BNP Paribas SA, BPS SA, and SGB Bank SA, specialise in financing agricultural production and food processing. The fourth consideration is the dynamic digitalisation of banking services and products, which means that close location of a banking outlet plays lesser role than it did a few years ago. Increasingly, members of generations Y and Z use mobile devices to contact their bank or make direct payments. Also, young people often study in academic institutions, which are usually located in larger Polish cities. This gives them access to several commercial banks, even though according to official records they remain inhabitants of their home municipality. Finally, the number of banking outlets in individual municipalities is determined mainly by the presence of Bank Pocztowy S.A. (the Postal Bank). Thanks to its strategic investor, the Polish Post, the bank has access to one of the largest commercial networks – the post offices. Those outlets were treated in the research as branches of a commercial bank [15].

In order to minimise the above limitations, the research takes into account the presence of commercial banks in individual municipalities and the number of their outlets. Furthermore, the analysis includes not only the dynamics during the years 2004-2018, but also the values of individual variables at the end of 2018. Furthermore, we have evaluated the efficiency of cooperative banks. A robust cooperative bank in a local community can effectively compete with commercial banks, trying to maintain its base of strategic clients. In the analysed period of 15 years, a lot of commercial banks ended their operation in Poland as a result of mergers and acquisitions, or for other reasons. Location and number of outlets changed continuously, particularly in the case of commercial banks. All changes of this type contribute to migration of clients. Cooperative banks' networks are more stable, due to the existing regulations. All this means averaging of positive and negative tendencies in customer migration to and from cooperative banks. In addition, in order to eliminate the influence of the Postal Bank upon the results, auxiliary calculations were conducted, in which Postal Bank's outlets were not included [16].

Discussions. Contrary to earlier results, the analysis did not show any significant influence of cooperative banks upon the local development of 118 municipalities in the Podlaskie Voivodeship. The prognostic value of the constructed model was low, with insignificant parameters. The R^2 coefficient of determination indicated lack of correlation between variables, and amounted to between 0.2085 and 0.0334. The situation was similar when we estimated the correlation between the dynamics of selected socio-economic variables and the independent variables: *CCB*, *BANK*, *CCBBRABCH*, *BANKBRANCH* and *EFFECT*, after eliminating the outlets of Bank Pocztowy S.A. from the sample of commercial banks.

Table 3 – Efficiency of cooperative banks in the Podlaskie Voivodeship

DMU	x1	x2	x3	y1	y2	y3	Efficiency
1	21 299	2 723	68.04	67 259	178 977	904	40.7%
2	11 334	1 133	57.12	81 587	100 208	1493	100.0%
3	9 193	1 690	65.45	79 075	133 585	860	82.4%
4	63 270	6 413	53.36	434 864	566 437	5378	100.0%
5	26 054	4 078	65.91	171 994	251 700	2017	65.9%
6	12 805	801	72.02	87 633	123 838	881	81.9%
7	13 308	997	71.54	74 689	121 297	965	74.6%
8	11 545	1 497	70.52	44 206	72 260	712	49.8%
9	8 084	1 201	70.01	42 432	73 258	435	48.4%
10	9 826	687	73.75	46 508	63 380	476	53.6%
11	31 280	4 838	63.70	194 098	318 505	2419	67.1%
12	8 078	220	61.99	16 622	32 975	570	100.0%
13	12 057	771	65.93	63 816	109 488	1051	93.7%
14	24 995	7 087	73.11	250 066	401 307	2148	79.5%
15	30 461	1 159	57.99	150 681	243 048	2185	100.0%
16	8 241	146	53.88	21 665	38 493	409	100.0%
17	32 620	6 862	45.10	294 771	407 348	3846	100.0%
18	22 801	3 615	65.27	112 108	213 459	1234	49.0%
19	21 815	1 246	65.22	96 725	161 669	1584	82.4%
20	27 366	1 270	64.62	216 788	287 968	961	100.0%
21	5 828	60	83.48	8 932	37 467	169	100.0%
22	23 139	2 963	66.19	125 999	249 204	1525	58.8%
23	13 506	3 058	81.65	96 194	163 475	740	58.7%
24	29 860	3 228	56.42	438 086	615 895	3202	100.0%
25	8 164	358	68.15	40 106	58 910	489	83.5%
26	20 231	4 524	69.92	188 710	312 012	1576	74.8%
27	22 286	4 097	79.21	168 197	316 745	1381	68.9%

It was possible to identify the significant variables with a high level of the R^2 coefficient of determination during an analysis of the existing levels of selected socio-economic parameters in the municipalities of the Podlaskie Voivodeship in 2018 (tables 4 and 5). The values of the Student's t-distribution (at the significance level of 0.05) lead to the rejection of the hypotheses according to which *BANK* and *BANKBRANCH* do not influence the municipality's population *POP*; that *CCB*, *BANK* and *BANKBRANCH* do not influence the number of businesses in the municipality *REG*; and that *BANKBRANCH* does not influence the level of unemployment in the municipality *UNEMP*. After the elimination of the outlets of Bank Pocztowy SA, the values of Student's t-distribution (at the significance level of 0.05) lead to the rejection of the hypotheses according to which *CCB*, *BANK*, *CCB* and *BANKBRANCH* do not influence the level of *POP*, *REG* and *UNEMP*. However, it is important to note that, in the case of the selected socio-economic parameters, it is the location of cooperative banks that is determined by the potential and development of individual municipalities, rather than vice versa. The negative values of indicators for the number of banks in individual municipalities and at the same time the positive values for the number of outlets can be explained by the fact that competition from the outlets of the same sector is not feasible in a local community. Cooperative banks operate within the traditional deposit and credit model. They can improve their profits only via an unhealthy competition within the same customer segments and sectors of the economy, which leads to lowering profits. Furthermore, cooperative banks with headquarters in other municipalities are reluctant to invest resources in the development of neighbouring municipalities [17-19].

Table 4 – Estimation results: basic models with the statement at the end of 2018

Specification N=118	Dependent variable					
	<i>REV</i>	<i>OWNREV</i>	<i>POP</i>	<i>REG</i>	<i>SAL</i>	<i>UNEMP</i>
<i>Constant</i>	–	–	45,9036 (5,2752)	3,2762 (0,5684)	–	1,5665 (0,2384)
<i>CCB</i>	–	–	–	-2,6856 (1,0788)	–	–
<i>BANK</i>	–	–	-10,6323 (1,6542)	-2,1605 (0,1782)	–	–
<i>CCB</i> <i>BRANCH</i>	–	–	–	–	–	–
<i>BANK</i> <i>BRANCH</i>	–	–	27,6781 (0,8545)	3,3824 (0,0921)	–	0,7189 (0,0386)
<i>EFFECT</i>	–	–	–	–	–	–
R^2	–	–	0.9887	0.9909	–	0.9693

Table 5 – Estimation results: basic models with the statement at the end of 2018 without Bank Pocztowy SA

Specification N=118	Dependent variable					
	<i>REV</i>	<i>OWNREV</i>	<i>POP</i>	<i>REG</i>	<i>SAL</i>	<i>UNEMP</i>
<i>Constant</i>	–	–	40,6370 (6,5664)	2,6285 (0,6803)	–	1,3959 (0,2828)
<i>CCB</i>	–	–	-34,2054 (12,2415)	-4,5984 (1,2684)	–	-1,3383 (0,5273)
<i>BANK</i>	–	–	-22,2605 (2,1555)	-3,5379 (0,2233)	–	-0,3520 (0,0928)
<i>CCB</i> <i>BRANCH</i>	–	–	40,1494 (8,7451)	4,8328 (0,9061)	–	1,3789 (0,3767)
<i>BANK</i> <i>BRANCH</i>	–	–	39,0008 (1,5676)	5,0184 (0,1624)	–	0,9300 (0,06752)
<i>EFFECT</i>	–	–	–	–	–	–
R^2	–	–	0.9825	0.9869	–	0.9569

Also the presence of an efficient bank in a municipality has principally no bearing upon any of the analysed parameters. This may indicate that efficient cooperative banks basically adopt the operating model of commercial banks and try to emulate their strategies. Concentrating on profit does not necessarily translate into benefits for the local community. It is important for a cooperative bank to produce net profit necessary for increasing equity and improving capital adequacy. However, orientation towards profit may harm actually acting in the interest of the stakeholders.

We believe that the lack of connection between the presence of cooperative banks and the dynamics of the selected socio-economic parameters in the Podlaskie municipalities can be explained by completely different conditions in which cooperative banks operate today, compared to the earlier research. The timeframe of the analysis included the time until 2018, i.e. a period when taxes and regulatory fees diametrically increased throughout the banking sector. Consequently, even though the statutes of cooperative banks provided for funding local cultural, educational, sporting needs etc., the banks focused on increasing their current reserves, capital reserves, and general risk funds to cover unidentified types of banking risk. Thus the assets devoted to sustainable development of local communities became significantly limited. Please note that, unlike in other countries, the membership in Polish cooperative banks becomes less and less popular, and membership numbers dwindle. Equity capital of cooperative banks, which is created chiefly by in-payments from members, suffers as a result [20-25].

Another reason for cooperative banks' lack of support for local communities is a certain alternation of their operating strategies. The dynamic changes in their environment force the management of cooperative banks to change their business orientation. It becomes less and less possible to maintain market position by applying an extensive business model, based mainly on interest margins. Until recently, cooperative banks cultivated a costly business model dependent on a relatively large number of banking outlets and high employment. This model is reflected in far lower cost effectiveness, lower staff productivity, and less effective customer acquirement, compared to commercial banks. According to M. Idzik (2018), an average age of a cooperative bank customer in the second quarter of 2018 was 52 years, compared to 43 years in the case of the customers of commercial banks. This results in relatively smaller activity of cooperative clients in terms of using banking cards (38%), savings accounts (10%), credit cards (11%), term deposits (13%), currency accounts (4%), online banking (26%) and mobile banking – usually in a different bank than the cooperative one (11%). Customer activity is at least 50% lower than in the case of commercial banks. With the current pace of changes in the market environment, and the digitalisation of banking products and services, cooperative banks operating as fully separate entities will be forced into losing positions as they try to compete in all areas of operation with far stronger commercial banks, unless they change their existing methods of management [26]. The cooperative sector can effectively compete with commercial banks if it becomes more integrated, and if the products, computer infrastructure and marketing are uniformly managed at the level of a cooperative bank association. The cooperative banks' only chance of survival (apart from occupying the niche of clients expecting flexibility and fast decision making, in which commercial banks are less interested) is to find products, services and manners of contacting clients, which are not offered by commercial banks. Answering this challenge is crucial for the future of the cooperative banking sector and its role in local communities. Another solution is a French-style consolidation, and creation of a bank operating according to commercial principles [27].

Contrary to earlier research, the analysis showed no significant influence of cooperative banks upon the local development of 118 municipalities in the Podlaskie Voivodeship. We believe that the lack of influence of cooperative banks upon the dynamics of the selected socio-economic parameters in those municipalities is mainly a result of the entirely different conditions of cooperative banks' operation, compared to the earlier research. Cooperative banks face serious regulatory, technological and demographic challenges, which they must overcome, or be pushed out of the market. Unfortunately, this situation is reflected in the cooperative banks' decreasing participation in financing the needs of local communities. More research is necessary to refine and further elaborate on our new findings.

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ПОЛЬШАДАҒЫ ПОДЛЯСКОЕ ВОЕВОДСТВОСЫНЫҢ ЖЕРГІЛІКТІ ДАМУЫНА КООПЕРАТИВТІК БАНК БӨЛІМШЕЛЕРІНІҢ ӘСЕРІ

Аннотация. Жұмыстың мақсаты Польшадағы Подляское воеводасының муниципалитеттерінде кооперативті банктердің болуы жергілікті дамуды ынталандыратындығын бағалау болып табылады. Осы мақсатта біз 118 муниципалитеттегі кооперативті банктермен жекелеген әлеуметтік-экономикалық факторлардың өзгеру динамикасы: жекелеген муниципалитеттердің жиынтық және меншікті кірістері, халықсаны, кәсіпорындар саны, орташа айлық жалақы және жұмыссыздық деңгейі арасындағы байланысты қарастырдық. Талдау Польшаның Еуропалық Одаққа кіруімен 2018 арасындағы кезеңді қамтиды. Біздің нәтижелеріміз кооперативті банктермен жергілікті даму арасындағы тығыз байланысты көрсететін бұрынғы тұжырымдарды растамайды.

Түйін сөздер: банк секторы, кооперативті банктер, жергілікті экономикалық өсу, DEA (жұмыс істеу ортасын талдау).

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ВЛИЯНИЕ ОТДЕЛЕНИЙ КООПЕРАТИВНЫХ БАНКОВ НА МЕСТНОЕ РАЗВИТИЕ ПОДЛЯСКОГО ВОЕВОДСТВА В ПОЛЬШЕ

Аннотация. Целью работы является оценка того, стимулируют ли кооперативные банки местное развитие в муниципалитетах Подляского воеводства в Польше. Для этой цели мы изучили связь между кооперативными банками в 118 муниципалитетах воеводства и динамикой изменения отдельных социально-экономических факторов: общих и собственных доходов отдельных муниципалитетов, численности населения, количества предприятий, среднемесячной заработной платы и уровня безработицы. Анализ охватывает период между вступлением Польши в Европейский Союз и 2018 годом. Наши результаты не подтверждают ранее сделанные выводы, свидетельствующие о тесной связи между кооперативными банками и местным развитием.

Ключевые слова: банковский сектор, кооперативные банки, местный экономический рост, DEA (анализ среды функционирования).

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REFERENCES

- [1] Ahn, H., Le, M.H. (2014). An Insight into the Specification on the Input-Output Set for DEA-based Bank Efficiency Measurement. *Management Review Quarterly*, 64(1), pp. 3-37, <https://doi.org/10.1007/s11301-013-0098-9>.
- [2] Aschhoff G. (1982) *The Banking Principles of Hermann Schulze-Delitzsch and Friedrich Wilhelm Raiffeisen*. In: Engels W., Pohl H. (eds) *German Yearbook on Business History 1982*. Springer: Berlin, Heidelberg.
- [3] Ayadi, R., Llewellyn, D.T., Schmidt, R., Arbak, E., De Groen, W. (2010). *Investigating Diversity in the Banking Sector in Europe: Key Developments, Performance and Role of Cooperative Banks*. Centre for European Policy Studies, Brussels.
- [4] Banker, R.D., Charnes, A., Cooper, W.W. (1984). Some Models for Estimating Technical and Scale Inefficiencies in Data Envelopment Analysis. *Management Science*, 30(9), pp. 1078-1092, <https://doi.org/10.1287/mnsc.30.9.1078>.

- [5] Barra, C., Zotti, R. (2019). Bank Performance, Financial Stability and Market Concentration: Evidence from Cooperative and Non-Cooperative Banks. *Annals of Public and Cooperative Economics*, 90(1), pp. 103-139, <https://doi.org/10.1111/apce.12217>.
- [6] Becchetti, L., Ciciretti, R., Paolantonio, A. (2016). The Cooperative Bank Difference before and after the Global Financial Crisis. *Journal of International Money and Finance*, 69, pp. 224-246, <https://doi.org/10.1016/j.jimonfin.2016.06.016>.
- [7] Bernini, C., Brighi, P. (2018). Bank Branches Expansion, Efficiency and Local Economic Growth. *Regional Studies*, 52(1), pp. 1332-1345, <https://doi.org/10.1080/00343404.2017.1380304>.
- [8] Karboz Zh. A., Dossayeva S. K. Issledovaniye vodorodoprionitsayemosti membran, pokrytykh razlichnymi metallichesкими plenkami (obzor) // Kompleksnoe Ispol'zovanie Mineral'nogo Syr'a (Complex Use of Mineral Resources). – 2019.-№3 (310). – P. 48-54(In Russian). <https://doi.org/10.31643/2019/6445.28>
- [9] Birchall, J. (2013). *Finance in an Age of Austerity: the Power of Customer-owned Banks*, Edward Elgar: Cheltenham, UK.
- [10] Catturani, I., Kalmi, P., & Stefani, M.L. (2016). Social Capital and Credit Cooperative Banks, *Economic Notes by Banca Monte dei Paschi di Siena SpA*, vol. 45, no. 2., pp. 205-234.
- [11] Cornée, S., Fattobene, L., & Migliorelli, M. (2018). An Overview of Cooperative Banking in Europe, pp. 1-27, [in:] *New Cooperative Banking in Europe. Strategies for Adapting the Business Model Post Crisis* [ed.] Migliorelli, M. Springer International Publishing.
- [12] Coccorese, P., Shaffer, S. (2018). Cooperative Banks and Local Economic Growth. *CAMA Working Paper*, 11/2018.
- [13] Eurostat (2019). GDP per capita in 281 EU regions. Regional GDP per capita ranged from 31% to 626% of the EU average in 2017. <https://ec.europa.eu/eurostat/web/products-press-releases/-/1-26022019-AP> (accessed 03 August 2019).
- [14] *Managerial Finance*, 35(3), pp. 227-245, <https://doi.org/10.1108/03074350910931753>.
- [15] Golec, M.M., Płuciennik, P. (2017). Polish Cooperative Banks as Net Lenders in the Money Market, *e-Finanse*, vol. 13, nr 4, pp. 27-36.
- [16] Groeneveld, J. M. (2017). *A Snapshot of European Co-operative Banking 2017*. Tilburg: TIAS School for Business and Society at Tilburg University.
- [17] GUS – Główny Urząd Statystyczny (2019), www.stat.gov.pl (accessed 03 August 2019).
- [18] GUS – Główny Urząd Statystyczny (2018). *Statistical Yearbook of Agriculture 2018*. Statistics Poland: Warsaw.
- [19] Hakenes, H., Hasan, I., Molyneux, P., Xie, R. (2015). Small Banks and Local Economic Development. *Review of Finance*, 19(2), pp. 653-683.
- [20] Idzik, M. (2018). Struktura rynku detalicznych usług bankowych i cechy klientów jako przesłanki strategii banków spółdzielczych w Polsce, *Bezpieczny Bank*, 3(72), pp. 102-120.
- [21] Kata, R. (2017). Efektywność ekonomiczno-finansowa banków spółdzielczych w warunkach niskich stóp procentowych, *Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu*, tom XIX, zeszyt 4, pp. 110-116.
- [22] Kontolaimou, A., Tsekouras, K. (2018). Are Cooperatives the Weakest Link in European Banking? A Non-Parametric Metafrontier Approach, *Journal of Banking & Finance*, 34(8), pp. 1946-1957, <https://doi.org/10.1016/j.jbankfin.2010.01.003>.
- [23] Lepczyński, B., Gostomski, E., Tendencje rozwojowe oraz sytuacja ekonomiczna niemi
- [24] Rafacz, J. (1937). *Fundacja ostrołęcka taniego kredytu z r. 1577*. *Roczniki Dziejów Społecznych i Gospodarczych*, t. VI. Lwów, skład główny: Kasa im. J. Mianowskiego – Instytut Popierania Polskiej Twórczości Naukowej: Warszawa, s. 59-71.
- [25] San-Jose, L., Retolaza, J.L., Lamarque, E. (2018). The Social Efficiency for Sustainability: European Cooperative Banking Analysis, *Sustainability*, 10, 3271, <https://www.mdpi.com/2071-1050/10/9/3271>.
- [26] Wspólnota (2019). Bogactwo samorządów. Ranking dochodów JST 2018. http://www.wspolnota.org.pl/fileadmin/user_upload/07_2019/Ranking_-_Zamoznosc_samorzadow_2018-ok.pdf (accessed 03 August 2019).
- [27] L.M. Sembiyeva, A.O. Zhagyparova, M.K. Makysh. Role of commercial banks in innovative development of the economy. *Reports of the National Academy of Sciences of the Republic of Kazakhstan*. 2019, 3
- [28] Shayakhmetova K.O, Uteubayeva A.T., Kabiyeu A.A., Nazhmidenov B.T. Bank risks in the system on countering the laundering of proceeds and financing of terrorism. *Reports of the National Academy of Sciences of the Republic of Kazakhstan*. ISSN 2224-5227. Volume 3, Number 325 (2019), 227 – 230. <https://doi.org/10.32014/2019.2518-1483.97>

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**TO BE OR NOT TO BE:
TRANSFER PRICING AGGRESSIVENESS
IN THE ENTERPRISES OF KAZAKHSTAN**

Abstract. The purpose of the study is to determine the transfer pricing aggressiveness index in the system of MNCs and focuses on identifying the significant determinants of transfer pricing aggressiveness in the enterprises of Kazakhstan in order to develop policies and regulations. During the research six variables were tested, which are the size of the enterprise, performance of the company, the structure of the capital, intangible assets, and cash flow from operating activities. It was expected that all these variables are positively associated with transfer pricing aggressiveness, however we obtained only 3 variables that were statistically significant which are size of the firm, profitability of the firm and intangibles of the firm.

There are some limitations of the study, which are that the sample size is too small for this kind of research, there is no division of the companies for industries. Future research can be done taking into account these limitations.

Keywords: transfer pricing, size of the enterprise, performance of the company, the structure of the capital, intangible assets, and cash flow from operating activities, transfer pricing manipulations, transfer pricing aggressiveness.

Introduction. In the context of integration and globalization of the economy, there is a growth of multinational companies, followed by an increase in trade turnover between interrelated parties within the group of companies. The World Trade Organization estimates that about 50 percent of world trade is conducted by multinational corporations, which account for 25 percent of all production assets are owned by the 500 largest transnational enterprises. In this regard, Rossing (2017) states that multinational companies play an essential role in the global trading environment. Emmanuel (2002) suggested that the transfer pricing is the heart of multinational companies, as it aims to maximize the profit of the companies by shifting the profit to the countries with low tax tariffs [1].

Several studies of Eden (1983), Borkowski (1996), Emmanuel (1998) and Pfeiffer (1999) mentioned that multinational companies participate in various transactions in the group to which they belong [2]. Such transactions may be different; for example, companies may sell (exchange) goods or services, provide financial resources, or participate in research and development. Such transactions may differ from other market transactions as between independent parties because associate group entities may freely set a lower value for a product or service to reduce the amount of the tax base, thereby maximizing profits from the global market for their holding company. The price which is formed between related parties which differs from the actual market price which is based on the existing price scale in transactions between independent parties is controlled by OECD guidelines and is known as the transfer price.

According to Ernst and Young survey in 2016, the transfer pricing is one of the essential aspects of MNCs in international taxation [3].

Cools (2008) suggested that transfer pricing can also be used as a strategic tool for interrelated companies in their decision-making, implementation of the company's core business objectives, transfer of income from one company to another in order to reduce the tax base, to increase the revenue of subsi-

diaries operating in low-tax countries, to maximize consolidated profits and to enter new markets [5]. Transfer pricing includes the information of related companies into one universal management accounting system. This combination allows the reducing of inaccuracies in the calculation of the cost of goods and services, which will enable you to calculate the cost of production more accurately and make better decisions.

Eden (2017) explains that transfer pricing is an essential component of the new market mechanism. In recent years, business entities increasingly use the possibilities of transfer pricing as an instrument of regulation of economic relations. In the conditions of the market economy, transfer pricing operations have reached a qualitatively new level. Some researchers (Schiller 2006, Borkowski 2010, Matsui 2011, Rohde 2014) defined that many multinational firms resort to transfer pricing purposefully, considering it as the best instrument for optimization of the tax burden [6].

However, according to Keuschnigg and Devereux (2012), there is a challenging task for tax authorities to collect a corporate taxes from MNEs, because they shift profits from high tax countries to low tax ones, by doing so - MNCs reduce their tax liability. Rugman and Eden (2017) stated that to optimize their tax burden, MNE could use market imperfections through the tax avoidance strategies, such as financial maneuvers, tax deferrals and transfer pricing manipulations such as over or under-invoicing intra-firm transfers of intangibles or goods (services). By doing it, as Sikka and Willmott (2010) mentioned, MNEs' transfer pricing manipulation affects the distribution of wealth, risks, and quality of life [7].

According to WIDER Working Paper (2017), global revenue losses were at around US\$ 650 billion annually, from which one-third relate to developing economies. Clausing (2016) found out that by 2012, the US-headquartered MNCs shifted their profits to the low - tax jurisdictions between US\$ 77 billion and US\$ 111 billion. Sikka and Willmott (2010) stated that profit shifts from high - tax economies to the low - tax economies are mostly done under transfer pricing manipulations [8].

Examples of transfer pricing manipulations are cases of Apple Inc., Vodafone, Yukos, and others. For instance, during 2013, the U.S.Congress find out that Apple Inc. Avoided tax for US\$ 10 billion through transfer pricing manipulations. This case led to the rise of the government authorities' attention to such transfer pricing manipulations. According to Matei and Pirvu (2011) because of these transfer pricing manipulations, the primary goal of the government authorities is the protection of federal tax revenues [9].

The message is clear: there is a necessity of a new transfer pricing strategy, that would help MNCs to maximize their profits without harming the governments' national tax revenues. According to Rossing, Cools, and Rohde (2017), one of the possible solutions is to determine the significant determinants of transfer pricing aggressiveness, which will be capable to reduce the manipulations with transfer pricing.

According to PWC (2017), the transfer pricing system (as well as high-quality information support) is necessary, first of all, for large industrial enterprises, companies engaged in mass wholesale deliveries and companies operating in the extractive industries. Also, only large companies can afford the costs associated with the transition to a new method of management. This process is most indicative in the automotive, construction, oil and gas and pharmaceutical industries.

For example, Baker McKenzie (2018) mentioned that the problem of transfer pricing in the pharmaceutical market is the most urgent [10]. Large pharmaceutical companies engaged in the wholesale supply of medicines face the challenge of agreeing to transfer prices in cooperation with customs services (in the process of purchasing imported medicines) and transport services (in the process of supplying drugs). To solve this problem, companies are forced to combine the procurement and sales departments with customs and transport departments into a single transfer process, combining them into a unique information space, within which domestic prices for pharmaceutical products are formed. By engaging this system, suppliers and customers arise a solid transfer structure to implement an effective method of calculations.

Grambusch and Kosyan (2018) explained that a reasonable combination of control and freedom gives the most optimal results in the formation of the transfer pricing system. In this regard, the determination of the significant determinants of transfer pricing aggressiveness will eliminate the problem of information asymmetry in corporations and improving the quality of centralized decision-making. However, according to Jutila (2017), there is a dark side of such determination [11]. The enterprises will be required to create a new specific transfer pricing documentation, which will be by the new policy. Such innovations will lead to the emergence of new forms of control. New trends are forcing financial services to pay attention to the

conversion of global financial flows into the "numbers." The implementation of new policies by tax authorities poses particular challenges. The first challenge is to ensure the stability and unification of tax administration during the implementation of new systems and regulations. The second is the constant improvement of technical and personnel support of the tax authorities.

Although the process of determination of transfer pricing aggressiveness index has not been yet widely adopted by the business community, many companies have gained confidence that it is possible to have a faster and efficient workflow in cross-border trade which can help in improving overall customer experience without compromising the safety of sensitive information.

The aim of this article is justified by the lack of knowledge of the problem in the determination of transfer pricing aggressiveness index in the system of MNCs. The study focuses on identifying the significant determinants of transfer pricing aggressiveness in order to develop policies and regulations.

According to the transfer pricing academic background, all researches can be divided into two major groups, which are the tax area and corporate management area, which also could be divided into the following sub-areas:

First researches were done during the 1950 – 1960 years and were mainly focused on the corporate management area [12]. The theoretical investigations of that period are Dean (1955), Hirshleifer (1956), Argyris (1957) and Heflebower (1960). Also, during this period, the main theories of transfer pricing were formed, which are:

- a. Economic theory
- b. Mathematical theory
- c. Accounting theory
- d. Organizational Behaviour Theory
- e. Strategic Management Theory

	Transfer Pricing		
Corporate Management Area			Tax Area
Effective resource allocation			Tax minimization
Motivation of Managers			Tax compliance
			Tax control

Figure 1 – Transfer pricing research areas.

Source: done by the author.

The father of economic theory in the transfer pricing system is Hirshleifer (1956). He proposed that multinational enterprises set a goal to increase their profits by shifting the income from high-tax jurisdictions to low ones [13].

The mathematical theory was formed by Eccles (1985), he believed that a proper mathematical model would be able to determine the ideal transfer price that will be optimal for the enterprises.

The accounting theory followed the same goal as economic and mathematical theories. The first person who researched the topic of how transfer prices affect financial decisions through accounting theory prism was Solomons (1965) [14].

Grabski (1985) concluded that it was not enough to use economic or accounting theories to solve management problems, he proposed that it is necessary to look through organizational behavior theory because the compensation schemes of managers depended on companies revenues [15].

The last theory that was formed was the strategic management theory, which suggested to look at the whole enterprise rather than on separate divisions. This theory of firstly was proposed by Swieringa and Waterhouse (1982).

All these theories considered only theoretical background, but it should be mentioned that these theories played a significant role as a basis for empirical researches.

As it was mentioned earlier, the theoretical studies were mainly focused on corporate management area of transfer pricing, while the empirical studies are focused on the tax area. In 1997 Hines conducted empirical research, and his research question was whether the companies in low-tax jurisdictions were

more profitable than companies in high-tax jurisdictions. Hines stated that there was a negative correlation between firm profitability and tax rates [16].

Another group of researches (Hines and Rice, 1990; Harris et al., 1993; Grubert and Mutti, 1991; Bartlesmann and Beetsma, 2000; Pfeiffer et al., 2007; Plesner et al., 2013; Beer et al., 2017; Wu and Lu, 2018) tested whether multinational companies used foreign direct investment or profit-based measures in order to shift income from a high level of taxes to low ones. These studies provided only indirect evidence of transfer pricing manipulations [17].

However, the most important empirical researches that have been made considering the transfer pricing manipulations were:

a. a. Eden (2003) was testing how product characteristics and market structures affect transfer pricing manipulations.

b. b. The research of Overesch M. (2006) investigated whether the transfer pricing of intra-company sales heavily depends on company tax planning. The empirical analysis that was done on German multinationals and considered the supposed tax response of intra-company sales directly [18].

c. c. The research of Hoonsawat R. (2007) has examined country sensitivity of transfer pricing as a result of differences in unilateral corporate tax rates to three factors described by the theoretical model: labor demand, capital endowment, and remoteness [19].

d. d. Bernard A., Jensen B., and Schott P. (2006). This research has provided some of the first evidence of the effect of exchange rates on pricing decisions inside and outside the firm [20].

Still, these researches play a vital role in transfer pricing manipulation studies.

Considering the transfer pricing aggressiveness index, the first empirical research was done by Richardson, Taylor, and Lanis (2013). They concluded that provision of specific documentation by management in regards to arm's length pricing contributes to a more effective tax administration and greater transparency of the transfer pricing rules to analysts, shareholders, and potential investors. The limitations of their study gave a gap for further research on this topic.

Methods. The factors that affect the transfer pricing aggressiveness are the size of the enterprise, performance of the company, the structure of the capital, intangible assets, and cash flow from operating activities. In order to test the impact of these variables on the transfer pricing, the following hypotheses were developed.

	SIZE			INTANGIBLE ASSETS					
PROFITABILITY		TRANSFER PRICING AGGRESSIVENESS		CASH FLOW FROM OPERATING ACTIVITY					
	LEVERAGE			TAX					

Figure 1 – Variables affecting the transfer pricing aggressiveness index.

Source: done by the author.

Hypotheses №1. There is a positive relation of the size of the firm with the transfer pricing aggressiveness in Kazakhstan.

According to Rego (2003), large companies may easily manipulate with transfer prices because they participate in a more significant amount of financial transactions and business operations. Taking into account Kiswanto and Purwaningsih (2015) the size of the firm affect the ability of the company to earn more profit through transfer pricing mechanisms [21].

Hypotheses №2. There is a positive relation of the profitability of the enterprise with the transfer pricing aggressiveness in Kazakhstan.

Taking into consideration such researches as Rego (2003), Mutti and Grubert (2009), Womack and Drucker (2011) and Duhigg and Kocieniewski (2012) we need to mention that they came to the conclusion that the more profitable is the firm, the more likely the company will shift the income from high tax rate jurisdictions to low ones.

Hypotheses №3. There is a positive relation of the capital structure of the with the transfer pricing aggressiveness in Kazakhstan.

Studies by Hines (1996); Richardson (1998), Cecchini, Leitch, & Strobel (2013), Newberry and Dhaliwal (2001); Rego (2003); Dyreng (2008); Eden (2010) mentioned that companies use the debt as an instrument to reduce tax liabilities [22].

Hypotheses №4. There is a positive relation of the intangible assets of the enterprise with the transfer pricing aggressiveness in Kazakhstan.

Grubert & Mutti (2007) mentioned that the relation between the intangible assets and transfer pricing aggressiveness plays an essential role in business operation.

Hypotheses №5. There is a positive relation of the cash flow from operating activity of the enterprise with the transfer pricing aggressiveness in Kazakhstan.

Taking into account the studies of Dechow et al., (1998), Hanlon (2005) and Kim (2011) it is considered that cash flows from operating activities are highly correlated with the tax avoidance. Usually, the MNCs use the CFOA in order to control the flows of the companies and monitor their performance.

The data for the research was collected from the official web-sites of the companies. In the study were used the annual reports with financial statements. The target of the study is FMCG companies, that are presented in Kazakhstan. Purposive sampling method is used in order to choose 6 FMCG-companies, which are Johnson Johnson, Proctor&Gamble, Kimberly&Clark, Uniliver, Beiersdorf and Colgate-Palmolive. This study uses financial statements of previously mentioned companies for the period from 2008 to 2018. For the research panel data regression will be used.

The following model represent the relationship between TAX (dependent variable) and SIZE, PROFIT, LEVERAGE, INTANGIBLES, CFOA and TP (independent variables). The model was created by Richardson et al. (2013) and during the research the model was modified by the researcher and additional variables were added.

$$TAX_{i,t} = \alpha_0 i_{i,t} + \beta_1 SIZE_{i,t} + \beta_2 PROFIT_{i,t} + \beta_3 LEVERAGE_{i,t} + \beta_4 INTANGIBLES_{i,t} + \beta_5 CFOA_{i,t} + \beta_6 TP_{i,t} + \varepsilon_{i,t} \quad (1)$$

Here, in the table 1, you may observe the description of the independent variables used in the research model.

Variables	Measurement	References
TP (transfer pricing aggressiveness) <i>DEPENDENT VARIABLE</i>	EBITDA/Interest paid	Clausing (2009), Klassen and Laplante (2012)
TAX <i>INDEPENDENT VARIABLE</i>	Income tax expense/ EBIT	Yuniasih, Rasmimi, & Wirakusuma (2012)
SIZE <i>INDEPENDENT VARIABLE</i>	Natural logarithm of total assets	Stickney and McGee (1982), Slemrod, 2001; Rego, 2003, Richardson and Lanis (2007), Richardson, G., Taylor, G., & Lanis, R. (2013), Waworuntu, S.R, Hadisaputra, R Pertanika (2016)
PROFIT <i>INDEPENDENT VARIABLE</i>	Natural logarithm of profit before tax	Mutti et al., (2009), Womack et al., (2011); Duhigg et al. (2012); Niresh & Velnampy (2014), Waworuntu, S.R, Hadisaputra, R Pertanika, (2016)
LEVERAGE <i>INDEPENDENT VARIABLE</i>	Total liabilities/total assets	Hines (1996), Newberry and Dhaliwal (2001), Rego (2003), Cecchini, Leitch, & Strobel (2013), Waworuntu, S.R, Hadisaputra, R Pertanika (2016)
INTANGIBLES <i>INDEPENDENT VARIABLE</i>	Natural logarithm of intangibles	Dyreng et al. (2008), Richardson, G., Taylor, G., & Lanis, R. (2013), Rotkowski (2015), Waworuntu, S.R, Hadisaputra, R Pertanika (2016)
CASH FLOW FROM OPERATING ACTIVITIES <i>INDEPENDENT VARIABLE</i>	Cash flow from operating activity/ total assets	Dechow et al., 1998, Hanlon (2005), Kim et al., 2011

Results. This part contains the results of the research.

Table 2 shows the descriptive statistics of the dependent and independent variables.

	Mean	Std. deviation	Minimum	Maximum
ID	3.5	1.720912	1	6
YEAR	2013	3.18651	2008	2018
SIZE	56505.21	53440.78	4459	157303
PROFIT	7802.545	6753.456	255	29251
LEVERAGE	7.482121	55.10068	.05	448.31
CFOA	1.757576	12.89965	.01	104.96
INTANGIBLES	10219.74	13367.68	119	53228
TAX	0.315	.3732158	-.26	3.09
TP	43.0003	57.19332	4.92	396

Observation of R2 showed a value about 0.5205 is able to account for 52% of variation in dependent variable TAX of companies in Kazakhstan.

Here in the table 3, the results of the test are presented:

Variables	Coefficient	Std. deviation	t-value	P> t
SIZE	.2965244	.0967805	3.06	0.275
PROFIT	-.7645487	.1007995	-7.58	0.003
LEVERAGE	.2467844	.1664638	1.48	0.000
CFOA	-1.053474	.7112261	-1.48	0.067
INTANGIBLES	.1224936	.0655011	1.87	0.144
TP	.0010307	.0009341	1.10	0.144
_cons	2.701925	1.052149		0.013
R2	0.5205			
F(6,54)	9.77			

Table 4, the result of the hypotheses testing.

Independent Variables	Expected sign	Hypothesis
SIZE	+	+
PROFIT	+	-
LEVERAGE	+	+
CFOA	+	-
INTANGIBLES	+	+

Discussion of the results. We can observe that 3 variables out of 5 gave us statistically significant results. The coefficient of the SIZE variable is positively associated with the transfer pricing aggressiveness, which supports our Hypotheses №1. The PROFIT coefficient is negative, which contradicts to our Hypotheses №2, so we reject to accept it. According to the researches of Mutti et al., (2009), Womack et al., (2011); Duhigg et al. (2012); Niresh & Velnampy (2014), Waworuntu, S.R, Hadisaputra, R Pertanika, (2016), the regression coefficient PROFIT showed only positive result. [23] They stated that the more profitable the company there is a high chance that it will use transfer pricing techniques to avoid taxes. According to the statistics of the Republic of Kazakhstan in 2018, it can be observed that the last 2 years the companies reported losses in their business activities. This can be one of the reasons, why we obtained negative results in our regression model. The Hypotheses №3, №4 and №5 show not significant results, which can result in modifying the current model in order to obtain better results, explaining the relation between the dependent and independent variables.

Conclusion. The purpose of the study is to determine the transfer pricing aggressiveness index in the system of MNCs and focuses on identifying the significant determinants of transfer pricing aggressiveness in order to develop policies and regulations.

During the research six variables were tested, which are the size of the enterprise, performance of the company, the structure of the capital, intangible assets, and cash flow from operating activities. It was expected that all these variables are positively associated with transfer pricing aggressiveness, however we obtained only 3 variables that were statistically significant which are size of the firm, profitability of the firm and intangibles of the firm.

There are some limitations of the study, which are that the sample size is too small for this kind of research, there is no division of the companies for industries. Future research can be done taking into account these limitations.

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БОЛУЫ НЕМЕСЕ БОЛМАУЫ: ҚАЗАҚСТАННЫҢ КӘСІПОРЫНДАРЫНДА ТРАНСФЕРТТІК БАҒА БЕЛГІЛЕУ АГРЕССИВТІЛЕГІ

Аннотация. Зерттеудің мақсаты ҰМН жүйесінде трансферттік баға белгілеу агрессиялық индексін анықтау және саясат және нормативтік актілерді әзірлеу мақсатында Қазақстан кәсіпорындарында трансферттік баға белгілеу агрессивтілегінің маңызды детерминанттарын анықтауға бағытталған. Зерттеу барысында кәсіпорынның өлшемі, компанияның қызметі, капитал құрылымы, материалдық емес активтер және операциялық қызметтен ақша ағымы болып табылатын алты айнымалы тестіленген. Барлық осы айнымалылар трансферттік баға белгілеу агрессивтілегіне оң әсерін тигізді деп күтілуде, алайда фирманың көлемі, фирманың кірістілігі және фирманың материалдық емес активтері болып табылатын статистикалық тұрғыдан маңызды үш айнымалылар ғана алдық.

Зерттеудің кейбір шектеулері бар, бұл зерттеулердің осы түрі үшін үлгі өлшемі өте аз, компаниялардың салалары үшін бөлінуі жоқ. Болашақ зерттеулер осы шектеулерді ескере отырып жүргізілуі мүмкін.

Түйін сөздер: трансферттік баға белгілеу, кәсіпорын өлшемі, компанияның қызмет етуі, капитал құрылымы, материалдық емес активтер және операциялық қызметтен ақша ағымы, трансферттік бағаларды айла-шарғы, трансферттік баға белгілеу агрессивтілегі.

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БЫТЬ ИЛИ НЕ БЫТЬ: АГРЕССИВНОСТЬ ТРАНСФЕРТНОГО ЦЕНООБРАЗОВАНИЯ НА ПРЕДПРИЯТИЯХ КАЗАХСТАНА

Аннотация. Цель исследования – определить индекс агрессивности трансфертного ценообразования в системе МНК и сосредоточиться на выявлении значимых детерминант агрессивности трансфертного ценообразования на предприятиях Казахстана с целью разработки политики и нормативных актов. В ходе исследования были протестированы шесть переменных: размер предприятия, результаты деятельности компании, структура капитала, нематериальные активы и поток денежных средств от операционной деятельности. Ожидалось, что все эти переменные положительно связаны с агрессивностью трансфертного ценообразования, однако мы получили только 3 статистически значимые переменные, которые включают размер фирмы, прибыльность фирмы и нематериальные активы фирмы.

Есть некоторые ограничения исследования, которые заключаются в том, что размер выборки слишком мал для такого рода исследований, нет разделения компаний по отраслям. Дальнейшие исследования могут быть сделаны с учетом этих ограничений.

Ключевые слова: трансфертное ценообразование, размер предприятия, результаты деятельности компании, структура капитала, нематериальные активы и поток денежных средств от операционной деятельности, манипуляции с трансфертным ценообразованием, агрессивность трансфертного ценообразования.

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REFERENCES

- [1] Borkowski, S. C., (1996). An analysis (meta- and otherwise) of multinational transfer pricing research. *The International Journal of Accounting*, 31(1), 39-53. (in English)
- [2] Borkowski, S. C., (2010). Transfer pricing practices of transnational corporations in PATA countries. *Journal of International Accounting, Auditing, and Taxation*, 19(1), pp.35-54. (in English)
- [3] Clausing, Kimberly A., *The Effect of Profit Shifting on the Corporate Tax Base in the United States and Beyond* (June 17, 2016). Available at SSRN: <https://ssrn.com/abstract=2685442> (in English)
- [4] Cools, Martine & Emmanuel, Clive & Jorissen, Ann, 2008. "Management control in the transfer pricing tax compliant multinational enterprise," *Accounting, Organizations and Society*, Elsevier, vol. 33(6), pages 603-628, August. (in English)
- [5] Eden, L., (1983). Transfer Pricing Policies under Tariff Barriers. *The Canadian Journal of Economics*, 16(4), 669. (in English)
- [6] Eden, L. & Rugman, A. M., (2017). *Multinationals and transfer pricing*. London: Routledge. (in English)
- [7] C. R. Emmanuel & P. B. Oyelere., (1998) *International transfer pricing and income shifting: evidence from the UK*, *European Accounting Review*, 7:4, 623-635 (in English)
- [8] Emmanuel C. & Elliott J.,(2002) *International Transfer Pricing*. In: Lymer A., Hasseldine J. (eds) *The International Taxation System*. Springer, Boston, MA (in English)
- [9] Hirshleifer, Jack, (1956), *On the Economics of Transfer Pricing*, *The Journal of Business*, 29, issue (in English)
- [10] Matei, G., & Pirvu, D., (2011). Transfer pricing in the European Union. *Theoretical and Applied Economics*, 4(4), 99. (in English)
- [11] Matsui, Kenji, 2011. "Intrafirm trade, arm's-length transfer pricing rule, and coordination failure," *European Journal of Operational Research*, Elsevier, vol. 212(3), pages 570-582, August. (in English)
- [12] Kenji Matsui, 2011. "Strategic Transfer Pricing and Social Welfare under Product Differentiation," *European Accounting Review*, Taylor & Francis Journals, vol. 20(3), pages 521-550, September. (in English)
- [13] Keuschnigg, C., & Devereux, M. P., (2013). The arm's length principle and distortions to a multinational firm organization. *Journal of International Economics*, 89(2), 432-440. doi:10.1016/j.jinteco.2012.08.007 (in English)
- [14] Pfeiffer, Thomas. (1999). Transfer pricing and decentralized dynamic lot-sizing in multistage, multiproduct production processes. *European Journal of Operational Research*. 116. 319-330. (in English)
- [15] Richardson, G., Taylor, G., & Lanis, R. (2013). Determinants of transfer pricing aggressiveness: Empirical evidence from Australian firms. *Journal of Contemporary Accounting & Economics*, 9(2), 136-150. (in English)
- [16] Rego, S. O. (2003). Tax avoidance activities of U.S. multinational corporations. *Contemporary Accounting Research*, 20(4), 805-833. (in English)
- [17] Rohde Carsten, (2014) "Transfer pricing: aligning the research agenda to organizational reality," *Journal of Accounting & Organizational Change*, Vol. 10 Issue: 3, pp.266-287 (in English)
- [18] Rossing, C. P., Cools, M., & Rohde, C. (2017). *International Transfer Pricing in Multinational Enterprises*. *Journal of Accounting Education*, 39, 55-67. (in English)
- [19] Sikka P. and Willmott H. (2010) *The Dark Side of Transfer Pricing: Its Role in Tax Avoidance and Wealth Retentiveness. Critical Perspectives on Accounting*. Vol. 21(4): 342-56. (in English)
- [20] Schiller, Ulf; Göx, Robert (2006). An economic perspective on transfer pricing. In: Chapman, Christopher; Hopwood, Anthony; Shields, Michael (eds.) *Handbook of Management Accounting Research*, Volume 2 (pp. 673-695). Amsterdam: Elsevier (in English)
- [21] Womack, B., & Drucker, J. (2011). Google questioned by SEC over earnings in low-tax countries. *Bloomberg News*. Retrieved from <http://www.bloomberg.com/news/2011-03-21/google-questioned-by-sec-over-earnings-in-low-tax-countries-1.html> (in English)
- [22] Barkhudar Sh. Gussenov, Stefan Dyrka. (2019). Influence of globalization processes and the fourth industrial revolution on the development of foreign economic activity of Kazakhstan. *Bulletin of National Academy of Sciences of the Republic of Kazakhstan*. Volume 1, Number 377 (2019), PP. 145 – 150. <https://doi.org/10.32014/2019.2518-1467.17>. ISSN 1991-3494 (in English)
- [23] Waworuntu, S. R., & Hadisaputra, R. (2016). Determinants of Transfer Pricing Aggressiveness in Indonesia. *Pertanika Journal of Social Sciences & Humanities*, Volume 24, Special Issue, July 2016, Pages 95 to 110. (in English)

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COMPARATIVE STUDY OF FRUITFULNESS OF COW INSEMINATION OF A MILKING HERD AT VARIOUS LEVELS OF PRODUCTIVITY IN THE CONDITIONS OF BAYSERKE-AGRO LLP

Abstract. A comparative analysis of the fruitfulness of cow artificial insemination of milking herd at various levels of productivity was carried out in the conditions of Baysyerke-Agro LLP. A study of reproduction performance of the milking herd was conducted based on the results of work performed from January 2018 to March 2019. The comparative data include cows artificially inseminated both according to the natural estrous cycle and according to the hormonal stimulation scheme of the estrus according to the Ovsynch program. It was established that the variability of the insemination index is directly dependent on the level of cow productivity, while the variability of this indicator in terms of lactation numbers has not been established. The service period and the insemination index in high productive groups significantly exceed the optimal indicators, and in groups with milk yields of 6–9 thousand kg, relatively high reproductive qualities are observed, corresponding to zootechnic norms.

Keywords: artificial insemination, insemination index, service period, estrous cycle, first-calf heifers.

Introduction. The determining factor in the dairy productivity of the herd, along with genetic potential, feeding and housing conditions, is the reproduction rate. It is known that one of the main factors determining the insemination index of cows, in addition to a balanced diet, is a certain level of productivity as well. The relationship between productivity and insemination index was revealed [1], as the milking capacity index increases above 1000, there is a significant decrease in the proportion of fecundated cows to 27.8% ($P < 0.05$) while increasing the milking capacity index to 800 does not have a significant effect [2]. According to research by several authors, indicators of the reproductive function of cattle have a low coefficient of heritability, in the range of 0.1 - 0.15. Consequently, they are largely influenced by environmental factors, though their genetic causation is also in no doubt [3]. Insemination at the age of 20.0 - 21.9 months is further characterized by reduced reproductive traits as an increased seed consumption for one fruitful insemination, extended service period and low fertility rate. Whereas the insemination of mating heifers under the age of 13.9 months are distinguished by a high fertility rate and, accordingly, low seed consumption per fruitful insemination, that indicates a high reproductive trait. At the same time, the periods of productive use of animals of this group are comparably low [4, 5].

«At this stage of the dairy cattle husbandry development, which is based on the formation of dairy-commercial farms with highly productive dairy cattle based on imported animals or the use of foreign gene pool, there are problems of temporary infertility of animals after calving. The causes of obstetric and gynecological diseases are driven, first of all, by a weakening of the general resistance of the organism and a metabolic disorder. The main factor predisposing to the disease is the unbalance of the diet in terms of acid-base equivalents, minerals, and vitamins, as well as housing conditions and the level of productivity. A metabolic disorder, in turn, causes endocrine insufficiency and hormonal disorders, which leads to a disturbance in the neurohumoral regulation of sexual functions and favorable conditions are created for the development of pathogenic microflora in the genitals causing inflammation processes.» [6].

It has been established that the milk productivity of Holstein cows increases until the fifth lactation [7]. Therefore, the high lifetime productivity of cows is a consequence of the good development and functioning of all organs and systems of vital activity of the organism, including reproductive organs. In reproduction of high productive dairy cattle, it is necessary to maximize the reproductive capacity of high productive breeding stock, including first-calf heifers, that will shorten the service period.

Materials and methods of research. The research work was conducted in the dairy complex of Bayserke-Agro LLP. The main breed is Holstein cattle of Canadian breeding. In accordance with the technology, the milking herd is allocated by productivity and feeding is based on the average group productivity. Artificial insemination of cows is carried out once in 12-14 hours from the start of estrus with ordinary seed, and heifers of the mating contingent are divided by sex (homosexual). The milking herd is equipped with motion sensors, thanks to which it is possible to accurately determine the time of estrus onset. The study of pregnancy was performed on the 45-50th day after insemination with ultrasound. The number of groups of animals is 8, of which 3 groups with an average productivity from 38 to 41 kg (high-yielding, lim. 34-79 kg), 4 groups - from 23 to 27 kg (medium-yielding, lim. 21-33 kg) and 1 group is low-productive with average productivity of 14-16 kg per day. Every 14-16 days, the cows regroup according to the average milk yield data for the last 5-7 days of lactation.

Artificial insemination of heifers is carried out starting from 12 months of age upon reaching a live weight of 360 kg.

The aim of the research. Comparative analysis of fruitfulness of cow insemination of milking herd at various levels of productivity.

Research results. A comparative analysis of reproduction indicators of the milking herd was carried out based on the results of work performed from January 2018 to March 2019. The comparative data include cows artificially inseminated both according to the natural estrous cycle and according to the hormonal stimulation scheme of the estrus upon the Ovsynch program. The stimulation scheme was used for anovulatory estrous cycle, in the absence of natural estrus for more than 55 days from the time of calving, with pronounced signs of ovarian dysfunction (ovarian hypofunction) caused by lactation predominant.

As can be seen from the table, the highest rates of semen consumption per fruitful insemination were observed in the group with a productivity level of more than 11 thousand kg of milk for 305 days of lactation, which averaged 2.96 doses. Consequently, the duration of the inter-calving period was longer than the generally accepted norm by more than 100 days, which is associated with obtaining offspring from these cows one time in 16 months. Groups with average productivity of less than 8,600 kg of milk per lactation had the lowest indices of insemination, which amounted to 2.2 and the duration of the service period corresponded to zootechnic norms. It is also worth noting that the percentage of fruitful insemination in groups with a yield of more than 10 thousand kg are comparatively low and averaged from 32 to 36% in spring and summer and from 34 to 38% in autumn and winter. In groups with indicators of milk yield from 7 to 9 thousand kg per lactation, the average fertility rates during the study for pregnancy ranged from 38 to 47%, and in cows with milk yield of 6 thousand kg per lactation - not less than 54% at single insemination.

Table 1 – Comparative results of artificial insemination of cows

Number of animals	Average productivity for 305 days, kg	Seed consumption per 1 fruitful insemination, doses	Period, days	
			Service period	Inter-calving period
86	11396±160.8	2.96±0.81	198±13.51	481±13.63
92	10522±150.1	2.72±0.46	192±12.8	475±12.1
98	9053±178.5	2.4±0.38	127±11.9	427±12.32
102	8620±125.3	2.2±0.36	98±10.1	379±9.81
58	7002±195	2±0.21	91±10.75	375±10.51
26	6105±203.4	1.85±0.18	80±9.35	364±8.83

Also, comparative analysis of the results of artificial insemination according to the number of lactation, listed in table 2, was carried out.

Table 2 – Variability of the insemination index of cows by lactations

Age group	n	Insemination index	Age, months
Of the first calving	72	2.4±0.42	23.6±0.26
Of the second calving	83	2.38±0.38	40.1±1.12
Of the third calving and more	45	2.3±0.35	64.7±9.5

For reliable data acquisition, only cows with milk yield from 8.5 thousand to 9.0 thousand kg were taken into account for 305 days of lactation, i.e. with average milk yield in the amount of 200 animals. Of these, first-calf heifers in the amount of 72 animals, cows of the second calving - 83 heads and the third and more calves - 45 heads.

The table shows that the age of registered cows at the time of fruitful insemination averaged 23.6 months for cows of the first calving, 40.1 months for cows of the second calving, and 62.7 months for cows of the third and more calvings. The insemination indices were identical and in the range of 2.3-2.4, the yield of offspring at the end of the year for these cows was 86% per 100 females.

In such a way, on the basis of the obtained data, it was established that the variability of the insemination index is directly dependent on the productivity level of the cows, while the variability of this indicator in terms of lactation numbers has not been established. The service period and the insemination index in high productive groups (more than 10 thousand kg of milk for 305 days of lactation) significantly exceed the optimal indicators, while in the groups with yields of 6–9 thousand kg, relatively high reproductive traits are observed, corresponding to zootechnic norms.

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"БАЙСЕРКЕ-АГРО" ЖШС ЖАҒДАЙЫНДА ӘРТҮРЛІ ӨНІМДІЛІК ДЕҢГЕЙІНДЕГІ САУЫН ТАБЫНЫНДАҒЫ СИЫРЛАРДЫ ҰРЫҚТАНДЫРУДЫҢ ЖЕМІСТІЛІГІН САЛЫСТЫРМАЛЫ ТАЛДАУ

Аннотация. "Байсерке-Агро" ЖШС жағдайында сауын табынындағы сиырларды қолдан ұрықтандырудың өнімділігін әртүрлі деңгейлерінде салыстырмалы талдау жүргізілді. Сүт алқабының репродуктивті өнімділігін салыстырмалы талдау 2018 жылдың қаңтарынан 2019 жылдың наурызына дейін жүргізілген жұмыстардың нәтижелері бойынша жүргізілді. Салыстырмалы деректерге табиғи сексуалды циклге сәйкес жасанды түрде ұрықтандыру және «Овсинх» бағдарламасына сәйкес жыныстық циклгормоналды ынталандыру схемасына сәйкес сиырлар жатады. Ұрықтандыру индексінің өзгергіштігі сиырлардың өнімділік деңгейіне тікелей тәуелді екені анықталды, бұл ретте осы көрсеткіштің сауын мөлшері бойынша өзгергіштігі анықталмаған. Жоғары өнімді топтарда ұрықтандыру кезеңімен индексі сервисі онтайлы көрсеткіштер дене дәуір асып түседі, ал 6-9 мың кг сауындары бар топтарда зоотехникалық нормаларға сәйкес келетін салыстырмалы түрде жоғары репродуктивті сапалар белгіленді.

Түйін сөздер: жасанды ұрықтандыру, ұрықтандыру индексі, сервис-кезең, жыныстық цикл, алғашқы тұқым.

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СРАВНИТЕЛЬНЫЙ АНАЛИЗ ПЛОДОТВОРНОСТИ ОСЕМЕНЕНИЯ КОРОВ ДОЙНОГО СТАДА ПРИ РАЗЛИЧНЫХ УРОВНЯХ ПРОДУКТИВНОСТИ В УСЛОВИЯХ ТОО «БАЙСЕРКЕ-АГРО»

Аннотация. Проведен сравнительный анализ плодотворности искусственного осеменения коров дойного стада при различных уровнях продуктивности в условиях ТОО «Байсерке-Агро». Сравнительный анализ показателей воспроизводства дойного стада был проведен по результатам работ, выполненных за период с января 2018 по март 2019 года. В сравнительные данные включены коровы как искусственно осемененные по естественному половому циклу, так и по схеме гормональной стимуляции половой охоты по программе «Овсинх». Была установлена, что изменчивость индекса осеменения находится в прямой зависимости от уровня продуктивности коров, при этом изменчивость данного показателя по количеству лактации не установлена. Сервис-период и индекс осеменения у высокопродуктивных групп значительно превышают оптимальные показатели, а у групп с надоями 6-9 тыс. кг отмечены относительно высокие репродуктивные качества, соответствующие зоотехническим нормам.

Ключевые слова: искусственное осеменение, индекс осеменения, сервис-период, половой цикл, первотелки.

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REFERENCES

[1] Fedoseeva N. (2007) Relationship between the inter-calving period and the dairy productivity of cows. Dairy and beef cattle. № 3. p. 22-23. (in Russ.).

[2] Valitov H.Z., Golovin A.S. (2014) The relationship of the milking capacity index with the reproductive functions of dairy cows. News of the Samara State Agricultural Academy. №1. P. 60-63. (in Russ.).

[3] Lyubimov A.I., Batanov S.D., Martynova E.N. (2007) Improvement of dairy cattle and the formation of the desired type, adapted to breeding in the conditions of the Western Pederalic. Manual. Izhevsk. Izhevsk State Agricultural Academy, 237 p. (in Russ.).

[4] Bydantseva E.N., Kavardakova O.Yu. (2012) Dependence of productive longevity of cows on genetic factors. Dairy and beef cattle. Number 3. P. 17 - 19. (in Russ.).

[5] Bydantseva E.N., Kavardakova O.Yu. (2010) The effect of the first calving age on productive longevity of cows. Innovative development of AIC - scientific support, dedicated to the 80th anniversary of the Acad. D.N. Pryanishnikov Perm State Agricultural Academy. Proceedings of international scientific-practical conf. Perm. Pp. 72 - 74. (in Russ.).

[6] Baimukanov D.A., Seidaliyev N.B., Alentayev A.S., Abugaliyev S.K., Semenov V.G., Dalibayev E.K., Zhamalov B.S., Muka Sh.B. (2019) Improving the reproductive ability of the dairy cattle. Reports of the National Academy of Sciences of the Republic of Kazakhstan. Volume 2, Number 324 (2019), 20 – 31. <https://doi.org/10.32014/2019.2518-1483.33>. ISSN 2518-1483 (Online), ISSN 2224-5227 (Print).

[7] Baimukanov D.A., Abugaliyev S.K., Seidaliyev N.B., Semenov V.G., Chindaliyev A.E., Dalibayev E.K., Zhamalov B.S., Muka Sh.B. (2019) Productivity and estimated breeding value of the dairy cattle gene pool in the Republic of Kazakhstan. Bulletin of National Academy of Sciences of the Republic of Kazakhstan. Volume 1, Number 377 (2019), 39 – 53 <https://doi.org/10.32014/2019.2518-1467.5>. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print)

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**THE STRUCTURE OF INCOME AND EXPENDITURES
OF THE POPULATION OF KAZAKHSTAN**

Abstract. This article is devoted to the analysis of monetary incomes and expenditures structure of the population of Kazakhstan. Statistical database of the Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan served as an information base. The analysis revealed an increase in per capita nominal and real monetary incomes of the population of Kazakhstan. However, despite of falling of the share of income from labor activities, there is also an increase, while the share of social transfers is increasing. There is an increase in the differentiation of the population by income, especially the most pronounced in rural areas, while the gap in indicators between the city and the rural areas only grows. The purchasing power of the population is also declining. The main item of expenditures of the population is consumer spending, while its share in the structure of cash expenditures of the population is growing. Directions are proposed for improving the methodology for determining the cost of living.

Keywords: income, expenses, cost of living, welfare, Kazakhstan.

In Kazakhstani practice, the understanding of well-being is more limited to determining the level of income received by an individual and a household. According to the better life index in 2017, in Kazakhstan the average adjusted net household income after taxes amounted to 9517 USD per year (PPP), and the its average for the OECD countries - 30 563 USD per year [1]. At the same time, the average per capita nominal monetary income amounted to 83 053 tenge per month [2], while the median is 39 896 tenge, which is two times less, while 10.1% of the population live with incomes below 60% of this level [3].

In the I quarter of 2019, nominal monetary income amounted to 96,975 tenge. For the period under review, there has been an increase in nominal income. In 2016, a decrease in real incomes was recorded, after which they began to grow. However, the growth rate of real incomes is lower than nominal ones (figure 1).

In the I quarter of 2019, income from labor activity accounted for 72.6% of household monetary income. Basically, these are income from employment, which during the period under review decreased by 7.1 percentage points (pp.) against the background of stable income from property and entrepreneurial activity. It should be noted that the share of income from labor activity tends to decrease: while the share of wages is reduced faster than the share of income from business activities. Reducing the share of income from labor activity compensated by the state social transfers, the volume and size of which are growing annually. Pensions increased by 6.2 pp. compared with 2015, which led to an increase of the share of social transfers from 16.8% to 23.3% in the structure of monetary incomes of households in Kazakhstan. It should be noted that the property of the population is the least developed source of income, which indicates that only a fairly limited circle of Kazakhstanis has any property that generates income, which contributes to further growth of income differentiation of certain groups of the population. At the same time targeted social and housing assistance is missing in the income structure.

In the regional context, strong imbalances are noted (table 1). The maximum value of average per capita nominal monetary income of the population for all years of the study period is noted in Atyrau region (195 546 tenge), where the indicator exceeded the average republican level by 2 times. The lowest incomes in the southern regions of the country, in particular in the Turkestan region (46 336 tenge). It

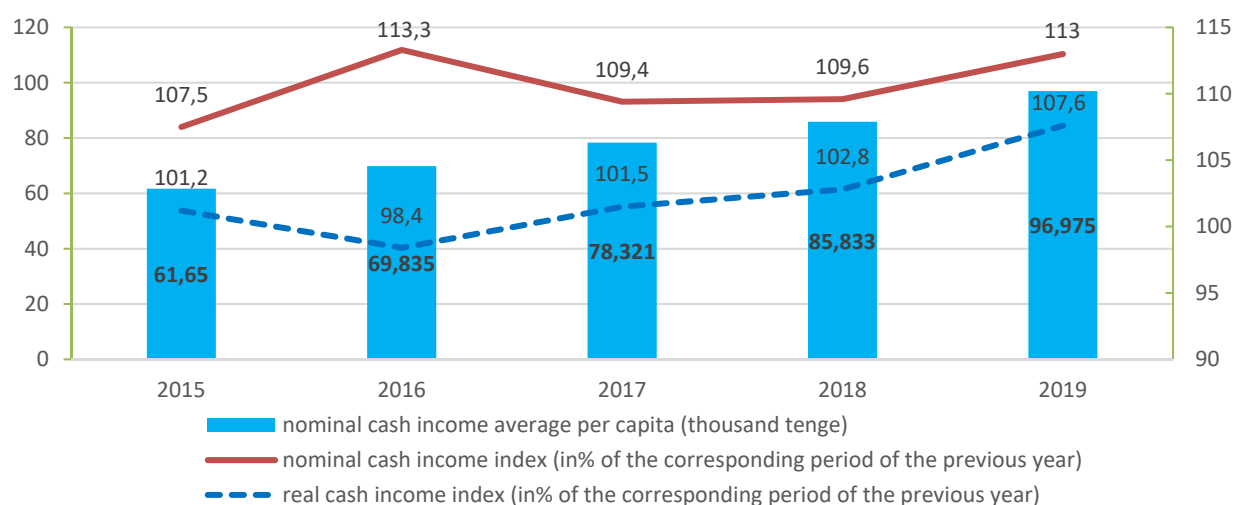


Figure 1 – Monetary income of households in Kazakhstan, I quarter 2015-2019 (%).

Note. Compiled by the authors on the basis of sources [4, 5].

Table1 – Per capita nominal cash income of the population by region, I quarter 2015-2019 (tenge)

Name of the region	2015	2016	2017	2018	2019	Growth
Kazakhstan Republic	61 650	70 055	76 903	85 833	96 975	1,57
Akmola	53 103	57 560	65 160	73 833	82 365	1,55
Aktobe	60 711	59 225	64 937	71 263	82 700	1,36
Almaty	44 674	54 427	61 421	63 459	74 090	1,66
Atyrau	121 666	137 780	137 998	163 675	195 546	1,61
West Kazakhstan	65 631	69 421	77 592	89 630	99 702	1,52
Zhambyl	40 597	43 105	49 838	58 195	66 361	1,63
Karaganda	68 673	66 250	73 654	86 192	97 915	1,43
Kostanay	51 160	57 563	66 333	75 753	82 881	1,62
Kyzylorda	57 540	48 678	59 082	61 512	71 266	1,24
Mangistau	110 104	103 568	110 845	118 893	138 589	1,26
Turkestan	36 636	40 626	42 631	87 481	98 416	2,69
Pavlodar	67 239	74 749	75 862	71 946	82 541	1,23
North Kazakhstan	49 408	56 610	62 367	38 660	46 336	0,94
East Kazakhstan	55 065	58 694	67 138	76 208	90 354	1,64
Astana city (Nur- Sultan)	114 387	125 170	122 057	141 106	147 824	1,29
Almaty city	115 151	110 973	125 203	131 020	145 419	1,26
Max	121 666	137 780	137 998	163 675	195 546	1,61
Min	36 636	40 626	42 631	38 660	46 336	1,26
Max /Min, times	3,3	3,4	3,2	4,2	4,2	1,27

Note. Compiled by the authors based on the sources [4, 5].

should be noted that the ratio between the maximum and minimum values of this indicator for the study period increased from 3.3 to 4.2.

The differentiation of average monthly wages remains high. The largest salaries is at mining enterprises and the financial sector. The lowest salaries is in agriculture, as well as in education, health and the arts. In 2018, the average salary of mining workers was almost 3.5 times higher than the average salary

of agricultural workers. Income from labor activity is the main source of income for residents of Mangistau region. Social transfers are one of the main sources of the East Kazakhstan and North Kazakhstan regions. Property as a source of income is mainly used in Nur-Sultan and Almaty cities, Karaganda and Kyzylorda regions. Property income is negligible for rural residents. In Kazakhstan villages income from labor activity in the income structure is lower than in urban areas, while at the same time, income from self-employment and entrepreneurial activity exceeds 2 times.

For the period under review, there has been an increase in monetary expenditures by 1.5 times. In the I quarter of 2019, monetary expenditures on average per capita amounted to 163,043 tenge (figure 2). The highest expenditures in Almaty city (257 061 tenge), Nur-Sultan city (195 218 tenge) and Karaganda region (194 977 tenge), which exceeded the national average by 57.7%, 19.7% and 19.6%, respectively. The lowest expenditures is in Turkestan region (103 375 tenge), i.e. 63.3% of the average republican level.

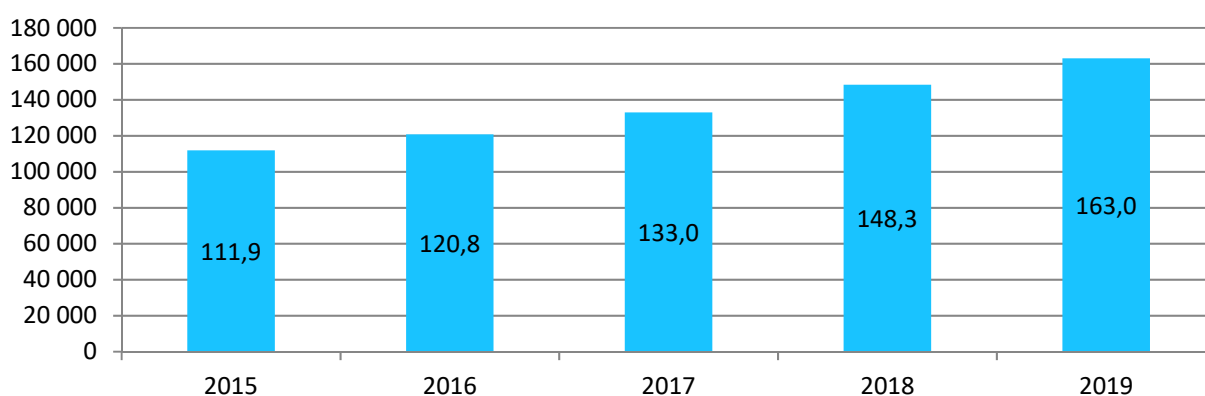


Figure 2 – Household monetary expenditures, I quarter 2015-2019 (%).

Note. Compiled by the authors based on the sources [4, 5].

In the I quarter of 2019, 92.3% of expenditures accounted for consumer spending, most of which was represented by food products. In the structure of monetary expenditures of the population, an increase in the share of expenditures on food products is observed. For the period under review, expenditures on consumer goods increased by 3.9 pp. At the same time, non-food products and paid services decreased by 2.8 and 1.3 pp., respectively (figure 3).

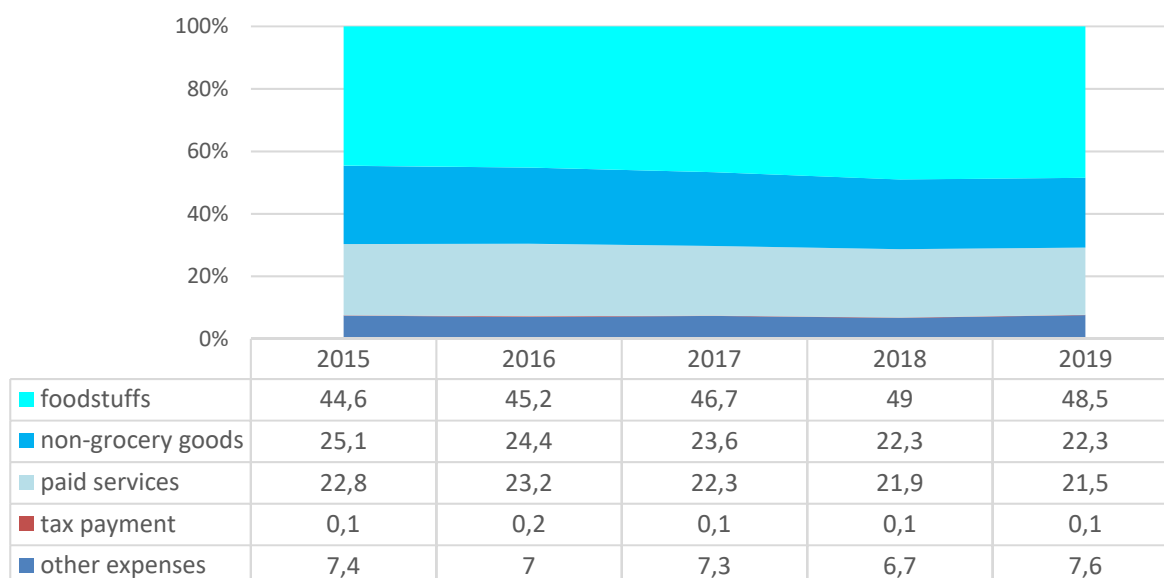


Figure 3 – Structure of household cash expenditures, I quarter 2015-2019 (%).

Note. Compiled by the authors based on the source [7].

Expenditures in cities are higher than in villages. In the I quarter of 2019, the expenditures of urban residents exceeded the expenditures of rural residents by 6 255, i.e. 1.5 times. In villages the expenditures on food and non-food products are higher than in the city by 5.1 pp. and 4 pp. respectively. Among the urban population, the expenditure on paid services is higher than in villages by 8.4 pp. For the period under review, the share of food expenditures increased from 46.3% to 51.9%. In the village, foodstuffs account for 51.9% of the structure of expenditures, and 46.2% in the city. For the period under review, in the structure of consumer spending there are an increase in spending on food products and a decrease in non-food spending (figure 4).

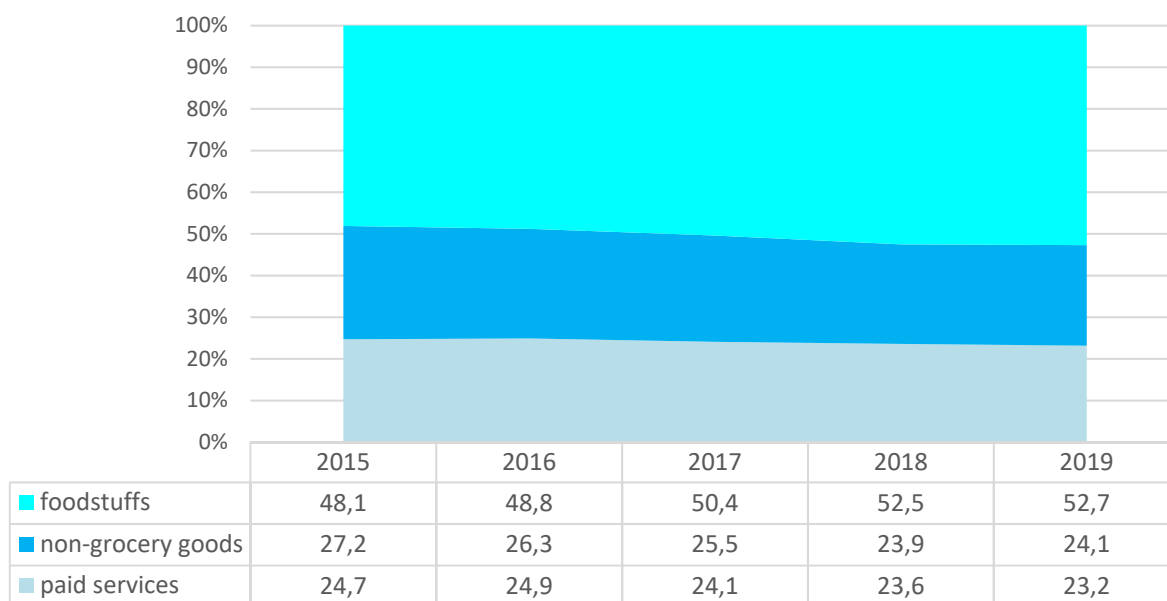


Figure 4 – Structure of household consumption expenditures, I quarter 2015-2019 (%).

Note. Compiled by the authors based on the sources [5, 6].

In the I quarter of 2019 basic expenditures occurred in such groups of food products as meat, poultry, and fish; bread and bakery products; fruits and vegetables; dairy products and eggs. In villages the expenses of bread, bakery products, sugar, confectionery, sweets exceed the expenses of urban residents by more than 1 pp. At the same time, urban residents have higher food and drink expenses than in villages. The main part of expenditures in the non-food products group falls on such product groups as clothing, fabrics, shoes; household products; vehicles, parts and gasoline. The expenditures on these goods in villages are higher than in cities. The costs of utilities, maintenance of housing and repairs, as well as transport and communications services occupy the bulk of the structure of paid services. And in cities, these expenditures are higher than in villages.

The lowest expenditures prevail in the population's expenditures on goods for home repair; goods for recreation, education and culture; alcoholic beverages, as well as health services.

A comparison of final incomes with a cost of living reflects the consumer's abilities of the population, showing the degree of satisfaction, first of all, of basic physiological needs. As a rule, low incomes of the population restrain consumer demand, which, in turn, affects the development of domestic markets for goods and services. In general, it is worth noting that, despite the growth in incomes, the purchasing power of the population of the Republic of Kazakhstan for the period under review decreased, especially in rural areas. During the period under review, the cost of living in Kazakhstan increased from 19 042 tenge to 27 144 tenge. In the I quarter of 2019, the share of population with incomes lower than cost of living increased compared to 2015 and amounted to 4.1%. Moreover, in rural areas this indicator is almost three times higher than in urban areas and amounts to 6.3%. Regionally, in Turkestan region, 10% of the population has incomes below the cost of living, the lowest share in the city of Nur-Sultan is 0.5% (table 2).

Table 2 – Income distribution in Kazakhstan, I quarter 2015-2019 (%)

Year	The share of population with incomes lower than		Depth of poverty	Severity of poverty	Gini coefficient for 20% of the population
	cost of living	food basket value			
2015	2,7	0,1	0,3	0,1	0,267
2016	2,5	0,1	0,3	0,1	0,263
2017	2,6	0,1	0,4	0,1	0,269
2018	4,1	0,2	0,6	0,1	0,271
2019	4,1	0,1	0,6	0,1	0,275

Note. Compiled by the authors based on the sources [5, 6].

In the whole country there is a low level of the share of the population having incomes below the cost of living, as well as the shares of the population having incomes lower than the food basket value. So, in Kazakhstan, 0.1% of the population has incomes below the value of the food basket. Their number for the period under review has remained unchanged. A quarter of the poor in Kazakhstan live in Turkestan region. For the period under review, the depth of poverty index doubled, which indicates an increase of share of extremely poor people. In Mangistau region it is the highest - 1.5%, in Shymkent and Nur-Sultan cities it is the lowest - 0.2%. The severity of poverty index characterizes the maximum depth of poverty. In the period from 2015 to 2019, the severity of poverty index in the republic remained unchanged, which indicates that the proportion of categories of people most in need of state support remained the same. At the same time, the Gini coefficient for 20% of the population groups increased from 0.267 to 0.275%, which indicates an increase in inequality over the period under review.

A household survey conducted in March 2019 showed that 68.8% of respondents in terms of material support (wealth) rated themselves as average, 0.4% of respondents indicated low material support level and only 0.3% of respondents referred to high material support level. 35.9% of respondents are satisfied with their financial situation, 1% are not satisfied. At the same time, in rural areas 42.3% of respondents are satisfied with their financial situation, in the city - 32.4%. The allocated weight of men satisfied with their financial situation in life is more - 37.1% than women - 35.1%. Among self-employed people, a greater number of respondents were satisfied with their financial situation (39.5%) than among employed people (37.2%). The percentage of those among the unemployed is 26%, while only 2.8% of them are dissatisfied with their financial situation. A similar trend is formed by satisfaction with the economic situation in the family (in the household). 60% of respondents are satisfied with their life, while it should be noted that their share is greater in rural areas - 69.3% (in the city - 54.4%). The allocated weight of men satisfied with their life is more - 61.8% than women - 58.5%. By age categories, the proportion of those satisfied with life is greater in the age ranges of 15-17 years (68.2%) and 18-28 years (65.8%). At the same time, over the past year, the welfare of 59.7% of respondents has not changed, it has improved in 36.4% [8].

Thus, despite the increase in per capita incomes of both nominal and real monetary incomes of the population of Kazakhstan, the share of income from labor activity is falling, while the share of social transfers is increasing. At the same time, the growth of nominal per capita monetary incomes is slower than the growth of real incomes and is accompanied by an increase in the differentiation of the population by incomes, especially the most pronounced in rural areas, while the gap in indicators between the city and the village only increases. The purchasing power of the population is also declining. The main item of population expenditures is consumer spending, while its share in the structure of monetary expenditures of the population is growing. Based on international experience, the expenditures on consumer goods should be less. The results of the analysis indicate that there is an objective need for government intervention in social processes. A complex of effective measures is required to support a variety of social groups, as well as a policy aimed at improving the welfare of a citizen, family and the whole Kazakhstani society. For example, improving the methodology for determining the cost of living. When calculating it, only basic

needs are taken into account, which support the existence of the individual, but do not characterize his well-being. The problem is aggravated by the fact that in Kazakhstan a food basket has not been updated for a long time. The Labor Code of Kazakhstan stipulates that the monthly minimum wage (MMW) cannot be lower than the cost of living. However, the established size of MMW does not ensure human development. When calculating the cost of living, the norms of consumption of basic food products are applied, quantitatively equal to the cost of the minimum set of food products, non-food goods and services necessary to maintain human health and ensure its vital functions. The minimum consumer basket consists of two parts: a food basket and a fixed share of the cost of non-food goods and services. The government of Kazakhstan has established a fixed share of expenses for minimally necessary non-food goods and services for calculating the cost of living in the amount of 40% of the cost of the minimum consumer basket, respectively, 60% falls on the food part. For comparison, the share of food expenses in developed countries is: Luxembourg - 8.8%, Switzerland - 9.6%, Norway - 11,8 %, Austria - 12.1%, Ireland - 16.2%, Turkey - 19.6%. Kazakhstan uses a low standard of consumption of food and non-food goods and services, which does not provide an adequate level of reproduction of labor. In order to correct the situation, it is necessary to improve the methodology for calculating the minimum wage on the basis of the minimum consumer budget (rational development budget), setting individual norms above physiological values.

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ҚАЗАҚСТАН ХАЛҚЫНЫҢ ТАБЫС ЖӘНЕ ШЫҒЫС ҚҰРЫЛЫМЫНЫҢ ТАЛДАУЫ

Аннотация. Мақала Қазақстан халқының табыс пен шығыс құрылымына жасалған талдауға арналған. Ал ақпараттық база ретінде Қазақстан Республикасының Ұлттық экономика министрлігі Статистика комитетінің статистикалық мәліметтері алынды. Талдау барысында Қазақстан халқының жан басына тұтынған номиналды және нақты табыстың өсуі айқындалды. Дегенмен, еңбек қызметінен түсетін табыс үлесінің азаюмен қатар әлеуметтік трансферттер үлесінің өсуі де байқалады. Халықтың табыс бойынша дифференциациясы күшееді. Оны әсіресе елді мекендерде байқауға болады. Бұл ретте, қала мен елді мекендер арасындағы көрсеткіштердің айырмашылығы тек арта беретіні анық. Сонымен қатар, халықтың сатып алу қабілеті түседі. Халықтың шығыстарының негізгі шығыс бабы тұтынушылық шығыстар болып табылады, бұл ретте халықтың ақша шығыс құрылымындағы оның үлесі өседі. Осы мақалада күнкөріс минимумды анықтау әдісін жетілдіру бойынша бағыттар ұсынылады.

Түйін сөздер: табыс, шығыс, күнкөріс минимум, әл-ауқат, Қазақстан.

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АНАЛИЗ СТРУКТУРЫ ДОХОДОВ И РАСХОДОВ НАСЕЛЕНИЯ КАЗАХСТАНА

Аннотация. Статья посвящена анализу структуры денежных доходов и расходов населения Казахстана. Основным методом исследования послужил экономико-статистический анализ. В ходе анализа был выявлен рост среднедушевых номинальных и реальных денежных доходов населения Казахстана. Однако на фоне падения доли доходов от трудовой деятельности наблюдается увеличение доли социальных трансфертов. Происходит усиление дифференциации населения по доходам, особенно наиболее выраженной в сельской местности, при этом разрыв в показателях между городом и селом только возрастает. Также снижается покупательная способность населения. Основной статьей расходов населения являются потребительские расходы, при этом доля его в структуре денежных расходов населения растет. Предложены направления по совершенствованию методики определения прожиточного минимума.

Ключевые слова: доходы, расходы, прожиточный минимум, благосостояние, Казахстан.

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REFERENCES

[1] Quality of life index in Kazakhstan in 2017 [Electronic resource]. - Access mode: <http://stat.gov.kz/api/getFile/?docId=ESTAT245357>. Date of applying: 22.07.2019. (In Russian)

[2] Assessment of nominal per capita cash income of the population [Electronic resource]. - Access mode: <http://stat.gov.kz/api/getFile/?docId=ESTAT105277>. Date of applying: 22.07.2019. (In Russian)

[3] Median income of the population [Electronic resource]. - Access mode: <http://stat.gov.kz/api/getFile/?docId=ESTAT306542>. 22.07.2019. (In Russian)

[4] CS MNE RK (2016) Monitoring of living standard of the population in the Republic of Kazakhstan. Spreadsheets. I quarter of 2016. Astana, 54 p. [Electronic resource]. - Access mode: <http://stat.gov.kz/api/getFile/?docId=ESTAT150793>. Date of applying: 22.07.2019. (In Russian)

[5] CS MNE RK (2019) Monitoring of living standard of the population in the Republic of Kazakhstan. Spreadsheets. I quarter of 2019. Nur-Sultan, 54 p. [Electronic resource]. - Access mode: <http://stat.gov.kz/api/getFile/?docId=ESTAT319618>. Date of applying: 22.07.2019. (In Russian)

[6] Household cash income structure [Electronic resource]. - Access mode: <http://stat.gov.kz/api/getFile/?docId=ESTAT103899>. Date of applying: 22.07.2019. (In Russian)

[7] Household cash expense structure [Electronic resource]. - Access mode: <http://stat.gov.kz/api/getFile/?docId=ESTAT103900>. Date of applying: 23.07.2019. (In Russian)

[8] The quality of life of the population in Kazakhstan: 26th series. 2019 year [Electronic resource]. - Access mode: <http://stat.gov.kz/api/getFile/?docId=ESTAT318787>. Date of applying: 25.07.2019. (In Russian)

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**STUDY OF SOME SUBETHNIC
AND GENEALOGICAL GROUPS OF KAZAKHS
IN PRE-REVOLUTIONARY RUSSIAN HISTORIOGRAPHY
(XVIII – EARLY XX CENTURY)**

Abstract. In article the analysis of works of the Russian researchers devoted to a research of subethnic and genealogical groups of Kazakhs during a specified period of time is given. The author pays attention to ethnographic features of separate groups of the Kazakh population, in particular, of so-called "shala-Kazakh". Features and factors of formation of the specified groups as a part of Kazakhs are shown. Processes of entry into the structure of the Kazakh people of a part of Karakalpaks, Uzbeks, Kalmyks and other foreign-language groups of the population are considered. The paper also draws attention to the peculiarities of the study by Russian authors of sub-ethnic and genealogical groups of Kazakhs. In particular, we are talking about the appearance of the first special works on individual genealogical groups, for example, tolengut. The author also dwells on the assessment of the contribution of individual Russian scholars to the study of the indicated topic.

Keywords: ethnography and ethnic history of Kazakhs, subethnic group, genealogical group, «Qojalar», Tóleńgit, Tóre, Noğai and other groups of Kazakhs, «shala-Kazakhs», Kataghans, Russian ethnography.

Introduction. An analysis of the historiographic aspects of the topic under study is a necessary element of any research. This allows you to identify achievements and problems at the previous stages of research, as well as to draw a definite result and outline the future prospects of a topic for the future.

This topic also relates to the main directions of domestic and foreign policy of the modern Kazakh state. Note that historical science in this case plays a decisive role, forming the basic principles and positions in relation to our own national history, the interpretation of its individual events and historical personalities from the position of an independent state.

The purpose of this article is to make a historiographic analysis of literature on sub-ethnic and genealogical groups within the Kazakh people during the Modern times period.

Methods. In the analysis of materials and their scientific interpretation, we used the following research methods: analysis, synthesis, comparison, diachronic.

At present, in ethnological science, the concepts of an ethnographic and ethnic (sub-ethnic) group are used to analyze individual groups within an ethnic group. The ethnographic group is distinguished by some local features of the traditional everyday culture highlighted by researchers, but at the same time it does not recognize itself as a special group and does not possess self-awareness. An ethnic (sub-ethnic) group is part of an ethnos, but it has not only the characteristics of a traditional culture, but is aware of its difference from the rest of the ethnos. The indicated groups as part of an ethnos are formed in different ways (territorial separation of a part of an ethnos, remnants of the former tribal division, incomplete process of assimilation of a nation or its part, special social (ethno-social, ethno-confessional) status of a part of the population) [1].

Such groups took place in the Kazakh ethnos. Russian researchers, travelers, and military men who visited Kazakhstan in the 18th – 19th centuries, in addition to the traditional clan associations (ru, zhuz), identified special groups of population who are referred to in the literature as “estates”, “sub-ethnic

groups”, “clans”, etc. The existence of such groups did not violate the ethnic unity of the Kazakh people. So, V.V. Radlov wrote: “although the names of the clans very clearly indicate that the Kaysak Kyrgyz (Kazakhs. – *authors*) were formed from a motley conglomerate of various Turkic tribes mixed with Mongolian and even Samoyed tribes, it should be noted that in the sociopolitical and linguistic sense, all the Kirghiz (Kazakhs. – *authors*) on the vast stretch of their distribution have merged and melted so closely that we can rightly call them a single people, since they are generally aware the unity of their people and their inseparable general community” [2, 111].

Results. A focused study of various regions of Kazakhstan, the ethnography of the Kazakhs, including sub-ethnic and genealogical groups in the Kazakh population began in the XVIII century. since the beginning of the subjugation of the Kazakh lands of the Russian Empire. The Russian military and administrative authorities organized expeditions, trips to the Kazakh steppe in order to collect various information (resettlement, life, customs and rites of the Kazakhs, climate, flora and fauna, etc.). During such events, significant material related to our topic was collected.

In 1762, the work of the geographer, historian and regional history researcher P.I. Rychkov (1712–1777) “The Orenburg topography, that is, a detailed description of the Orenburg province” (Rychkov, 1762). In his work P.I. Rychkov, among other things, mentions the patrimonial units of the Kazakhs of the Middle and Younger Zhuzes [3] and also dwells on the origin of the Kazakh genealogical group of the population under the name “Qozha”. In his opinion, the Qozha came from the “Hagarians who came to Turkestan” and who are “revered as saints” as the descendants of Muhammad, moreover, “from such Hojjas to this day in the Turkestan great mosque there is a coffin of one according to their law for the saint revered, who is called Hojja Akhmet” [3, 1762: 20].

In 1771, “Daily Notes of the Captain Nikolai Rychkov’s Travel to the Kirgiz-Kaisak Steppe in 1771” [4], in which the observations and thoughts of the traveler and geographer, the son of P.I. Rychkov, N.P. Rychkov (1746–1798), relating to our topic. So, N.P. Rychkov also mentions in his notes the genealogical group “Kozha”. In particular, he writes: “The Kirghizes (Kazakhs. – *authors*) ... do not have their own priests, but instead in the autumn they are visited by Hojjas, Akhuns and Mullahs who come from Tashkent, Turkistan and Khiva. They enrich them with every kind of cattle, and those people enriched with the forgery of their holiness return within their fatherland” [4, 1771: 26].

In the same work of N. P. Rychkov, we see one of the first references to the inclusion of part of the Nogais in the Kazakh ethnic group, when the Nogais “began to wander along the steppes with their wives, increasing their kin from time to time more... However, now they are generally called Kirghiz-Kaisaks; and this new name is more common between their people than the ancient one” [4, 1771: 32–33].

In 1773, the work of a naturalist, traveler P.S. Pallas (1741–1811) “Traveling to different provinces of the Russian Empire” [5], in which, in addition to other things, there is information on the ethnography of the Kazakh people in the aspect that interests us. So, P.S. Pallas gives a brief description of the representatives of Tore and Qozha: “Those who have a large number of subordinates are called khans and sultans. There are also other ranks subordinated to them, namely: noblemen, named bu (bi); the venerable people of the old generation Hojja and others called Murza” [5, 1773: 578–579]. In the descriptions of P.S. Pallas we meet the mention of the Nogai topic: “The outpost of Saraichik or Sarachikovka is located near Yaik on the eastern side of the moat left from the formerly populous Tatar city of Sarachik. I do not intend to repeat here what is being told about the fate of this Nagai city and the resettlement of its inhabitants to present-day Khiva, but I will only give a brief description of the remnants there” [5, 1773: 578–610].

In 1799, the work of the ethnographer, traveler I.G. Georgi (1729–1802) “Description of all the peoples living in the Russian state. Their worldly rites, customs, clothes, dwellings, exercises, fun, religions and other memorable things” [6], the second part of which was devoted to “the peoples of the Tatar tribe”, that is, the Turkic-speaking peoples. Part of the material is devoted directly to the Kazakhs (“On the Kirghiz”), which, he notes, “are also known under the name of the Kazakh horde”. Based on the legends of the Kazakhs, I.N. Georgi writes that they are “descendants of the Crimean Khan Kundugur, therefore, they are Nogai by nature” [6, 1773: 119].

In 1830, a large six-part work of the military S.S. Bronevsky (1786–1858) “On the Kirghiz Kaisaks of the Middle Horde” [7, 8, 9, 10, 11] was published. It is worth noting that, as far as one can judge, these parts are not thematically separated from each other: each of the parts is a continuation of the previous one.

In the first part [7]. S.B. Bronevsky considers several issues, including the question of veneration of “Kozha” in the Kazakh society: “Khans and sultans consider Turkestan to be their homeland: Bukey’s grandfather and father owned Turkestan. The Bukey clan is still worshiping Azret or all the same Turkestan, where the righteous Azretis kept, according to legend he is God’s saint and Batyr. The Bukey’s family ..., takes the bodies of the departed ancestors there for burial despite the remoteness” [7, 1830: 413–414].

Of great interest to us in the framework of our topic is the second part of S.B. Bronevsky’s writing [8]. Here we see references to the barymta, in which khans and their tolenguts took part [8, 1830: 80]. S.B. Bronevsky notes the complex ethnic composition of the Tolenguts, which consisted of “Karakalpaks, Bukhara, Tashkent habitants and Kalmyks captivated by the ancestors” [8, 1830: 83]. The author dwells on tolenguts in more detail in the paragraph “On Telenguts or Slaves”. He characterizes them as “a class of servants among the Soltans and Kirghiz”, reports that in addition to the above-mentioned peoples and population groups, the Bashkirs were also part of the Tolenguts [8, 1830: 96].

In his work S.B. Bronevsky especially dwells on the characterization of “Qozha”: one of the paragraphs of the considered part of the author’s notes is called “On Khozhas, who are in the Kirghiz Steppe” [Ibid.: 93–94]. S.B. Bronevsky writes that the Qozha “originate from the Prophet Mohammed and the first preachers of his law, hailing from the Uzbeks, Tashkent and Bukhara people, and since they are pious, they take spiritual positions and they are especially respected” [Ibid.: 93].

In the third part of his work in the paragraph “On the various Asians who live in the Middle Horde” [9], S. B. Bronevsky speaks of Kazakhs who came from Central Asia and East Turkestan, who moved to the Kazakh lands “by the invitation of the Kirghiz (Kazakh. – *authors*) sultans ... on condition that they stay with them forever” [9, 1830: 162].

In the fifth part [10], in the paragraph “Spiritual rites”, S. B. Bronevsky only briefly mentions the genealogical group “Qozha” among the Kazakhs in connection with Islam: “Kirghiz-Kaisaks, although they practice the laws of Mohammed, are ignorant of it; the Akhuns, Mullahs, and Hojjas are kept in volosts” [10, 1830: 95].

The sixth part of the work of S. B. Bronevsky [11] contains approximately half of the ethnographic material (funerals, weddings, etc.). Here we find a small mention of the inclusion of a certain part of the Kalmyks into the Kazakhs [11, 1830: 215]. Among other things, S.B. Bronevsky also considers the “Nogai” issue in connection with his mention of the ruins of three cities in Central Kazakhstan [11, 1830: 251–252].

In the materials of S. B. Bronevsky, the genealogical group “Qozha” also appears in the provisions of the common law of the Kazakhs. So, “if anyone hurts Hojja or Mullah, it is believed that the offender paid a fine of 27 pieces of different livestock, including one camel, and if there is nothing to pay, then one of his thumbs must be cut off, but if Hojja is the instigator himself, then he loses the right of action” and others [11, 1830: 263–264].

In 1832, the “Description of the Kirghiz-Cossack or Kyrgyz-Kaisak Hordes and Steppes” [12, 13, 14] of the historian, ethnographer, statesman A.I. Levshin (1798–1879), which consisted of several parts, and in which some information was given on the subject of interest to us. In the first part [12] A.I. Levshin, considering the paths leading from “from the Saraichik fortress to Khiva” through the isthmus between the Caspian and Aral Seas, calls one of the paths “the ancient Nogai road”, which leads “from the Saraichik fortress to the remains of ancient Urgench” [12, 1832: 180, 290].

In the second part of his work [13], A.I. Levshin notes that some Kazakhs consider themselves descendants of immigrants from the Crimea, and “the reason for their resettlement in the present lands was a quarrel that arose between the sons of the Crimean Khan Kundugur after his death” [13, 1832: 24–25].

In the third part [14]. A.I. Levshin again returns to the Nogai topic. So, according to him, in addition to Kazakh cemeteries in the steppes, there are many other cemeteries; according to A.I. Levshin, the Kazakhs “attributed (these cemeteries) to the Nogais, who once lived in this country”: “The Nogai graves are tall, vast and often consist of huge mounds of such stones, which were transported from afar” [14, 1832: 114].

A.I. Levshin also addresses the issue of the groups “Tore”, “Qozha” and “Tolengit” among the Kazakhs. He notes that “whoever kills the Sultan or Hojja, he pays the relatives of the killed the kun (fine) for 7 people. The insult of the Sultan or Hojja in words is punishable by a fine of 9 pieces of cattle, and for beating them – 27 pieces of cattle” [14, 1832: 170].

As for the Tolenguts, A.I. Levshin points to a clear difference between the Tolenguts and slaves (kuls). In particular, firstly, the Tolenguts “belong to the common people”, and the kuls “consist of captured Russians, Persians, Kalmyks, etc.” and “do not belong to the Kirghiz (Kazakh. – *authors*) tribes”, but, secondly, the Tulenguts enjoy the same rights with them (ordinary Kazakhs. – *authors*), and the kul “are treated as a commodity or thing” [14, 1832: 12–13].

In 1848 the multi-volume Military Statistical Review of the Russian Empire was published [15, 16]. This Review paid some to the Kazakh lands. In particular, the 14th volume (in two parts) was devoted to Western Kazakhstan. In the first part of this volume, territories to the west of the Ural river were examined. In this part, representatives of the Nogaik in are mentioned, as their horse herds were driven in mud by the storm in 1825 [15, 1848: 5].

In addition, there is a brief mention of the tolenguts: “Telenguts constitute a special branch not belonging to any kin, and they are workers of other Kirghiz (Kazakhs. – *authors*), 400 families” [15, 1848: 12].

The second part of the 14th volume of the Military Statistical Survey of the Russian Empire mentions some toponyms associated with the Qozha group at Kazakhs: “From the side of Karatamak, at the top of the Khojanyn-Sai ravine ...” [16, 1848: 13], “Khoja-Kul in the valley of the Kauljurriver... It is not big and the depth is not more than 5–6 feet ” [16, 1848: 64]. We also note that the “Qozha” in the indicated part of the publication is also mentioned in the genealogical traditions of the Kazakhs of the Younger Zhuz. So, according to the compilers of the edition, the founder of the Younger Zhuz was Alshyn: “Three kinsoriginate from his three sons Alim, Kadyr-Khuja and Karakartysh, the 1st is the ancestor of Alimuly, the 2nd – Bayuly, from the 3rd – Semirodsky” [16, 1848: 76].

In the considered part of the edition, a list of tribal units of the Kazakhs of Western Kazakhstan is given, among which the “Tulenguts” (60 family) and Kozha (528 family) are mentioned. In particular, the summer migrations of the Tolenguts were in the territory near the Ural line. At the same time, the Tolenguts wandered “together with the heirs of the khans of Aichuvak and Nurali” [16, List...].

As for the Qozha, they are listed as the Ak-Khujinsk subdivision of Jagabailik in. Their summer territories were “at the Ilguar and Baguta rivers”, and their winter ones “at the Korig river, against the Syrtinskaya, Uvalskaya and Kyzyl villages” [Ibid.].

In the same year, the work of Colonel General Staff I.F. Blaramberg (1800–1878) “Lands of the Kirghiz Kaisaks of the Inner and Trans-Ural Horde” [17]. This paper discusses the history, population, economy, climate of Western Kazakhstan, and pays attention to the resettlement of tribal associations of Kazakhs in this part of the country. In particular, Kuyas units, Kazakhs kulaks, Uysuns and Kostamgaly of the Nogaikin, as indicated, spend winter in the upper part of Ryn Sands, and in the summer they roam within the Saratov province. Sultans and Kozha (200 families) are also mentioned, and with respect to the Tolenguts (400 families) it is said that they “constitute a special division not belonging to any kin, and they are the workers of other Kirghiz (Kazakhs. – *authors*)” [17, 2001: 20]. The name Qozha is also present in the name of Lake Khoja-Kul in the east of Mugodzhar [17, 2001: 99]. They also appear in the legends of the Kazakhs about the origin of the clans of the Younger Zhuz. So, according to one of the legends mentioned by I.F. Blaramberg of, the first ancestor of the Younger Zhuz was Tulkaz-Alchin, who had three sons: Alim-Chuman, Kadyr-Khuja and Karakashysh or Kart-Kazak [17, 2001: 124, 125, 145].

When characterizing the Kazakh lands east of the Ural River, in particular on Ustyurt, I.F. Blaramberg mentions deep wells carved in loose limestone by the Nogais, as the Kazakhs informed him, although Blaramberg notices at the same time, this “name is indefinite, meaning generally all the Tatar-Mongol tribes of former times” [Ibid., 48]. Nugai is also mentioned as a subdivision of the Karasakal clan (in the Syr Darya region), as well as Berish clan [17, 2001: 116, 121].

In 1848, N. Troitsky published the article, “A Look at the Inner Kirghiz Horde” [18]. It again briefly mentions the tribal units of the Kazakhs living west of the Ural river. In particular, in addition to the traditional clans of the Younger Zhuz of the Kazakhs, “telenguts who generally servants of the khans and sultans in the Kirghiz (Kazakhs. – *authors*) hordes” are mentioned, “several dozen *kibitka* of the Hajji kin, who are honored by other Kirghiz (Kazakh. – *authors*) because of their origin”, as well as “the Nogaikin that originate from the twenty-five Nogai families that came to Abulkhayir Khan one hundred years ago” [18, 2001: 75].

In 1851, A. Evreinov's article, “The Internal, or Bukey, Kirghiz Kazakh Horde,” was published [19]. A. Evreinov turns to the study of the tribe composition of the Kazakhs. In this case, among other Kazakh

clans, there draws the attention the Istekunit, a part of Kita clan, the Nogaikin (200 families), consisting of four divisions: Kuyas, Kustamgaly, Kazankulak, Uysyun, Telengut clan without divisions [19, 2001: 60–61]. In this case, the kin Nogai is indicated by the author among those kins in which “almost everyone is rich” [19, 2001: 76].

In 1853 A. Tereshchenko's article “Traces of Desht-Kipchak and Inner Kirghiz-kaisat Horde” [20] was published. In his work, the author briefly describes the history of the formation of the Bokeev khanate, some customs of the Kazakhs, lists the tribal associations of the Kazakhs, describes the Tolenguts as “servants of khans and sultans”, mentions “several dozen kibits of the Khoja family”, Nogais, who “joined Abul-Khair” [20, 2001: 166]. The author also mentions in the area of lake Baskunchak karakalpaks, near which the Kazakhs settled, as well as “Trukhmen, Tatars tungurov, Tatars kundrov and part of the Kalmyks”.

In 1859 the work “Essays of the Trans-Ural steppe and the Inner or Bukeyev Horde” [21] was published. In this work, in addition to the sultans, there are mentions of telenguts: “The so-called Telen-guts, servants of the former khans and sultans, belong to the common people” [21, 2001: 104].

In 1859, E. Ostrovsky's article “A Trip to the Inner Kyrgyz-Kaisak Horde for Veterinary Purpose” was published [22]. As the name of the work shows, its focus on the topic was completely different, but, nevertheless, it contains brief information about the patrimonial units of the Kazakhs: “Kyrgyz (Kazakhs. – *authors*) are divided into generations, generations into genera, controlled by individual patriarchs from the Sultans. There are 16 genera in the internal horde, among which are Nogai, Tulengut, and also “Sultan and Khoji” [22, 2001: 44].

Ch. Ch. Valikhanov addressed in his works to class and genealogical groups as a part of the Kazakh people. In particular, in “Remarks on the third part of the description of the Kirghiz-Cossack hordes [A.I. Levshin]” Ch.Ch. Valikhanov emphasizes the privileged position of kozha in Kazakh society: Kaisaks (Kazakhs. – *authors*) khozhas do not belong to the white bone, but respect them on an equal basis with the sultans as spiritual persons, strict performers of Sharia regulations, and as descendants of the prophet [23, 1984: 198]. Mention of Kozha is also contained in the work of Ch. Valikhanov, devoted to the forms of Kazakh folk poetry [24, 1984: 280-286].

Question about khozha Valikhanov also considering the “Status Altyshar or six eastern cities of China province of Nan-Lu (Minor Bukhari) in 1858 – 1859” [25]. In particular, he notes that “Turkestan Khojis, they belong, like Kashgar, to a pure breed of Seids, i.e. come from Fatima. These Khojis live in the city of Turkestan, or Azret, and are distributed among the Kyrgyz (Kazakhs. – *authors*)” [25, 1985: 182].

The Nogai question is considered by Ch.Ch. Valikhanov also in the work “Legends and legends of the Great Kirghiz-Kaisak Horde” [26]. In particular, in his opinion, the word Nogai should be considered more broadly as “the General name of [steppe] nomadic Tatars”, which has been used since the adoption of Islam in the Golden Horde in the reign of Uzbek Khan by Muslims “in relation to the ulus for their predilections to ancient beliefs and old customs” [26, 1984: 276]. This same thought Ch.Ch. Valikhanov conducts in his work “Essays of Dzungaria” [27, 1985: 349].

In the article «Ablai» [28]. Ch.Ch. Valikhanov speaks about the circumstances of the part of the Kyrgyz people joining the Kazakh people. In particular, talking about the battle of Khan Ablai with the Kirghiz “near the Kyzylsu and Shamsi rivers flowing into the Chu”, he further writes the following: “Ablai returned to Kokshetau, his beloved nomad, close to the Siberian line, burdened with prey, and prisoners brought by him, were so numerous that now their descendants comprise two volosts called Yana and Bai-Kirghiz (that is, new and rich Kirghiz)” [28, 1985: 115]. Here, Ch.Ch. Valikhanov says that in 1774, at the request of the Uysunov elders, Ablai gave his son Adil to manage them, “having built a town on the Talas River that he inhabited by hardworking Karakalpaks” [28, 1985: 115]. The Kyrgyz element in the composition of the Kazakh people is considered by Ch.Ch. Valikhanov in the article «Kyrgyz Genealogy» [29].

Valuable information on subethnic and genealogical groups of the Kazakh population of the 1860s are contained in the work of V. Radlov (1837–1918) “From Siberia” [2]. Thus, speaking about the population of Semei, V.V. Radlov notes a group of ethnically mixed population, consisting of immigrants from Tashkent, runaways and deserters. This group of the population became a part of the Kazakh ethnos: “These people received permission to register as Chala-Kazakh (half-Kirgiz) (half-Kazakhs. – *authors*), and thus others became semi-Kyrgyz, not knowing a word in Kyrgyz (in Kazakhs. – *authors*)” [2, 1989: 73].

In addition, V.V. Radlov pays some attention to the characteristics of the population group called “Kurama”, settled “between Tashkent and Khojend” and suggests that “Kurama is a mixture of Kyrgyz (Kazakhs. – *authors*) and Uzbeks” [2, 1989: 10]. The value of the information given by V.V. Radlov is that he clearly indicates the ethnic composition of the “kurama” (“jalair, teleu, tama, jagalbayly and tarakly”), which finds analogies in the tribal composition of the Kazakhs.

In his work, V.V. Radlov also gives a characteristic of Tolenguts. They are characterized by him as “former serfs and slaves of the Sultan”: many decades ago they were released, legally they are no different from the rest of the Kazakhs, but nevertheless, they try to roam next to their former Sultan and retain the name tolengut (tölongýt) [2, 1989: 347]. In the specified work of V.V. Radlov besides tulenguts three more groups of the Kazakh population which the author designates as “serf of sultans” are mentioned, namely: “karakalpak, tyuryukpen, kangdy”. True, V.V. Radlov does not give any of their characteristics, but he limited only to mentioning their names. He also cites some statistics. In particular, in Kazaly district of the Turkestan General-governorship, he noted 525 families of khozha-kirey (in the area for all genera were 17680 families), in the Perovsky district 700 families of khozha and 150 families of Kara-Kalpak, marked them as belonging to the Middle Zhuz of Kazakhs. In total, there were 26645 families in Perovsky district [2, 1989: 113].

In 1889, there was written a book by N. Grodekov “Kirghiz and Kara-Kirghiz of Syrdarya region” [30], where some of parts of the material are related to our topic. Particularly, in the work of N. Grodekov there is information about the genealogical group of “Qozha” tribe. The author wrote: “the “Qozha” are considered descendants of the companions of the prophet, and the “sayyids”, who are few among the Kirghiz, descendants of Hussein's son, Imam Zeinulabuddin, and there fore the best of he “Khojas” [30, 189: 5].

From the work of N. Grodekov there are clearly seen applications with the design nation of tribal units of the Kazakhs of three «zhuzes» with the indication of their battle cries “U’ran”, in which the word «Qozha» occurs. Also given are the images of the tamgas of “Qozha» and “Tore” [30, 189: 299].

N. Grodekov not by passed “Tolengut” clan. In particular, he wrote that the “Tolenguts” were *jigits* from the poor, who served the prisons and were a dopted by them. Previously, they served because of the all of men of property (enchi), because of “Kalym” and generally because of food. After receiving “kalym” or “enchi”, they continued to serve their masters, from which they had differentin comes. Former Tolengut serve and now, but for a fee” [30, 189: 6].

Mentioned in the work of N. Grodekov and a group of so-called “Shala-Kazakhs”, which the author defines as “semi- Kazakhs, settled Kirghiz” [30, 189: 100].

In 1891 in Astrakhan published book which called “Inner Kyrgyz Horde (Brief statistical essay)” [31], which contains information abouts ub ethnic and genealogical groups among the Kazakhs living between the Volga and Ural (Yaik) rivers. There are also data on the tribal composition of the Kazakhs to the West of the Ural river. In addition to the traditional tribal divisions of the Younger Zhuz (Kete, Kerderi, Aday, Alshyn, etc.), the genera “Sultan, Khojin... and Tolengut” are al some ntioned. The authors of the essay note: “as part of the Kyrgyz (Kazakh. – *authors*) population are also listed as separate genera, Karakalpaks and Nogais” [31? 1891: 4].

In 1891, the Imperial Academy of Sciences published he work “Notes about peoples and lands of Central Asia” [32] on the results of translator of a separate Siberian corps F. Nazarov, who travelled to Kokand in 1813–1814. In the notes there are indirect indications of the existence of the Kazakhs had a special relationship to the skin. Thus, here ports that on the steep shore of the lake is the Kazakh cemetery, where over the graves built “wooden four-cornered tomb stones”, while the author notes that some devout Kazakhs in the summer take away the bodies of rich relatives are taken to Turkestan, there to “bury the graves of their saints” [32, 1891: 13–14].

In the same work, we see indirect indications about the entry into the Kazakh people of certain representatives of the Kalmyk ethnic group. In particular, speaking about horse racing after a certain time after the funeral of a rich noble Kazakh, F. Nazarov writes: “the first horse too ver take was appointed as a reward 75 horses and 7 “Kalmyks”...” [32, 1891: 17].

By the end of the XIX century, there were began to be published special indexes of publications on the designated area, including the study of subethnic and genealogical groups of the Kazakh population of the Russian Empire. Thus, in 1891, the famous researcher of the traditional culture of the Kazakhs A. Haruzin developed an index that included a list of articles and other works on the history and Ethnography of the Kazakhs and Kyrgyz from 1734 to 1891 [33].

In 1894, the work of the famous researcher N. Aristov. (1847–1910) “Experience of clarification of ethnic structure of Kirghiz-Kaysaks of the Big Horde and Karakirgiz on the basis of genealogical legends and data on existing patrimonial divisions” and belonging to the “Kangly” tribe and to the “Dulat” tribe, having accepted into its environment parts of the Kara-Kyrgyz families and preserved its singularity “Kara-Kyrgyz” generation “Sary-Uysun” [34, 1894: 465].

In the work of N. Aristov there are brief information about the Katagans [34, 1894: 405]. He also notes the presence in one of the genera of Zhalaïr (according to 1865) of two generic divisions: Khoja-Nazar-Maida and Khoja-Nazar-Appak [34, 1894: 407].

In 1902, F. Zobnin who wrote a research article “On the question of slaves and Tolenguts in the Kyrgyz steppe” [35] the author specifically raises the question of the origin and features of Tolenguts. As a result of his research in the Eastern and South-Eastern regions of Kazakhstan, including conversations with Kazakhs, F. Zobnin comes to a number of conclusions about the origin of Tolenguts and the history of origins their name [35, 1902: 27–30, 32, 34–36].

In the XIX century. Russian scientists collect and publish some folklore materials collected by them among the Kazakhs, which refers to the special position of the “Tore” among the Kazakhs. Thus, one of the Kazakh Proverbs recorded by N. Pantusov in Zhetysay says: “Toresiz elden it jaqsy” – “a Dog is better than the people who have no “Tore” [36]. “Tore” are also found in the “Collection of Kyrgyz Proverbs” which was written by V. Katarinsky: “«Tasta tamyr joq, Torede bayyr joq” – “the stone has no roots, the Sultan or “Tore” has no relatives (for the just there are no friends or relatives)”, etc. [37]. From the materials of I. Laptev's work “Materials on the Kazak-Kirghiz language” we can see the mention of “Qozha” true meaning “master” “The Son in the father, the servant Lord” [38, 1900: 4].

By the beginning of the XX century, additionally to individual articles published generalizing works on the history, geography, Ethnography of certain localities and regions of the Russian Empire. Thus, in 1903 was published the 18th volume of the publication “Russia: a complete geographical description of our Fatherland. Table and travel book for Russian people” [39]. In this book under the title “Kyrgyz land”, in which the authors noted that «the ancient Sultan families (Valikhan, Ablay, Bukey, etc.) and “Hadji” (descendants of Mohammed), although considered secular and spiritual aristocracy, but especially do not enjoy privileges: their influence on the people becomes insignificant” [39].

The authors also note the process of changing the position of so-called “Tolengut” at the end of the 1850's, So if “Tolengut” seen as “a special kind of voluntary slavery”, that after this time, who were moving to the position of “free Kirghiz” (Kazakhs. – *authors*) [39, 1903: 216].

In 1913, the 19th volume (Turkestan region) of the publication “Russia: a complete geographical description of our Fatherland. Table and travel book” [40]. This volume mentions the Qozha (“Qozha»), who “descend from the first followers of Mohammed” [40, 1913; 377]. In addition, the publication notes the complex ethnic composition of certain groups of the population (“mixed ethnographic types”), in particular, “Kurama” [40, 1913; 377].

In the same period, Russian researchers continue to study the characteristics of individual groups of the Kazakh population. Thus, in 1908, the work of A. A. Kaufman “The Russian community. In the process of its origin and growth” [41], consist informations about “Tolenguts” do not have mowing, which are in the sole use of the sultans [41, 1908: 73].

Discussions. Generally, Russian researchers have made a great contribution to the study of subethnic and genealogical groups of the Kazakh people. The articles of Russian researchers from XVIII century, till early XX century are characterized as a encyclopaedism: their articles and books, as a rule, contain information on almost all sides of the traditional culture of the Kazakh people, including our topic.

As it seems to us, in the study of subethnic and genealogical groups of the Kazakh population by Russian researchers of the XVIII – early XX century, there are may be possible to distinguish two stages: the stage of the initial accumulation of ethnographic material, including information on subethnic and genealogical groups of the Kazakh population (works of P. Rychkov, P. Pallas, etc.) – the period of the XVIII – mid XIX century. The second stage covers the period around the middle of the XIX century. and is primarily associated with the scientific research of A. Haruzin, N. Aristov.

The most important from this is a scientific article by F. Zobnin, which we mention edit above. It should be noted that this work is some what knocked out from among other works. If in the works of A. Haruzin and N. Aristov we see the analysis of individual scientific problems, but within the framework

of generalized works (these works simultaneously considered generalized geographical, ethnographic, historical and other aspects), the article of F. Zobnin is devoted to a specific topic and it is within the framework of a separate article.

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**РЕСЕЙДІҢ РЕВОЛЮЦИЯҒА ДЕЙІНГІ ТАРИХНАМАСЫНДАҒЫ
ҚАЗАҚТАРДЫҢ СУБЭТНИКАЛЫҚ ЖӘНЕ ГЕНЕАЛОГИЯЛЫҚ ТОПТАРЫН ЗЕРТТЕУ
(XVIII – XX ҒАСЫРДЫҢ БАСЫ)**

Аннотация. Мақалада қазақтардың субэтникалық және генеалогиялық топтарын зерттеуге арналған ресей зерттеушілерінің көрсетілген мерзім ішіндегі еңбектеріне талдау беріледі. Автор қазақ халқының, дәлірек айтқанда «шала қазақтар» деген, жекелеген топтарының этнографиялық ерекшеліктеріне назар аударады. Қазақтардың көрсетілген топтарының қалыптасуындағы өзгешелік пен факторлар көрсетіледі. Қазақ халқының құрамына қарақалпақ, өзбек, қалмақ және басқа да өзге тілді халықтардың бір бөлігінің кіріуі қаралады.

Түйін сөздер: қазақтардың этнографиясы мен этникалық тарихы, субэтникалық топ, генеалогиялық топ, қазақтардың «қожалар», толентгіттер, төрелер, ноғайлар және басқа да топтары, «шала қазақтар», катағандар, Ресей этнографиясы.

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**ИЗУЧЕНИЕ НЕКОТОРЫХ СУБЭТНИЧЕСКИХ И ГЕНЕАЛОГИЧЕСКИХ ГРУПП КАЗАХОВ
В ДОРЕВОЛЮЦИОННОЙ РОССИЙСКОЙ ИСТОРИОГРАФИИ (XVIII – НАЧАЛО XX ВВ.)**

Аннотация. В статье дается анализ работ российских исследователей, посвященных исследованию субэтнических и генеалогических групп казахов в обозначенный период времени. Автор обращает внимание на этнографические особенности субэтнических групп казахского населения, в частности, т.н. «шала-казахов». Показаны особенности и факторы формирования указанных групп в составе казахов. Рассматриваются процессы вхождения в состав казахского народа части каракалпаков, узбеков, калмыков и других иноязычных групп населения.

Ключевые слова: этнография и этническая история казахов, субэтническая группа, генеалогическая группа, «кожа», толентгуты, торе, ногаи и другие группы казахов, «шала-казахи», катаганы, российская этнография.

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REFERENCES

[1] Subetnicheskaya gruppа (subetnos). URL: <http://www.ethnomuseum.ru/subetnicheskaya-gruppа-subetnos> (data obrashcheniya: 08.08.2018).

[2] Radlov V. V. Iz Sibiri. M. : Nauka, 1989. 749 s.

[3] Rychkov P. I. Topografiya Orenburgskaya, to est obstoyatelnoye opisaniye Orenburgskoy gubernii. SPb. : Imperatorskaya akademiya nauk, 1762. Ch. 1. 331 s.

[4] Dnevnye zapiski puteshestviya kapitana Nikolaya Rychkova v Kirgiz-kaysatskoy stepi v 1771 godu. SPb.: Imperatorskaya Akademiya Nauk, 1772. 104 s

[5] Pallas P.S. Puteshestviye po raznym provintsiyam Rossyskoy imperii. SPb.: Imperatorskaya Akademiya Nauk, 1773. Ch. 1. 657 s.

[6] Georgi I.G. Opisaniye vsekh v rossyskom gosudarstve obitayushchikh narodov. Ikh zhiteyskikh obryadov, obyknoveny, odezhd, zhilishch, uprazhneny, zabav, veroispovedany i drugikh dostopamyatnostey. SPb : Imperatorskaya akademiya nauk, 1799. Ch. 2. 178 s.

[7] Bronevsky S.B. O Kirgiz-Kaysakakh sredney Ordy // Otechestvennye zapiski. SPb., 1830. Ch. XLI. Kn. CXIX. Avgust. S. 400-420.

[8] Bronevsky S.B. O Kirgiz-Kaysakakh sredney Ordy // Otechestvennye zapiski. SPb., 1830. Ch. XLII. Kn. CXX. Avgust. S. 75-8(9)8.

[9] Bronevsky S.B. O Kirgiz-Kaysakakh sredney Ordy // Otechestvennye zapiski. SPb., 1830. Ch. XLII. Kn. CXXI. Avgust. S. 162-194.

- [10] Bronevsky S.B. O Kirgiz-Kaysakakh sredney Ordy // Otechestvennye zapiski. SPb., 1830. Ch. XLIII. Kn. CXXIII. Avgust. S. 70-97.
- [11] Bronevsky S.B. O Kirgiz-Kaysakakh sredney Ordy // Otechestvennye zapiski. SPb., 1830. Ch. XLIII. Kn. CXXIV. Avgust. S. 194-285.
- [12] Levshin A. Opisaniye kirgiz-kazachyikh ili kirgiz-kaysatskikh ord i stepey. SPb.: Tipografiya Karla Krayya, 1832. Ch. 1. Izvestiya geograficheskoye. 264 s.
- [13] Levshin A. Opisaniye kirgiz-kazachyikh ili kirgiz-kaysatskikh ord i stepey. SPb.: Tipografiya Karla Krayya, 1832. Ch. 2. Istoricheskoye izvestiya. 333 s.
- [14] Levshin A. Opisaniye kirgiz-kazachyikh ili kirgiz-kaysatskikh ord i stepey. SPb. : Tipografiya Karla Krayya, 1832. Ch. 3. Etnograficheskoye izvestiya. 304 s.
- [15] Voyenno-statisticheskoye obozreniye Rossyskoy imperii. 1848. T. XIV. Ch. 1. Zemli kirgiz-kaysakov Vnutrenney (Bukeyevskoy). 30 s., pril.
- [16] Voyenno-statisticheskoye obozreniye Rossyskoy imperii. 1848. T. XIV. Ch. 2. Zemli kirgiz-kaysakov Zauralskoy (Maloy) ordy Orenburgskogo vedomstva. 120 s., pril.
- [17] Zemli kirgiz-kaysakov Vnutrenney i Zauralskoy ordy // Bukeyevskoy Orde 200 let. Almaty: Ælke, 2001. Kn. 5. S. 5-190.
- [18] Troitsky N. Vzglyad na Vnutrennyuyu Kirgizskuyu Ordu // Bukeyevskoy Orde 200 let. Almaty : Ælke, 2001. Kn. 3. S. 72-95.
- [19] Yevreinov A. Vnutrennyaya, ili Bukeyevskaya, Kirgiz-kazachya orda // Bukeyevskoy Orde 200 let. Almaty: Ælke, 2001. Kn. 4. S. 29-86.
- [20] Tereshchenko A. Sledy Desht-Kipchaka i Vnutrennyaya Kirgiz-kaysatskaya orda // Bukeyevskoy Orde 200 let. Almaty: Ælke, 2001. Kn. 4. S. 155-198.
- [21] Ocherki Zauralskoy stepi i Vnutrenney ili Bukeyevskoy ordy // Bukeyevskoy Orde 200 let. Almaty: Ælke, 2001. Kn. 3. S. 96-163.
- [22] Ostrovsky E. Poyezdka vo vnutrennyuyu kirgiz-kaysatskuyu ordu s veterinarnoy tselyu // Bukeyevskoy Orde 200 let. Almaty : Ælke, 2001. Kn. 3. S. 39-71.
- [23] Valikhanov Ch.Ch. Zamechaniya na tretyu chast opisaniya Kirgiz-kazachyikh ord [A. I. Levshina] // Valikhanov Ch.Ch. Sobraniye sochineny v pyati tomakh. Alma-Ata: Glavnaya redaktsiya kazakhskoy sovetskoy entsiklopedii, 1984. T. 1. S. 198-204
- [24] Valikhanov Ch.Ch. [O formakh kazakhskoy narodnoy poezii] // Valikhanov Ch.Ch. Sobraniye sochineny v pyati tomakh. Alma-Ata: Glavnaya redaktsiya kazakhskoy sovetskoy entsiklopedii, 1984. T. 1. S. 280-286.
- [25] Valikhanov Ch.Ch. O sostoyanii Altyshara ili shesti vostochnykh gorodov Kitayskoy provintsii Nan-lu (Maloy Bukharii) v 1858-1859 godakh // Valikhanov Ch.Ch. Sobraniye sochineny v pyati tomakh. Alma-Ata: Glavnaya redaktsiya kazakhskoy sovetskoy entsiklopedii, 1985. T. 3. S. 184-187.
- [26] Valikhanov Ch.Ch. Predaniya i legendy Bolshoy Kirgiz-kaysatskoy ordy // Valikhanov Ch.Ch. Sobraniye sochineny v pyati tomakh. Alma-Ata: Glavnaya redaktsiya kazakhskoy sovetskoy entsiklopedii, 1984. T. 1. S. 273-276.
- [27] Valikhanov Ch.Ch. Ocherki Dzhungarii // Valikhanov Ch.Ch. Sobraniye sochineny v pyati tomakh. Alma-Ata: Glavnaya redaktsiya kazakhskoy sovetskoy entsiklopedii, 1985. T. 3. S. 325-356.
- [28] Valikhanov Ch.Ch. Ablay // Valikhanov Ch.Ch. Sobraniye sochineny v pyati tomakh. Alma-Ata: Glavnaya redaktsiya kazakhskoy sovetskoy entsiklopedii, 1985. S. 111-116.
- [29] Valikhanov Ch.Ch. Kirgizskoye rodosloviye // Valikhanov Ch.Ch. Sobraniye sochineny v pyati tomakh. Alma-Ata: Glavnaya redaktsiya kazakhskoy sovetskoy entsiklopedii, 1984. T. 2. S. 148-167.
- [30] Grodekov N.I. Kirgizy i kara-kirgizy Syrdaryinskoy oblasti / N.I. Grodekov. Tashkent : Tipo-Litografiya S. I. Lakhtina, 1889. T. 1 Yuridicheskyy byt. 503 s.
- [31] Vnutrennyaya Kirgizskaya orda (Iz Astrakhanskikh gubernskikh vedomostey) // Bukeyevskoy Orde 200 let. Almaty: Ælke, 2001. Kn. 4. S. 149-151.
- [32] Nazarov F. Zapiski o nekotorykh narodakh i zemlyakh sredney chasti Azii. SPb.: Imperatorskaya Akademiya Nauk, 1891. 98 s.
- [33] Kharuzin A.N. Bibliograficheskyy ukazatel statey, kasayushchikhsya kirgizov i karakirgizov. M.: T-vo skoropech. A. A. Levenson, 1891. 68 s.
- [34] Aristov N.A. Opyt vvyasneniya etnicheskogo sostava kirgiz-kazakov Bolshoy ordy i karakirgizov na osnovanii rodoslovnnykh skazany i svedeny o sushchestvuyushchikh rodovykh deleniyakh i o rodovykh tamgakh, a takzhe istoricheskikh dannyykh i nachinayushchikhsya antropologicheskikh issledovany // Zhivaya starina. 1894. Vyp. 3, 4. S. 301-486.
- [35] Zobnin F. K voprosu o nevolnikakh, rabakh i tyulengutakh v kirgizskoy stepi // Pamyatnaya knizhka Semipalatinskoy oblasti na 1902 god. Vyp. VI. C. 1-99.
- [36] Pantusov N.N. Kirgizskiy poslovitsy, zapisannyye v Kopalskom uyezde Semirechenskoy oblasti (tekst, transkripsiya i perevod). Kazan: Tipo-litografiya Imperatorskogo universiteta, 1899. 35 s.
- [37] Katarinsky V. V. Sbornik kirgizskikh poslovits // Pamyatnaya knizhka Turgayskoy oblasti. S. 145-297.
- [38] Materialy po kazak-kirgizskomu yazyku, sobrannyye I. Laptevym. I. Obraztsy narodnoy slovesnosti. M. : Tipografiya Varvary Gatsuk, 1900. 158 s.
- [39] Rossiya: polnoye geograficheskoye opisaniye nashego Otechestva. Nastolnaya i dorozhnaya kniga dlya russkikh lyudey / pod red. V. P. Semenova. SPb. : Izd-vo A. F. Devriyena, 1903. T. 18. Kirgizskyy kray. 488 s.
- [40] Rossiya: polnoye geograficheskoye opisaniye nashego Otechestva. Nastolnaya i dorozhnaya kniga / pod red. V. P. Semenova-Tyan-Shanskogo. SPb.: Izd-vo A. F. Devriyena, 1913. T. 19. Turkestanskyy kray. 875 s.
- [41] Kaufman A. A. Russkaya obshchina. V protsesse eye zarozhdeniya i rosta. M.: Tipografiya T-va I.D. Sytina, 1908. 455 s.

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NEW KAZAKH LETTER BASED ON THE LATIN CHART

Abstract. The article considers the most acceptable ways of transition of the Kazakh alphabet to the Latin script. The principles of the new Kazakh letter are analyzed on the basis of a new spelling that establishes the correct spelling of phonemes, morphemes, words based on three basic principles: traditional-historical, phonetic and phonemic (morphological). The essence of the principle of economy in the new Latinized Kazakh letter is revealed. The basic principles of the theory of writing are described. The advantage of the phonemic principle in Kazakh orthography is revealed, in which the same letters of the alphabet designate the phoneme in all its mutations, no matter how it sounds. The law of phonology and its influence on the development and formation of the Kazakh phonetic system are described. The external and internal factors of the origin of new phonemes and their designation on the letter are described. The formation of new phonemes is associated with the development of language and thinking, supplementing it with new concepts, new vocabulary, the influence of adjacent cultures and civilizations. With frequent use, borrowed sounds adapt to the articulatory apparatus of its carriers and the phonetic system of the language is enriched with new phonemes. The rules of spelling and pronunciation of words in a new Latinized Kazakh letter are analyzed.

Key words: Latin, phonemic principle, phonology, pronunciation, writing, syntagmatics, paradigmatics, Kazakh alphabet, letters, sounds.

Introduction. In February of this year, the latest version of the new Kazakh alphabet based on the Latin script was approved. The transition to the Latin alphabet is not a replacement of one letter for another, it is a very complex process, the purpose of which is to create conditions for the further development of the Kazakh language and high technologies. This is one of the important elements of modernization program of public consciousness, the basis of progress, advanced knowledge, digital communication.

Education and science employees consider the transition to the Latin alphabet as a part of the educational process. As a result of joining to the Bologna process in Kazakhstan, a transition to a three-level model of training specialists was carried out: undergraduate, graduate, PhD. Participation in this process means the recognition of highly qualified scientists and teachers, improving the quality and competitiveness of Kazakhstani educational services. The introduction of world educational standards in the Kazakhstani educational environment helps to increase the competence and competitiveness of the Kazakhstani specialist. In order to enroll in a magistracy, doctoral studies must pass an exam in English, and in order to defend a dissertation you must have publications in English published in journals indexing in Scopus and Thomson Reuters databases. Upon transition to the Latin script, youth will find it easier to adapt to the modern educational space, where English is dominant.

The aim of the study is to define and describe the phonological foundations of the new Kazakh Latinized script based on the phonemic principle of spelling.

The research material is the Latinized words of the Kazakh language in spelling and pronunciation, corresponding to the rules of spelling and spelling.

The work were used phonological research methods, analysis of phonemes in a strong and weak position with the identification of the ratio of letters and sounds in Kazakh words.

Results and discussion. The Head of State has repeatedly noted that the transition to the Latin script will take place in stages, sequentially and systematically. There is a point of view that as a result of the transition to the Latin alphabet, Kazakhstanis are distancing themselves from Russian world, from Russia, it will be lost a whole cultural layer that based on the Cyrillic alphabet. We do not agree with this opinion, since we have common values, a similar mentality, we are united by cultural, historical and family ties. Knowledge of the Russian language distinguishes us, Kazakhstanis, from other peoples of the CIS and we will never give up this advantage. Possession of the Russian language and Cyrillic alphabet will be considered one of the main criteria for a comprehensively cultured and educated person. This is our national-cultural heritage and, as the President says, “it is important that this National heritage is not lost for the next generations of Kazakhstanis, we should treat the Russian language and Cyrillic as carefully as the Kazakh language, knowledge of the Russian language is historical advantage of our nation” [1].

It is said in the Address that Kazakhstanis of 2050 is a society of educated, free people who speak three languages. The young Kazakh nation has powerful potential, our youth is not inferior to anyone in the world in terms of development and education, that can be judged by various international competitions, contests in which our schoolchildren and students take prizes.

In recent decades, we have seen great changes in our Republic. These are reforms in the economy, politics, the transfer of the capital, urban planning. Astana has become a symbol of prosperity of the Republic, a city of the future, our youth. And as our President says, “we were able to use the potential of the capital in order to show the world the possibility of our country. That is why the international community has chosen Kazakhstan as the venue for the world exhibition "Expo-2017-a planetary event".

"Responsible language policy is one of the main consolidating factors of the Kazakh nation" the Message says [1]. The idea of Latinization was first supported by linguistic scholars, because by virtue of their profession, they, like no one else, understand the importance and necessity of reforming the alphabet in the era of the revival of the Kazakh language, the spread of information technology, globalization, the computerization of our lives. At the moment, there are already many projects of the new alphabet. After studying and summarizing the available options, the last word should be said, in our opinion, by the scientists of the Institute of Linguistics named after A. Baitursynov, since in such a complex and crucial step, the transition to the Latin alphabet should be involved linguists who are competent in phonetics and phonology, spelling and orthoepy.

It is said in the Address: “Responsible language policy is one of the main consolidating factors of the Kazakh nation” [1]. The idea of Latinization was first taken up by linguistic scholars, because by virtue of their profession, they, like no one else, understand the importance and necessity of reforming the alphabet in the era of the revival of the Kazakh language, the spread of information technology, globalization, and the computerization of our lives.

A plan has been drawn up for the phased introduction of the Latinized alphabet since 2020. To introduce the new Latinized Kazakh alphabet into practice, it was created a National Commission, on its special issues are testing, training of the teaching staff, and the creation of a regulatory framework. Four groups have been created on the basis of the National Commission: the first is the spelling group, which develops the rules of spelling and orthoepy of the Kazakh alphabet in the Latin script); the second is methodical - the methodology for teaching the Kazakh language in Latin is being developed for gradual introduction into the educational system); the third - terminological - the terminological fund is systematized Kazakh language based on Latin graphics); the fourth - expert-technical - programs are being prepared to adapt Latin graphics to IT technologies). In the work in groups involved professional specialists in the relevant fields of knowledge, who began to work in their areas. The alphabet of any language is conventional in the transmission of sounds of the speech stream of live speech in writing. Spelling rules compensate for the flaws and roughness of the Alphabet. When compiling the rules of Kazakh spelling based on Latin graphics, phonological laws should certainly be taken into account. Currently, linguists are developing a spelling concept. This is a very time-consuming process, where the rules for spelling the Kazakh language in the Latin script must be taken into account.

Three principles are distinguished in spelling: traditional historical, phonetic and phonemic (morphological). Spelling, as you know, establishes the correct spelling of words and word forms.

The traditional historical principle is mainly used in European languages: for example, in English, French. The traditional principle is that words are written as they were written in the old days. Their writing took shape very early; it did not change for many centuries, although the phonetic system developed, the number of phonemes grew. As a result, there was a mismatch between letters and sounds, writing and pronunciation. For their rapprochement, the correct pronunciation in these languages, transcription is widely used.

The phonetic principle is typical for Belarusian and Serbian languages. According to this principle, words are pronounced as they are written, i.e. the spelling must correspond to the pronunciation, for example, *galava* (*head*), *karova* (*cow*), *тунэль* (*tunnel*). This principle does not always guarantee literate writing, since different people pronounce and hear in different ways. For example, Koreans do not distinguish phonemes [r] and [l]; Arabs do not differentiate [o] and [u]; the French hear the phoneme [e] differently in the Kazakh word *kerek* (*need to*). This is due to the fact that the sounding speech is perceived through the phonological sieve of native language therefore, when learning a foreign language, in order to avoid an accent it is necessary to master its articulatory base [2].

The phonemic (morphological) spelling principle is used in Russian. A phoneme or morpheme does not change in all cognate words and their forms regardless of its sound: stunning or voicing of consonants, reduction of vowels, assimilation and other phonetic changes in a word. So, in the words *вода* (*water*) and *воды* (*water*) the letter **o** identical to the phoneme <o> in the same way, i.e. this phoneme is expressed in the same letter, although in the first case the word is in a weak position, and in the second - in a strong one. In the words *воды* and *вод*, the letter **d** is written the same way, although the sounds indicated by it are pronounced differently [3].

In the Kazakh language, all three principles are used, but the leading one is phonemic. A phonemic letter is one in which the same letters of the alphabet denote the phoneme in all its variations, regardless of its sound in a particular phonetic environment. In this case, modifications of the phoneme in various phonetic positions are not taken into account, only its main sound is indicated on the letter [4]. As a result, it turns out that each morpheme containing the same phonemes and their variations is always written the same. It is written the same way even if it is pronounced differently in oral speech. A morpheme consisting of phonemes does not change in its spelling, although due to the phonetic environment in oral speech it is implemented in its variants. For example, consonant phonemes **с**, **н**, **з** change their pronunciation depending on the position in a word. Based on the new Latinized alphabet, the written form of the word *басшы* [basshy] - *leader* in the Kazakh language is pronounced as [башшы] - [bashshy], the spelling form of the word *жаңбыр* [jañbyr] - *rain* is pronounced as [жамбыр] - [jambyr], the word *qobyzshy* [қобызшы] means one of musicians who plays the mare, and pronounced as [qobyszshy] [қобышшы], it is written jazsa (*жазса*) which means *having written*, pronounced [jassa] - [жacca], the phrase *qyz jibek* (*қыз жібек*), *a silk girl* (from folklore) is pronounced as [qyjjibek]- [қыжжібек]. In the last three examples, the grapheme (letter) <з> has three variants of pronunciations: **ш**, **с**, **ж**, i.e. <з> = [sh], [s], [j]. And the same is happened in the words with vowels. The word *erke* (*ерке*) is translated as *spoiled girl*, and pronounced as [erke] - [йерке], *ómir* (*өмір*) - *life* is pronounced as - [ómir] - [уомір], *shai* (*шаі*)- [shái]-[шаі], the spelling of the next word is *qundyz* (*құндыз*) - *minx*, the pronunciation is [qunduz] - [құндұз], *júrek* (*жүрек*) - *heart* is pronounced as [jurók] - [жүрөк] [5].

Thus, if spelling studies the rules for writing words and their forms, then orthoepy rules pronunciation.

All listed phonemes are native Kazakh phonemes and they are included in the phonetic system of the Kazakh language. And there are borrowed phonemes in the Kazakh language such as **u** and **ч**. Despite the fact that they are not in the system of native Kazakh phonemes, they are often found in the speech of Kazakh people and are adapted to our articulator apparatus, i.e. Kazakhs easily pronounce them. For example, in the words *aitsa* (*айтса*) - *speaking*, *aitshy* (*айтшы*) - *speak* phonemes <s> and <sh> are pronounced as [c]- [u] and [ch] - [ч]. In the new Latinized Kazakh alphabet, the phoneme **ч** is designated as **ch**, and the phoneme **u** should designate as **c**. In linguistics there is such a law, sounds, when used frequently in oral speech, go into the language system, i.e. new phonemes appear [6].

This universal law of phonologization [7] is inherent in all world languages. The birth of new phonemes is due to external and internal factors. External factors (extralinguistic) are the replenishment of

phonemes due to borrowed new words, terms. Internal factors (linguistic) are caused by the formation of new phonemes due to the development of the language itself, as a result of the transition of sounds from syntagmatics to paradigmatics, i.e. into the language system. As the history of the development of languages shows, their sound foundation was improved, replenished with new phonemes and, due to their frequent use, adapted to the articulation apparatus of its speakers. The formation of new phonemes is associated with the development of language and thinking, enriching it with new concepts, new vocabulary, the influence of related cultures and civilizations. This progressive phenomenon enriches the language, and does not “spoil”, as some purists from linguistics believe. In our time of globalization and intercultural cooperation, educating the younger generation in the traditions of trilingualism, the “purist” approach to reforming the alphabet is not acceptable, which can give rise to many additional problems. The young generation, striving for Western standards, to enter the global information space, assimilate world technologies and knowledge systems for a reasonable and adequate choice of the Kazakh alphabet based on Latin graphics.

As a result of the external causes of phonologization, through the borrowed words *вагон, фильм, химия* (carriage, film, chemistry), there were appeared sounds - **в, ф, х** in the Kazakh language. They have their equivalents in the new Kazakh alphabet based on Latin graphics (**v, f, h**). A big debate arises among linguists themselves the status of letters (phonemes) in **у** and **и**. They are called false diphthongs, since they consist of two components **у = ұу, үу, и = ый, ій**. From the view point of the main law of orthography according to the principle of economy in writing, they are designated by one letter - **у, и**. Therefore, the words with these letters should be written as *jazú (жазу) – to write, jabú (жабу) – to close, to cover, kelú (келу) – to come, ketú (кету) – go, biyl (биыл) – this year, melik (инелік) – a dragonfly*, although according to the rules of orthoepy they are pronounced as [жазұу], [жабуу], [келүү], [кетүү], [бийыл], [ийнелік].

Regarding the designation of soft consonants one can say that in Russian, they are softened by the soft sign (**ь**). In the Kazakh language, according to the rules of syngarmonism, the softness of the consonants is subordinated to the adjacent “soft” vowels. For example, in Russian, in the words *мол – моль, мел – мель* we have two phonemes: hard - **л** and soft - **л**. In the Kazakh language one of the phonemes **л** changes its property because of the neighboring vowel phoneme: if the neighboring vowel is “hard”, then the consonant is hard, if the vowel is “soft”, then the consonant is soft too: бол- (be) - бөл - (divide) [b[°]ol[°] – b[’]ól[°]], тол – (get better) - төл- (original) [t[°]ol[°] – t[’]ól[°]].

Conclusion. The law of economy in spelling is the main principle that all languages of the world strive for. Linguists tried to derive mathematical formulas for the combination of phonemes and graphemes, providing for the creation of a formula for constructing the most economical alphabet. In Russian, the economy of constructing the alphabet is achieved by the fact that the differential signs of hardness and softness of consonant phonemes are indicated by subsequent vowels. In the Kazakh language, short writing was proposed by A. Baitұrsynov, the founder of Kazakh linguistics, in which numerous sounds of the Kazakh language were transmitted only by a limited number of letters. Thus, the new Kazakh writing on the basis of Latin graphics allows a small number of letters, fully and at the same time simply convey the sound side of the language in the letter.

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ЛАТЫН ГРАФИКАСЫНА НЕГІЗДЕЛГЕН ЖАҢА ҚАЗАҚ ЖАЗУЫ

Аннотация. Мақалада қазақ әліпбиінің латын графикасына көшудің ең қолайлы жолдары қарастырылған. Жаңа қазақ жазуының принциптері фонемалардың, морфемалардың, сөздердің дұрыс жазылуын белгілейтін жаңа орфография негізінде талданады, үш негізгі қағидатқа негізделген: дәстүрлі тарихи, фонетикалық және морфологиялық (фонемалық). Латыннегізді жаңа жазу үнемдеу принципіне негізделген. Жазу теориясының негізгі принциптері сипатталған. Фонемалық принциптің қазақ емледегі артықшылығы айқындалды, онда әліпбидің бірдей әріптері оның дыбысына қарамастан бір фонеманы белгілейді. Фонологизация заңы және оның қазақ фонетикалық жүйесінің дамуы мен қалыптасуына әсері сипатталған. Жаңа

фонемалардың пайда болуының сыртқы және ішкі факторлары және олардың жазбаша түрде белгіленуі сипатталған. Жаңа фонемалардың қалыптасуы көрші мәдениеттер мен өркениеттердің әсеріне, тіл мен ойлаудың дамуына байланысты. Олар жаңа лексика мен терминологиямен толықтырылады. Қолданылған дыбыстар адамның артикуляциялық аппаратына бейімделеді, сонда тілдің фонетикалық жүйесі жаңа фонемалармен байыды. Латын қарпіне көшкен қазақ әрпіндегі сөздердің орфографиялық жазылуы мен айтылу ережелері талданады.

Түйін сөздер: латын, фонемалық принцип, синтагматика, парадигматика, фонология, айтылым, емле, қазақ алфавиті, әріптер, дыбыстар.

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НОВАЯ КАЗАХСКАЯ ПИСЬМЕННОСТЬ НА ОСНОВЕ ЛАТИНСКОЙ ГРАФИКИ

Аннотация. Рассмотрены наиболее приемлемые пути перехода казахского алфавита на латинскую графику. Анализируются принципы нового казахского письма на основе новой орфографии, которая устанавливает правильное написание фонем, морфем, слов, базирующиеся на трех основных принципах: традиционно-историческом, фонетическом и морфологическом (фонематическом). Раскрывается суть принципа экономии в новом латинизированном казахском письме. Описываются основополагающие принципы теории письма. Выявляется преимущество фонематического принципа в казахской орфографии, при котором одни и те же буквы алфавита обозначают одну фонему независимо от ее звучания. Описывается закон фонологизации и его влияние на развитие и становление казахской фонетической системы. Описываются внешние и внутренние факторы зарождения новых фонем и их обозначение на письме. Становление новых фонем зависит от влияния соседних культур и цивилизаций, от развития языка и мышления. Они пополняются за счет заимствованной лексики и терминологии. При частом употреблении заимствованные звуки приспособляются к артикуляционному аппарату его носителей и фонетическая система языка обогащается новыми фонемами. Анализируются правила правописания и произношения слов в новом латинизированном казахском алфавите.

Ключевые слова: латиница, фонематический принцип, синтагматика, парадигматика, фонологизация, произношение, написание, казахский алфавит, буквы, звуки.

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REFERENCES

- [1] Address of the President of the Republic of Kazakhstan N. Nazarbayev to the people of Kazakhstan. December 14, 2012 Strategy "Kazakhstan-2050". The new political course of the established state. <http://adilet.zan.kz/rus/docs/K1200002050>.
- [2] Shcherba L.V. Language system and speech activity. Section: Linguistics → General linguistics. M.: URSS editorial, 2004. 226 p.
- [3] Trubetskoy N.S. The basics of phonology. – Translated from the German by A. A. Kholodovich; Edited by S. D. Katsnelson. - M.: Aspect Press, 2010. - 352 p.
- [4] Baitursynov A. Tіл тағылымы. (Language training). Almaty, 2008. 325 b.
- [5] Bazarbayeva Z.M. Problems of segmental and super-segmental Phonetics. - Almaty, 2016. - 600 p.
- [6] Syzdykova R. Sózder sóileidi. (Words say). Almaty, 2014. 231 b.
- [7] Zhuravlev V.K. Diachronic Phonology. - M., 1986. - 230 p.

Юбилейные даты

Мерейтой – 80 жас

САН ҚЫРЛЫ ТАЛАНТ



Әріптес, бірге қызметтес болып келе жатқан ғалымдар, ұстаздар жөнінде пікір айту оңай емес. Қазақ: «Артық айтсаң, өтірігің шығады, оған ел куә, кем айтсаң, несіне әуре болдың, ақ қағазды қор қылып» – дейді. Дәл үстінен дөп түсіп, әріптес – ғалымның қыры мен сырын анық, ашық, әділ, адал сипаттап, халықтың ойынан шыққанға не жетсін. Ал академик С. Н. Сәбікенов жөнінде қалай болсада тартынбай, ұялмай ой толғауға болады.

Қазіргі таңда есімі бүкіл алыс-жақын шетелдерге танымал, парасатты тұлға, Қазақстан ғылымдарының мақтанышы, Қазақстан Республикасы Ұлттық Ғылым Академиясының толық мүшесі, құқықтану ғылымдарының докторы, профессор, Абай атындағы Қазақ ұлттық педагогикалық университетінің халықаралық құқық кафедрасының меңгерушісі Салахиден Нұрсарыұлы Сәбікенов міне, бүгін 80 жастың белесіне көтеріліп отыр. Дана қазақ: «Жақсының жақсылығын айт, нұры тасысын», – дейді. Салахиден Нұрсарыұлы Отандық құқықтану ғылымының көшін бастап отырған – Дарынды ғалым, құқықтану ғылымының іргелі, маңызды саласы өкілдерінің бірі – Дара ғалым, құқықтану ғылымының күрделі, өзекті проблемаларын шешуде жастармен қоян – қолтық белсене араласып, жаңа, түйінді ой тастап жүрген – Дана ғалым, ұлағатты ұстаз, оның өмірі бізге өнеге.

Дарынды азамат болу оңай емес және ондай биікке көтерілудің өзі екінің бірінен келе бермейді де. Жаратушымыз Сакеңе салауатты ақыл, терең білім, сезімталдық пен сергектік берген. Жүрегі жылы, ойы ұшқыр, ең әуелі қара басына қатаң талап қоя білетіндігінің арқасында ол ірі ғалым дәрежесіне көтеріліп, ізденістер мен қиыншылықтарға толы күрдеі жолдан сурінбей өтіп, биік тұлғалы қазақ зиялыларының қатарына қосылды. Адал еңбегі мен алғырлығы, таланты мен дарындығы арқасында Сакең суырылып алға шығып, ең жоғары ғылыми атақ – ҚР ҰҒА-ның академигі атанды.

Студент кезінде-ақ С. Сәбікенов ғылыми – зерттеу жұмысына белсене атсалысты. ҚСРО – ның Мәскеу, Вильнюс, Ташкент және тағы басқа қалаларында өткен студенттердің бір қатар республикалық және бүкілодақтық ғылыми конференцияларына қатысып, ғылыми баяндамалар жасады. Студенттердің ғылыми қоғамының ғылыми үйірлемелерін басқарды. Факультеттің осы ғылыми қоғамының төрағасы болып сайланды. Жас студент С. Сәбікенов жазған «Социалистік қоғамдағы

құқық қатынастарының кейбір теориялық мәселелері» атты диплом жұмысына сол кезде – ақ оның ғылыми жетекшісі, заң ғылымдарының кандидаты, философия және құқық институтының аға ғылыми қызметкері М. А. Биндер, рецензент, заң ғылымдарының кандидаты, ҚазМУ-дың доценті М. С. Сапарғалиев жоғары баға бере келіп, оны студенттік диплом жұмысы шегінен шығып кеткен шағын ғылыми зерттеу деп мойындаған болатын. Әрине, осындай ірі ғалымдармен біте қайнасып, араласу Салахиденнің ірі ғалым және ғылым мен білім саласында ұйымдастырушылық қабілеттерінің шырдалуына жол ашады. Міне, студенттік кезден басталған ғылымға деген құштарлық жоғары білімді жас маман С. Сәбікеновты үлкен ғылымның даңғыл жолына жетелейді. Университетті бітіргесін ол жолдама бойынша Маңғыстау облысының Ақтау қаласында мамандығы бойынша екі жылдай еңбек етіп, 1966 жылы С. Сәбікенов Қазақстанның Ғылым Академиясының философия және құқық институтының «Мемелекет және құқық теориясы» бойынша аспирантурасына түседі. Бірақ, бір жылдан кейін ҚСРО Ғылым Академиясының Мәскеудегі Мемлекет және құқық институтына ауыстырылады. Осындай іргелі ғылым орталығында жас ғалым С.Сәбікенов 1969 жылы «Кеңес құқығында қоғамдық және жеке мүдделердің сәйкестірілуі» тақырыбында кандидаттық диссертация қорғады.

Үлкен ғылым жолына түскен Салахиден Сәбікеновтың жас ғалым ретінде қалыптасуына, шарықтап өсуіне Қазақстандағы философия және құқық институтының аспирантурасында оқып жүргенде туған еліміздің С. З. Зиманов, М. Т. Баймаханов, В. А. Ким, Ғ. С. Сапарғалиев, С. С. Сартаев, М. Т. Имашев, У. Д. Құдайбергенов, М. С. Сахипов, Е. Ж. Жанабілов, Е. Б. Баянов секілді және басқа да көрнекті ғалым – заңгерлер елеулі ықпал етті. Мәскеу қаласында жүрген кезінде С. Н. Сәбікенов ҚСРО - ның А. А. Пионтковский, Н. П. Фарберов, С. М. Строгович, Р. О. Халфина, В. М. Чхиквадзе, В. С. Нерсесянц, В. Т. Казимирчук, Е. Лукашева, Ю. А. Тихомиров, Д. А. Керимов, А. В. Патюлин, Г. В. Мальцев, Л. И. Загайнов, Д. В. Шутько сынды және басқада көптеген аса ірі ғалым-заңгерлерінен іргелі аспиранттық дайындықтан өтті. Үлкен ғылымның жолына түсіп, оның алғашқы сатысын игерген Салахиден Сәбікеновтың қажыры мен қайратының арқасында өрлеу баспалдақтары биіктей береді. Білім мен біліктілікті жадына тұтқан Салахиден алғашында бір жылдай Қазақ ҚСР Ғылым Академиясының философия және құқық институтында ғылыми қызметкер міндетін атқарады да, одан кейінгі бар ғылыми және ұйымдастырушылық өмірінің негізін еліміздің Ішкі істер министрлігінің қарамағындағы Қарағанды жоғары мектебінің қабырғасында өткізеді.

Академик С. Н. Сәбікенов – еліміздегі мемлекет пен құқықтық жалпы теориясы саласындағы жетекші ғалым-заңгер. Оның ғылыми шығармашылығында айқын көзге түсетін ерекшелігі – зерттеу тақырыптарының жан – жақты, кешенді түрде болуы және терең талдануы. Академик өзінің ғылыми еңбектерінде Одақта алғашқылардың бірі болып, құқық пен әлеуметтік мүдделердің өзара ықпал етуінің теориялық проблемалары, заңды және заңға қайшы мінез – құлық факторлары жүйесіндегі мүдделер, мемлекетте жеке адамның өзара жауапкершілігі, мемлекеттік егемендік, қоғамда бой көрсететін мемлекеттік-құқықтың режимнің заңдылығы және халықаралық құқықтық, конституциялық құқықтың өзекті мәселелерін, басқа да маңызды проблемалар секілді заң ғылымындағы іргелі мәселелерді зерттейді. С. Н. Сәбікеновтың зерттеулерінің ішінен 80-жылдары кең тараған – «Құқық және қоғамның әлеуметтік мүдделері» (1986 ж.) атты монографиясын ерекше атауға болады. Монографияда теориялық-әдіснамалық мәселелерді күн тәртібіне қойып, сыни көзқараспен жазылған бұл монография өзінің ғылыми – практикалық құндылығымен қазір де ерекшеленеді. Жақында С. Н. Сәбікеновтың үш монографиясы «Жеті жарғы» баспасынан шықты: «Жалпы құқық теориясының өзекті мәселелері» (2019 ж.); «Конституциялық құқық проблемалары» (2019 ж.); «Халықаралық құқық мәселері» (2019 ж.). Бұл ғылыми еңбектері, құқықтану ғылымының дамуына қосқан үлкен үлесі, деймін.

С. Н. Сәбікенов тек қана ірі ғалым, ұлағатты ұстаз ғана емес, ол туған елінің қоғам жұмысына белсене қатысып жүрген қоғам және мемлекет қайраткерлерінің бірі. Қазақстан Республикасы Президентінің Жарлығымен С. Н. Сәбікенов 1995–1998 жылдары Қазақстан Республикасы Конституциялық Кеңесінің мүшесі болып тағайындалып, еліміздегі конституциялық құқықтың іске асуына өз үлесін қосты. Одан кейін 1999 жылы Қазақстан Республикасы Жоғары Соты жанындағы ғылыми-конституциялық кеңесінің мүшесі болып, сот саласында да жемісті еңбек етті. С. Н. Сәбікенов заңгер-ғалым ретінде тәуелсіз еліміздің алғаш Конституциясын жасауға белсене қатысқан

тұлғаның бірі. 1989–1994 жылдары Қазақ ҚСР-нің сайлау және халық депутаттарын кері шақырып алу жөніндегі Орталық сайлау комиссиясының мүшесі болды. Қазақ ҚСР Жоғарғы Кеңесінің халық депутаттарының және Қазақстан Республикасының тұңғыш Президентінің алғаш сайлауларын дайындап, өткізуге тікелей белсене атсалысты, сол үшін Қазақ ҚСР Жоғарғы Кеңесі мен Қазақстан Республикасы Президенті талай рет С. Н. Сәбікеновты ынталандырды. С. Н. Сәбікенов жоғары білікті заңгер кадрларын даярлауға беделді үлес қосуда. 1993 жылы заң ғылымдарының докторы, профессор С. Н. Сәбікенов Қазақстанда алғаш құрылған заң ғылымдары жөніндегі Жоғары аттестациялық комиссияның сараптау кеңесінің ғылыми хатшысы, 1999 жылы оның төрағасы болып сайланды.

С. Н. Сәбікенов Қазақстан ғылымын көптеген елдерде үлкен абыроймен танытқан ғалым. 2008 жылы академик С. Н. Сәбікенов халықаралық құқық Ресей ассоциациясының мүшелігіне сайланды және ол РФ Үкіметінің жанындағы салыстырмалы құқық және шетел заңдары институты журналының редакциялық коллегиясының мүшесі болды. Қазақ–Швейцар саммитінде кіршіксіз абыройлы іскерлігі үшін академик С. Н. Сәбікенов алтын медальмен марапатталды (Женева қаласы, 2004.20.12). ХХІ ғ. ғалым, мәдениет, білім аясындағы Лидерлер саммитінде академик С. Н. Сәбікенов қазіргі қоғамға интеллектуалдық өз үлесін қосқаны үшін Соқрат атындағы халықаралық медальмен марапатталды және тұлға ретінде халықаралық тіркеуге (регистрге) енгізілді (Оксфорд университеті, Ұлыбритания, 2007.23.03).

С. Н. Сәбікенов мемлекет және құқық теориясы, конституциялық және халықаралық құқық ғылымдар жөнінен 45 жылдан астам бойы шеберлік ұстаздық жұмыс атқарып келеді. Студенттер мен магистранттар оның қазақ және орыс тілдеріндегі лекциясын ынтыға тыңдайды, әрбір лекциясы теориялық тереңдігімен, түсініктілігімен, нақтылығымен тыңдаушысына тез ұялағыш тәрбиелік ұғыныңқылығымен көзге түседі. Ғалымның алдынан өткен, дәріс алған мыңдаған студенті мен тыңдаушысы қазір практикалық жұмыста – құқық қорғау органдарында, әкімшілік-басқару аппаратында, Қазақстан Парламентінде, республиканың жоғары оқу орындары мен одан тыс жерлерде ойдағыдай еңбек етіп келеді.

Ғылым және қоғамдық қызметте сіңірген айтулы еңбегі және ғылымды дамытудағы үлкен үлесі С. Н. Сәбікенов және білім беру саласындағы еңбек үшін «Қазақстан Республикасының білім беру ісінің құрметті қызметкері» белгісімен, «Ерен еңбегі» медалімен, т. б. марапатталды.

Салахиден Нұрсарыұлы, сөз жоқ, көш бастар көшелі азамат, заманға лайықты тұлға. Ол – ғылымға жан-тәнімен берілген, бойындағы оған деген мол дарынын, қарымды қабілеті мен қажыр-қайратын, айтулы таланты мен тәлімді тәрбиесін, бар ықылас, ынта-жігері мен ой-ниетін өзі қалаған осы бір киелі де қастерлі өмір жолында жанқиярлығымен аянбай жұмсап келе жатқан, алған бетінен таймаған, ары таза, кеменгер жан. Ол Қазақстан тарихында өз орны бар ардагер азамат. Ел өмірінің негізгі саласының бірі – оқу мен білімін өркендетуге елеулі үлес қосып келе жатқан білікті маман ретінде ел құрметіне бөленіп келеді.

Академик С. Н. Сәбікеновтың тұлғасы, әлемі мен творчествосында сыры әлі ашылмаған жұмбақтар жатыр, бәлкім, уақыт өте сол сырды ашып, тым болмағанда Салахиден Нұрсарыұлының бүгінгі бейнесіне жақындай түсерміз. Ал әзірше С. Н. Сәбікеновтың сом тұлғасы, әлемі өзінің лайықты ізденушілерін күтіп тұр. Ол біздер, шәкірттер, жастар үшін сарқылмас қазынаның көзіндей, творчестволық даму, өрлеу мен танымдылықтың, шабыттылықтың қайнар бұлағы болып қала береді.

Қорыта айтқанда, өнегелі өмір кезеңдерінде ғылыми шығармашылығы мен ұстаздық-тәрбиелік еңбегін ұрпақтар игілігіне арнаған академик Салахиден Нұрсарыұлы Сәбікенов – Қазақстан құқықтануының аса көрнекті Қайраткер – Азаматы. Туған елінің ұрпақтары үшін ғылыми, құқық шығармашылығы мен қоғамдық-әлеуметтік қызметін тұтастырған парасатты қайраткер – тұлға, ұстаз – ғалым ұлағаты – Тәуелсіз Қазақстанның жаңа тарихы ұрпақтары үшін мәңгілік өнеге. Салахиден Нұрсарыұлы Сәбікенов өзінің 80 жылдық мерейтойын шығармашылық күш-қуаты кемелденген, әлі де жузеге асыратын мол ойлар мен идеяларға толы кезеңде қарсы алуда. Сізді, ұлы мерейтоймен ақ ниетпен құттықтап, алдағы уақытта өміріңізді қызықты, табысты, сәнді өткізуге шын жүректен тілектеспін.

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