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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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ANALYSIS OF WATER QUALITY IN THE COASTAL ZONE OF THE ISSYK-KUL LAKE BEFORE AND AFTER THE TOURIST SEASON

Abstract. Water quality is a characteristic of the composition and properties of water, determining its suitability for specific types of water use. Natural and anthropogenic factors affect the water quality. Anthropogenic impact, solid domestic waste and wastewater have a negative impact on water quality and the state of the lake. Recently, the increase in the number of tourists affects the water quality and condition of the Issyk-Kul lake. However, according to the results of analyzes, the water of the Issyk-Kul basin is not exposed to significant pollution. The quality of the surface waters of the lake is satisfactory, but the concentrations of some parameters such as nitrites and ammonium nitrogen (NH^+_4 and NH^-_2) are relatively high in Balykchy Bay, and the content of the remaining parameters does not exceed the MPC. The volume of water in the lake is huge, so while the lake is completely coping with the dissolution of harmful substances to a safe level for organisms.

Key words: Issyk-Kul lake, water quality, petroleumproducts, tourist season.

Introduction. Water is chemically pure only in exceptional cases. Naturally, it always contains some dissolved and suspended matter. The range of chemical compounds in water is very diverse, since there is a change in the content of basic ions, dissolved gases, biogenic and organic substances, and trace elements [1]. A water body is characterized by a certain natural composition and water properties, and the consumer forms its own requirements for the composition and properties of the water consumed. Based on the data on the composition and properties of water, as well as customer requirements, water quality indicators (criteria) are formed. Quality is a characteristic of the composition and properties of water, determining its suitability for specific types of water use. Each type of water body has characteristic properties: salinity, alkalinity, hardness, acidity, corrosive properties. Factors affecting the state of the water body can have both a natural nature and anthropogenic, caused by human economic activity. By regulating the factors affecting the state of the water body, it is possible to regulate the quality of its water. These factors affect the quality of water, which depends on both mineralization and dissolved and suspended matter [2]. Currently, the water system is facing a serious threat due to pollution, which is a serious problem in a global context [3]. In this regard, particular interest is represented by detailed studies of the microelement composition of the coastal waters, bays and caves of Lake Issyk-Kul, which differ in their mineralization,

depending on the degree of dilution with river water. This is very important, since the accumulation of toxic heavy metals can lead to unpredictable catastrophic effects on the fauna of the lake and the ecosystem as a whole. Currently, the growing attractiveness of the resort area of the Lake Issyk-Kul for tourists creates conditions for the socio-economic development of the region, but on the other hand is a huge danger to the lake due to the ingress of insufficiently treated sewage into it and the impact of a number of other negative factors with anthropogenic activity [4]. In addition, the development of agriculture where fertilizers and grazing are used also increase the concentration of nutrients in the lake water [5-6].

The main purpose of the study is to analyze the influence of the tourist season on the hydrochemical appearance and water quality of the coastal zones of the Issyk-Kullake.

Study area. TheIssyk-Kul is a drainless lake in the Northern Tien Shan, and it is located in the northeastern part of Kyrgyzstan [7], and is one of the largest mountain lakes in the world. It is located at an altitude of 1608 m in the intermountain Issyk-Kul basin between the KungeiAla-Too Ridge in the north and the TerskeyAla-Too Ridge in the south (figure 1). Issyk-Kul Lake of tectonic origin, was formed due to faults, faults and deflections of the earth's surface; the vast part of it sank and filled with water, while the neighboring sections rose to 3000-3500 m above the lake level. The basin of the Issyk-Kul Lake stretched 252 km long in the latitudinal direction, and 22080 km^2 in the meridional zone at 146 km. Of these, the lake accounts for 6,247 km^2, in the foothill plain, which is a zone of river flow diversion of 3,092 km^2, the remaining part of the basin (12741 km^2) is occupied by mountain areas, which are a zone of river flow formation. The Issyk-Kul Lakehas the following characteristics: length is 178 km, width is 60.1 km, length of the coastline is 668 km, average depth is 278.4 m, depth maximum is 668 m, area is 6247 km^2, and water volume is 1738 km^3 [8]. The Issyk-Kul lakerefers to brackish lakes. In the chemical composition of its water, sulfates predominate over chlorides, which is a particular feature of the continental origin of the salt composition of this lake, fed by high-mountain rivers [9]. The climate of the Issyk-Kul Lake basin is moderately warm, favorable for crops and horticulture [10].

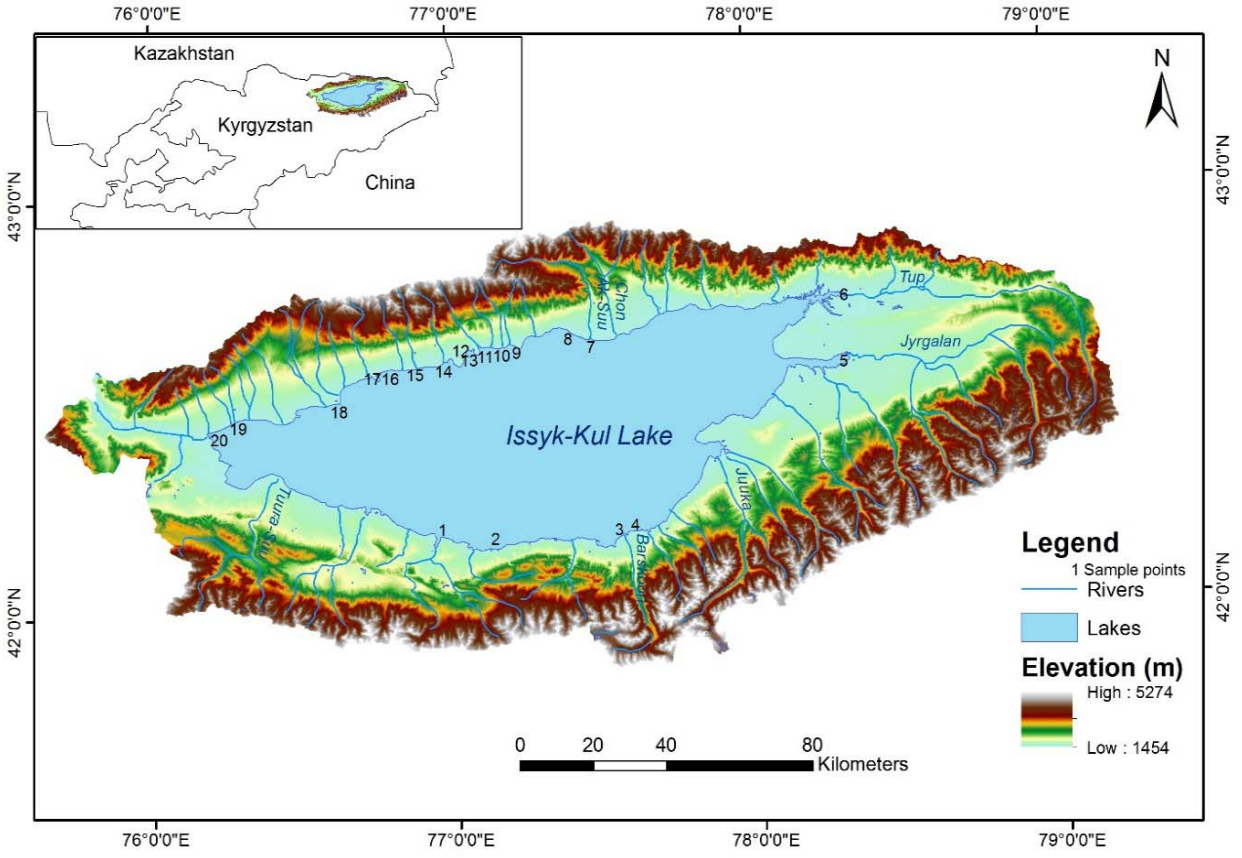

Figure 1 – Study area and sampling points

Methods and materials. The results of the analysis from the State Agency for Environmental Protection and Forestry under the Government of the Kyrgyz Republic (SAEPF) were used to characterize the degree of water pollution in the Issyk-Kullake. In 2016, monitoring was carried out twice a year: before and after the end of the tourist season. From 6 to 9 June and from 29 August to 1 September 2016; 20 water samples from the lake were selected (figure 1) and 20 water samples were analyzed according to the following parameters: pH, nitrogen nitrite, ammonium nitrogen, surfactants (anionic synthetic detergents), petroleum products, dissolved oxygen, heavy metals such as copper, zinc, cadmium and lead (table 1, 2).

Table 1 – Results of water analysis before tourist season (06 and 09 June 2016)

Sampling points	t, °C	pH	NH^+_4	NO^-_2	Surfactant	Oil	Cu	Zn	Cd	Pb
1	16	8.40	<0.039	<0.01	<0.015	0.04	<0.0006	<0.0005	<0.0002	<0.0002
2	16	8.36	<0.039	<0.01	<0.015	0.04	<0.0006	<0.0005	<0.0002	<0.0002
3	20	8.33	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
4	18	8.40	<0.039	<0.01	<0.015	0.03	<0.0006	<0.0005	<0.0002	<0.0002
5	18	8.18	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
6	16	8.15	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
7	17	8.37	<0.039	<0.01	<0.015	0.03	<0.0006	<0.0005	<0.0002	<0.0002
8	17	8.42	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
9	20	8.43	<0.039	<0.01	<0.015	0.03	<0.0006	<0.0005	<0.0002	<0.0002
10	19	8.43	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
11	17	8.43	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
12	17	8.41	<0.039	<0.01	<0.015	0.03	<0.0006	<0.0005	<0.0002	<0.0002
13	15	8.15	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
14	11	8.37	<0.039	<0.01	<0.015	<0.02	<0.0006	<0.0005	<0.0002	<0.0002
15	17	8.44	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
16	17	8.42	<0.039	<0.01	<0.015	0.04	<0.0006	<0.0005	<0.0002	<0.0002
17	19	8.43	<0.039	<0.01	<0.015	0.03	<0.0006	<0.0005	<0.0002	<0.0002
18	17	8.47	<0.039	<0.01	<0.015	<0.02	<0.0006	<0.0005	<0.0002	<0.0002
19	19	8.47	0.81	0.065	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
20	19	8.74	<0.039	<0.01	<0.015	0.03	<0.0006	<0.0005	<0.0002	<0.0002

Table 2 – Results of water analysis after tourist season (29 August and 1 September 2016)

Sampling points	t, °C	pH	NH^+_4	NO^-_2	Surfactant	Oil	Cu	Zn	Cd	Pb
1	20	8.27	<0.039	<0.01	<0.015	0.03	<0.0006	<0.0005	<0.0002	<0.0002
2	20	8.34	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
3	17.5	8.41	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
4	17.5	8.38	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
5	17	8.10	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
6	20.5	8.43	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
7	18	8.34	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
8	21	8.42	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
9	20.5	8.42	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
10	21	8.41	<0.039	<0.01	<0.015	0.04	<0.0006	<0.0005	<0.0002	<0.0002
11	20	8.43	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
12	21	8.53	<0.039	<0.01	<0.015	0.03	<0.0006	<0.0005	<0.0002	<0.0002
13	21	8.45	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
14	21	8.43	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
15	23	8.47	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
16	22	8.47	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
17	22	8.46	<0.039	<0.01	<0.015	<0.015	<0.0006	<0.0005	<0.0002	<0.0002
18	22	8.44	<0.039	<0.01	<0.015	<0.015	<0.0006	<0.0005	<0.0002	<0.0002
19	22	8.60	0.80	0.156	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002
20	22	8.62	<0.039	<0.01	<0.015	0.02	<0.0006	<0.0005	<0.0002	<0.0002

The analysis of water samples was carried out in accordance with modern analytical methods described in the relevant state standards.

Results and discussion. The pH values of all collected surface water samples show that they are in the allowable concentration. The water in the lake has an alkaline reaction, the pH of the water is between 8.10-8.74 in 2016 (tables 1, 2). The total alkalinity is mainly due to the content of $HCO_3^-$and partially CO_3^{2-}ions. The concentration of other ions affecting the alkalinity of water (H_2BO_3, HPO_4^{2-}, $H_2PO_4^-$, $HSiO_3$) is very small [11]. The concentration of ions of HCO_3 and CO_3^2 ions depends on the mineralization of water and CO_2. The surface water temperature in the study area ranges from 17.0 to 20.0 °C in June and 17.5 to 23 °C in August.

The content of ammonium nitrogen in the water of reservoirs is subject to seasonal fluctuations: in spring it decreases, in summer it increases due to the intensification of bacterial decomposition of organic substances [4]. According to the results of the chemical analysis of water collected in the bay of the Balykchi shipyard, an exceedance of the maximum permissible concentration (MPC) for nitrogen ammonium was 2.1 times, nitrite nitrogen 2.7 times (figure 2a, b). If the pollution does not go beyond these areas, then it can be considered that self-cleaning ability will maintain an equilibrium state in these areas of the reservoir [] (Karmanchuk, 2002). It can be seen from the table that the concentrations of all elements other than NH^+_4 and NO_2^- do not change significantly in the waters of the coastal zone.

In the Soviet period, the plant "Selkhozhimiya" operated, where mineral fertilizers were stored for the Issyk-Kul and Naryn oblasts, and, accordingly, the soil was contaminated with various chemicals.

The chemicals is washed outby rain and partially falls into the lake. Storm runoff in urban areas contains various pollutants from residential and industrial areas [13, 14] flows into the lake and reduces water quality [15]. In addition, excessive use of fertilizers, manure and pesticides can be harmful, although they are used for better production and protection of crops [16, 17].

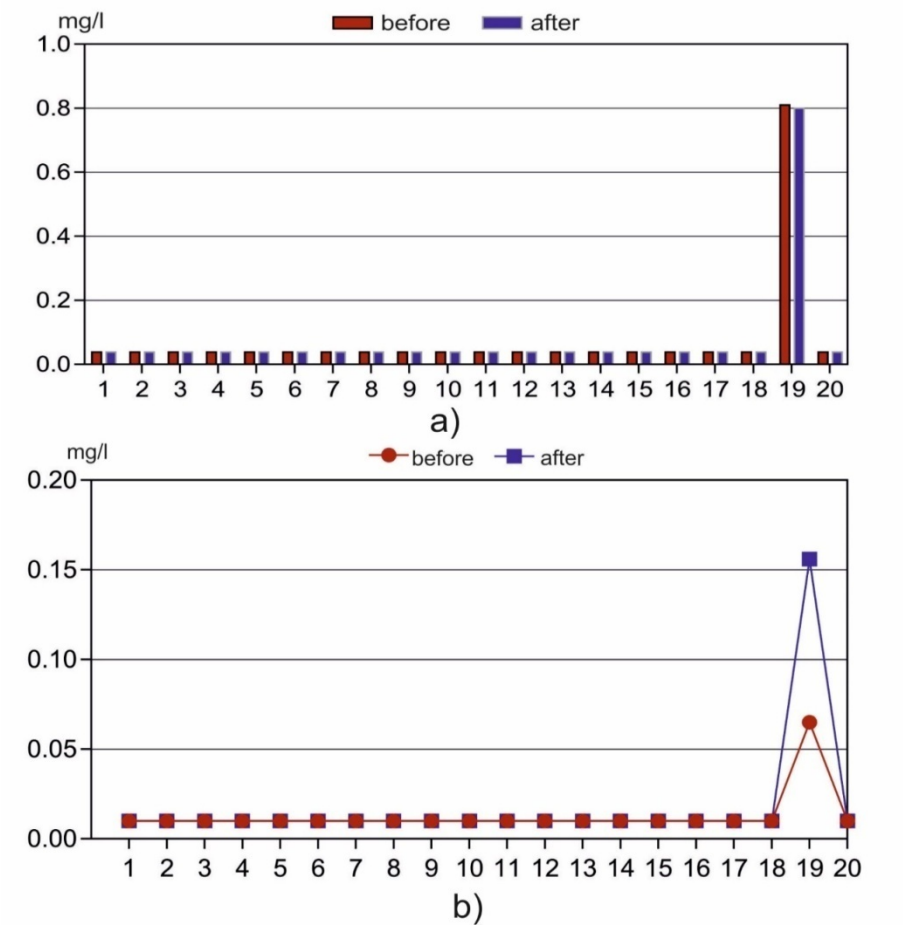

Figure 2 –Thecontent of before and after the season: a) Ammonium nitrogen, b) Nitrogen nitrite

The content of oil/petroleum products in the water did not exceed the maximum permissible concentration limit and varied within the range of 0.02-0.04 mg/l. The most polluted by oil products is the coastal zone of the lake, within which the average content varied from 0.00 to 0.69 mg/l for the period 1975-1982. In the period 1985-1992 and 2000 (figure 3), the content of oil products in the lake's water decreased as a result of the introduction of the K-2 wastewater treatment plants for boarding houses and resorts, thanks to the creation of sanitary protection zones and the prohibition of transportation of petroleum products by water transport [12]. According to [4] in 2016 in the area of the shipyard in Balykchy, there was an excess of 0.07 mg/l for petroleum products.

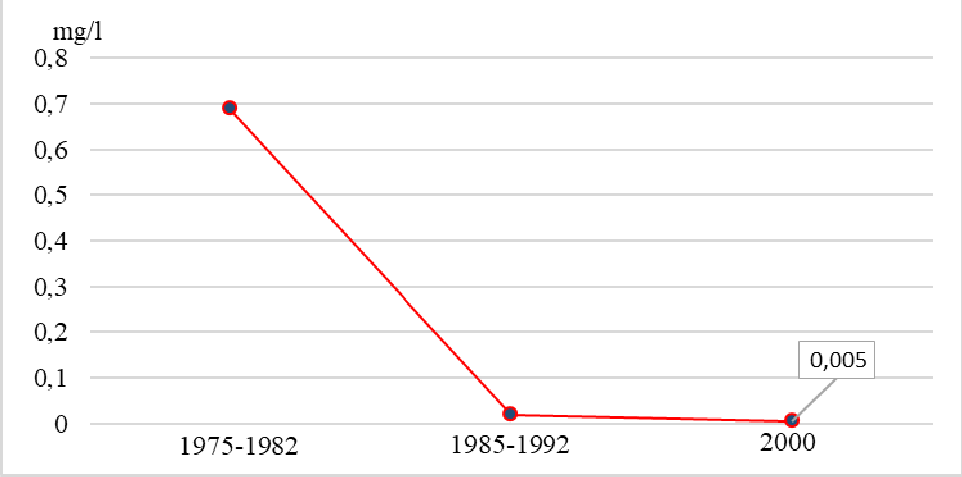

Figure 3 – The contents of petroleum products

The presence of dissolved oxygen in water is important for aquatic organisms. Its concentration depends on both physical (water-air exchange and turbulence), and on chemical (photosynthesis and oxidation) factors. The solubility of oxygen in the lake water depends on temperature, atmospheric pressure and has a seasonal regime [12]. The dissolved oxygen of the coastal zones according to the data obtained in 2016 is from 7 to 10 mg/l (figure 4). The presence of oxygen in almost all the coastal zones indicates the presence of a lake water flow, through which water exchange between the coast and the lake takes place. In addition, it is quite possible to wedge cold spring waters in this area, as there are numerous outcrops along the lake's coastal strip, as well as the presence of aquatic flora (thick algae).

Conclusion. The analyzed data show that in general the Issyk-Kul lake water is not exposed to significant pollution. Analysis of the quality of surface water in the study zone shows that the concentrations of certain parameters (NH^{+}_{4} and NH^{-}_{2}) are relatively high in Balykchi Bay, the content of the remaining parameters does not exceed the MPC. The volume of water in the lake is huge, so while the lake is completely coping with the dissolution of harmful substances to a safe level for organisms. But if there is a saturation of harmful substances, then we can not clean up any forces. Therefore, it is necessary to organize constant monitoring of the Issyk-Kul lake water in order to obtain reliable information on the state of the water of pollutants in the lake water.

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ТУРИСТІК МАУСЫМҒА ДЕЙІН ЖӘНЕ КЕЙІН ЫСТЫҚКӨЛ КӨЛІНІҢ ЖАҒАЛАУ АЙМАҚТАРЫНЫҢ СУЫНЫҢ СУ САПАСЫН ТАЛДАУ

Аннотация. Судың сапасы дегеніміз судың құрамы мен сипаттамасы және оның су қолдану түрлеріне қарай жарамдылығын анықтайды. Табиғи және антропогендік факторлар судың сапасына әсер етеді. Антропогендік факторлар, қатты тұрмыстық қалдықтар және ағынды суларкөлдің жағдайы мен су сапасына әсер етеді. Кейінгі кезде туристер санының өсуі Ыстықкөл көлінің жағдайы мен су сапасына әсер етіп жатыр. Дегенмен, анализ нәтижелеріне сүйенсек, Ыстықкөл көлінің суы айтарлықтай ластанбаған. Көлдің жер үсті сулары қанағаттанарлық жағдайда, бірақ нитриттер жәнеаммонилы азот (NH^{+}_{4} и NH^{-}_{2}) сияқты кейбір көрсеткіштер концентрациясы Балықчы шығанағында салыстырмалы түрде жоғары, ал қалған көрсеткіштер мөлшері ШРК-ден жоғары емес. Көлдегі су мөлшері ауқымды, сондықтан әзірше көл зиянды заттарды ағзаларға қауіпсіз жағдайға дейін ерітіп жібере алады.

Түйін сөздер: Ыстықкөл көлі, су сапасы, мұнай өнімдері, туристік маусым.

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АНАЛИЗ КАЧЕСТВАВОДЫ ПРИБРЕЖНОЙ ЗОНЫ ОЗЕРА ИССЫК-КУЛЬ ДО И ПОСЛЕ ТУРИСТИЧЕСКОГО СЕЗОНА

Аннотация. Качество воды это характеристика состава и свойств воды, определяющая пригодность ее для конкретных видов водопользования. Природные и антропогенные факторы влияют на качество воды. Антропогенное воздействие, твердые бытовые отходы и сточные воды оказывают негативное влияние на качество воды и состоянии озера. В последнее время увеличение потока туристов влияют на качество воды и состояние озера Иссык-Куль. Однако, согласно результатам анализов, вода бассейна озеро Иссык-Куль не подвергается значительным загрязнениям. Качество поверхностных вод озера в удовлетворительном состоянии, однако концентрации некоторых показателей таких как нитриты и азот аммонийный (NH^{+}_{4} и NH^{-}_{2}) относительно высоки в заливе Балыкчи, и содержание остальных параметров не превышает ПДК. Объем воды в озере огромны, поэтому пока озеро полностью справляется с растворением вредных веществ до безопасного для организмов уровня.

Ключевые слова: озеро Иссык-Куль, качество воды, нефтепродукты, туристический сезон.

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APPLICATION OF MASSIVE PARALLEL SEQUENCING FOR THE INVESTIGATION OF WILD BIRDS VIRUSES

Abstract. Identification of viral pathogens is of great importance for the diagnostics of infectious diseases in humans and animals. Almost all outbreaks of dangerous infections in the last two decades have been caused by new viruses, most of which originated from a natural reservoir.

Experimental studies on avian paramyxovirus (APMV) of serotype 1 have shown that wild birds can spread and introduce mild or non-pathogenic virus variants into the poultry population, which, after several passages in the organism of susceptible birds, often acquire highly pathogenic properties.

Using the new technology of massive parallel sequencing, information on the genetic structure of wild bird viruses belonging to the *Paramyxoviridae* family was obtained. The high efficiency of the method is shown, which allows simultaneous sequencing of the complete genomes of viruses without prior knowledge of their belonging to any family. The data obtained will allow us to expand our knowledge of the course of the natural evolution of migratory bird viruses.

Keywords: Virus, Massive Parallel Sequencing, Wild Birds, Complete Genome of the Virus, RNA, DNA, Bioinformatic Analysis.

Introduction. Recent studies confirm the priority role of wild birds as a natural reservoir and the source of genetic material for the emergence of new epizootic variants of viruses.

Ecological and epizootological assessment of the state of viral populations in birds is important for practical veterinary medicine when defining the cause of the outbreaks and controlling emergent epidemic situations. Since Kazakhstan is located in the center of the Eurasian continent and important wild birds' migration flyways cross its territory, this can serve as a factor of introduction of new pathogenic variants of viruses, the study of the genetic diversity of viruses circulating in the organism of wild birds is an urgent issue.

To date, genetic studies of viruses with the sequencing of their genes have been conducted using the widely used and well-proven Sanger method. With the development of technology, new methods have emerged into the arena, which are gradually becoming routine in the world's scientific laboratories. One of these new methods is massive parallel sequencing, also called Next Generation Sequencing (NGS), which provides a high-performance analysis of huge amounts of data on the nucleotide sequences contained in the sample.

In order to study the capabilities of this technology in obtaining the complete genomes of wild bird viruses, unidentified hemagglutinating agents without preliminary knowledge of their belonging to a certain family of viruses were sequenced.

Materials and methods. Field samples were collected from wild and domestic birds according to the Office International des Epizooties (OIE) [1] and before researches were stored in liquid nitrogen (-196ºC).

Isolation of virus and recovery passages were conducted by the inoculation of each sample into the allantoic cavity of 9-10 days old Embryonated Chicken Eggs (ECE) and subsequently incubated at + 36ºC for 48 hours according to certified methods recommended by the OIE [2].

Viral RNA was extracted using QIAamp Viral RNA Mini Kit (Qiagen, Hilden) according to the manufacturer's recommendations.

NGS libraries were prepared using NEBNext Ultra Directional RNA Library Prep Kit for Illumina (NEB, USA). Complementary DNA from RNA was synthesized using random hexamer primers by reverse transcription. Sequencing was performed on Illumina MiSeq Sequencer (USA).

Bioinformatic analysis was performed using UGENE 1.20 (Russia) [3] and Tablet (UK) [4] software.

Alignment of gene sequences and phylogenetic analyses by Maximum Parsimony were carried out using MEGA 6.0 [5].

Results. A virological screening of samples from archival materials collected in Western, Southeast and Central Kazakhstan in different periods from wild aquatic birds belonging to the families of *Anatidae*, *Laridae*, *Scalopacidae* and *Charadriidae* of *Anseriformes* and *Charadriiformes* orders. As a result of inoculastion of samples into10-days-old ECE, haemagglutinating agents were isolated, of which RNA was isolated and their concentration was measured (table 1).

Table 1 – Initial RNA concentrations of virus isolates for sequencing

Hemagglutinating agent	Conc., ng/ul
chicken/Almaty/36/2015	100,0
pygmy cormorant/Kyzylkol/7074/2016	>8,0
barn swallow/ Kyzylkol /7079/2016	>8,0
mallard/ Korgaljyn /6769/2015	>8,0
great black headed gull/Atyrau/6452/2015	18,0
white fronted goose/Northern Kazakhstan /5751/2013	>8,0
white fronted goose /Northern Kazakhstan/5759/2013	26,3
white fronted goose /Korgaljyn/1791/2006	9,2
black headed gull/Balkhash/5844/2013	>8,0
great black headed gull /Atyrau/5541/2013	>8,0
gull/Aktau/5976/2014	>8,0
aquatic bird/Alakol/6952/2016	23,2

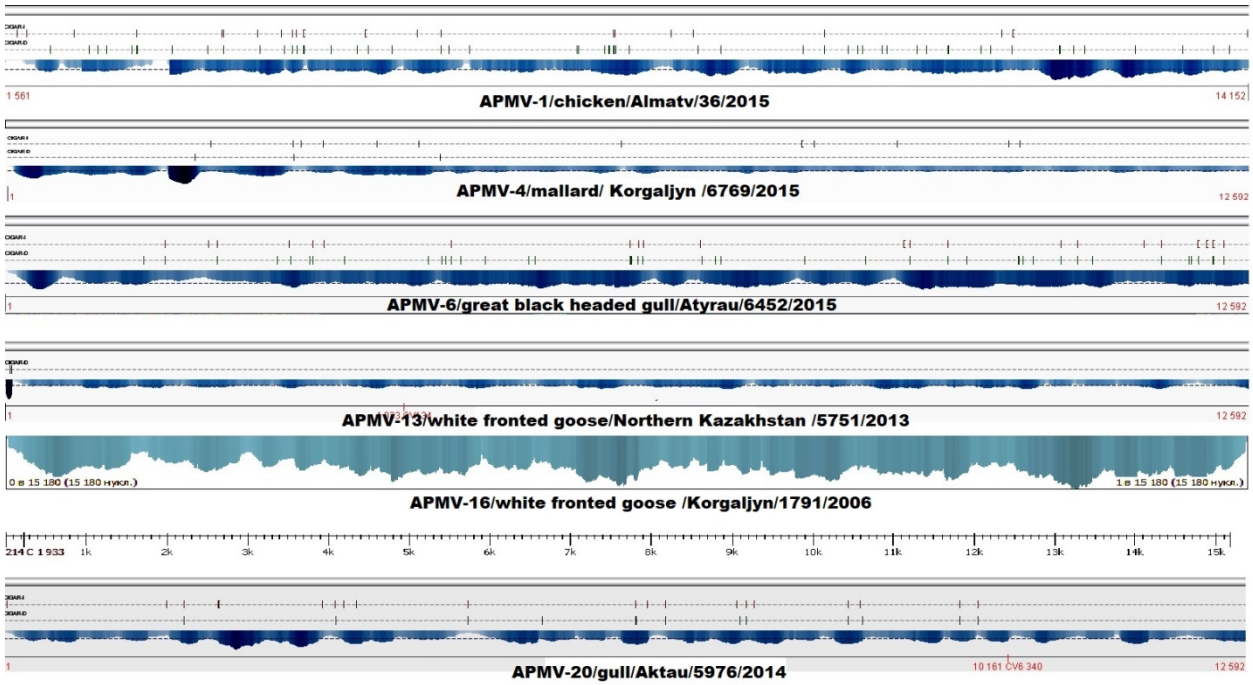
As can be seen from table 1, RNA concentrations ranged from 8.0 to 26.3 ng/ul, which, according to the recommendation of the sequencing kit manufacturer, is sufficient for the production of libraries.

Cytoplasmic and mitochondrial ribosomal RNAs (rRNAs) were removed for further sequencing of the complete viral nucleotide sequences using specific oligonucleotides, in addition to the NEBNext Ultra Directional RNA Library Prep Kit for Illumina (NEB, USA) kit used.

RNA fragmentation was performed to a size of about 300-400 bp. using an enzymatic method at different temperatures, using bivalent cations included in the kit. From the RNA fragments, the first cDNA chain was synthesized using reverse transcriptase and random primers followed by a second strand synthesis using DNA polymerase I and RNase H.

The adenine molecule was then attached to the obtained cDNA fragments and subsequently the adapters were ligated. Illumina adapters were used for preparation of the library of fragmented cDNA. The products were purified and amplified in PCR. The quality of the prepared libraries was checked on the Bioanalyzer 2100 (Agilent Technologies, USA). Sequencing was performed on a next generation sequencer Illumina MiSeq (USA), using a reagent kit v.3.

For bioinformatic analysis, the resulting sequences were collected and processed in the UGENE 1.20 software (Russia). As a result, the complete genomic sequences of the viruses were obtained (figure).



View of the complete genomes of sequenced viruses in Tablet and UGENE 1.20 software

Figure show that the coverage of the virus genome was even and varied from 4,521 to 5,500 rids in different regions. Complete genome sequences of viruses belonging to *Paramyxoviridae* family of APMV-1, APMV-4, APMV-6, APMV -13, APMV -16 and APMV -20 serotypes were obtained. The full names of isolates with identified serotypes are presented in table 2.

Table 2 – Identified serotypes of paramyxoviruses and their genomes

Вирусы	Genome Length, nt
APMV-1/chicken/Almaty/36/2015	15097
APMV-4/pygmy cormorant/Kyzylkol/7074/2016	15054
APMV-4/barn swallow/ Kyzylkol /7079/2016	15054
APMV-4/mallard/ Korgaljyn /6769/2015	15054
APMV-6/great black headed gull/Atyrau/6452/2015	16236
APMV-13/white fronted goose/Northern Kazakhstan /5751/2013	15996
APMV-13/white fronted goose /Northern Kazakhstan/5759/2013	15996
APMV-16/white fronted goose /Korgaljyn/1791/2006	15180
APMV-20/black headed gull/Balkhash/5844/2013	15786
APMV-20/great black headed gull /Atyrau/5541/2013	15786
APMV-20/gull/Aktau/5976/2014	15786
APMV-20/aquatic bird/Alakol/6952/2016	15786

Discussion. Identification of new pathogens is of great importance for the diagnosis of infectious diseases in humans and animals. Almost all outbreaks of dangerous infections in the last two decades have been caused by new pathogens, such as the severe acute respiratory syndrome virus (SARS) [6], hanta virus Sin Nombre [7], the 2009 pandemic influenza virus H1N1 [8], and the newly described EMC coronavirus [9], most of which originate from a natural reservoir.

Modern technologies make it possible to identify viruses using a wide range of methods. Traditional methods include electron microscopy, cell culture and infection of live organisms, as well as serological studies [10], but all they have their limitations. For example, many viruses are not able to be cultivated in

laboratory and can be characterized only by molecular methods [11], such as the use of hybridization microchips [12] and PCR [13].

Amplified products as the result of hybridization and PCR require final identification by sequencing. The limitation of these methods is the need to know the sequence of nucleotides before the study, which is not always possible.

Massive parallel sequencing or next generation sequencing (NGS), provides a high-performance analysis of huge amounts of data on the nucleotide sequences contained in a particular sample. So, it makes possible to identify all the nucleic acids of different organisms present in a sample and this hugely increases the possibilities of genetic researches.

Perhaps the most obvious application of these technologies is the sequencing of the genome. Although viral genomes are relatively small, but their scientific value is often extremely important, and this technology can be a highly effective way of obtaining the complete sequence of the viral genome.

This study made it possible to simultaneously obtain the complete genomes of paramyxoviruses of various serotypes using the method of massive parallel sequencing. It is known that wild ornithofauna plays a key role in maintaining APMV in the biosphere and is a potential natural source of the emergence of new dangerous variants of viruses.

Experimental researches on APMV-1 showed that wild birds can spread and introduce low- or non-pathogenic variants into poultry, which after a few passages *in vivo* become highly pathogenic [14]. For this reason, continued monitoring of the APMV in the wild is one of the most important tasks for ensuring the safety of poultry.

The obtained data on the complete genomes of paramyxoviruses using new technologies will allow us to expand our knowledge about the course of the natural evolution of viruses of migratory birds.

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ТҮЗ ҚҰСТАРЫНЫҢ ВИРУСТАРЫН ЗЕРТТЕУДЕ ЖАППАЙ БІР МЕЗГІЛДЕ СЕКВЕНДЕУ ӘДІСІН ҚОЛДАНУ

Аннотация. Вирустық патогендерді идентификациялаудың адам мен жануарлардың инфекциялық ауыруларын балаудағы маңызы зор. Соңғы екі онжылдықтағы қауіпті инфекциялардың барлығын дерлік жаңа вирустар шақырды. Олардың басым бөлігі табиғи резервуарларда туындады**.**

Серотүрі 1 парамиксовирусы (ПМВ) негізінде сынақтық зерттеулер, түз құстарының үй құстары арасына вирустардың әлсіз немесе зардапсыз нұсқаларын енгізуге және таратуға қабілетті екенін, олардың жиі жағдайда бірнеше пассаждан кейін бейім құстардың ағзасында зардаптылығы жоғары қасиетке ие болатынын көрсетті.

Жаңа, жаппай бір мезгілде секвендеу технологиясын қолдану нәтижесінде парамиксовирустар туыстатығына жататын түз құстары вирустарының генетикалық құрылымдары жайында мәліметтер алынды. Бір уақытта вирустардың қай туыстастық өкілі екенін алдын-ала білмей ақ, олардың толық геномын секвендеуге мүмкіндік беретін аса тиімді әдіс екені анықталды. Алынған мәліметтер жыл құстары вирустарының табиғи эволюциясы барысы жайында біздің біліміміздіе нығайтады.

Түйін сөздер: вирус, жаппай бір мезгілде секвендеу, жабайы құс, вирустың толық геномы, РНҚ, ДНҚ, биоинформатикалық талдау.

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ПРИМЕНЕНИЕ МЕТОДА МАССОВОГО ПАРАЛЛЕЛЬНОГО СЕКВЕНИРОВАНИЯ ПРИ ИССЛЕДОВАНИИ ВИРУСОВ ДИКИХ ПТИЦ

Аннотация. Идентификация вирусных патогенов имеет огромное значение для диагностики инфекционных заболеваний человека и животных. Почти все вспышки опасных инфекций последних двух десятилетий были вызваны новыми вирусами, большинство из которых происходили из природного резервуара.

Экспериментальные исследования на примере парамиксовируса (ПМВ) серотипа 1 показали, что дикие птицы способны распространять и заносить слабо- или непатогенные варианты в популяцию домашних птиц, которые через несколько пассажей в организме восприимчивых птиц зачастую приобретают высокопатогенные свойства.

С использованием новой технологии массового параллельного секвенирования получены сведения о генетической структуре вирусов диких птиц, принадлежащим семейству парамиксовирусов. Показана высокая эффективность метода, который позволяет одновременно секвенировать полные геномы вирусов без предварительного знания об их принадлежности к какому-либо семейству. Полученные данные позволят расширить наши знания о ходе естественной эволюции вирусов перелетных птиц.

Ключевые слова: вирус, массовое параллельное секвенирование, дикие птицы, полный геном вируса, РНК, ДНК, биоинформационный анализ.

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SENSITIVITY OF 2015 KAZAKHSTAN INFLUENZA VIRUSES TO CHEMOTHERAPY DRUGS

Abstract. One of the most important characteristics of influenza viruses is resistance to specific medicines. Practice shows that it is impossible to select an etiotropic antiviral drug effective against the whole variety of circulating viruses.

The purpose of this work was to study the resistance of the Kazakhstan strains of influenza virus to commercial chemotherapy drugs with different mechanisms of action. Studies were conducted on new isolates of the influenza A/H1N1 viruses isolated in 2015. Sensitivity to influenza drugs was assessed by the level of inhibition of reproduction of 100 EID_{50} (50% embryo infectious dose) of the virus by different drug concentrations in chick embryos.

It was established that the 2015 Kazakhstan strains of the influenza A/H1N1 viruses are sensitive to tamiflu and resistant to arbidol and ingavirin. With respect to remantadine, both sensitive and resistant variants have been detected among the viruses studied which indicates the heterogeneity of the influenza virus strains circulating in Kazakhstan. The results obtained indicate the need to monitor the epidemiological surveillance and study drug resistance in viruses – infectious agents.

Key words: influenza virus, chemotherapy drugs, anti-influenza agents, sensitivity, resistance.

Introduction. Acute respiratory viral infections (ARVI) and influenza are the most massive infections of mankind and represent a serious problem for public health. Influenza is in the first place among all human diseases in terms of social importance, huge damage to the health of the population and economy [1]. The share of influenza and ARVI accounts for 10-30% of temporary disability among the population. Influenza infection causes up to 40% of all adult diseases, more than 80% of all infectious pathology, more than 60% of diseases among children. Each year, seasonal epidemics result in about 3-5 million cases of serious illness and about 250-500 thousand cases of death [2].

The ability of the influenza causative agent to change constantly in the process of replication presents a serious problem for practical medicine and virology. Influenza viruses can acquire new properties even due to point mutations in the genome, which leads to an ineffective treatment. One of the most important characteristics of the virus is its resistance to specific drugs [3, 4].

Chemotherapy of viral infections, as a method of treatment, originates from the accidental detection of antiviral properties of the adamantane derivatives in the late 1960s. An extensive experience in the development and use of new agents for the treatment and prevention of viral infections has been accumulated for this time. In the case of influenza, it is recommended to use drugs that have a direct inhibitory effect on the virus reproduction, with different mechanisms of action. The most widely used etiotropic drugs are represented by four groups [5]:

- ion channel blockers (adamantanes, including remantadine);
- hemagglutinin(HA)-specific chaperone (arbidol);
- neuraminidase (NA) inhibitors (tamiflu (oseltamivir), relenza, peramivir);
- NP-directed inhibitors (ingavirin).

The purpose of this work was to study the resistance of the Kazakhstan new epidemically important influenza viruses to commercial chemotherapy drugs recommended for the treatment and prevention of influenza infection.

Materials and methods. The following Kazakhstan influenza A/H1N1 viruses, isolated in 2015, were used in the study: A/Aktobe/02/15, A/Atyrau/60/15, A/Atyrau/64/15, as well as reference strains stored in the laboratory collection: A/Kostanay/353/15, and A/California /04/09 pdm, A/Solomon Islands/03/06, A/New Jersey /8/76. The viruses were cultured in the allantoic cavity of developing 8-10-day chick embryos for 48 hours at 36 °C. Hemagglutination activity was determined according to a conventional technique on 96-well plates using a 0.75% suspension of chicken red blood cells [6]. The infectivity was calculated by the L. Reed and H. Mench method [7].

To determine the drug resistance of viruses, the effect of four commercial drugs (remantadine, tamiflu, arbidol, and indavirin) from various manufacturers in an active form was examined. Remantadine (Olainfarm, Latvia) was used in the form of rimantadine hydrochloride (alpha-methyltricyclo [3.3.1.1/.7] decane-1-methanamine); tamiflu (F. Hoffmann-La Roche, Switzerland) as oseltamivir phosphate (ethyl(3R,4R, 5S)-5-amino-4-acetamido-3- (pentan-3-yloxy) -cyclohex-1-en-1- carboxylate); arbidol (Pharmstandard-Leksredstva, Russia) as umifenovir hydrochloride monohydrate (6-bromo-5-hydroxy-1-methyl-4-dimethylaminomethyl-2-phenylthiomethylindole-3-carboxylic acid ethyl ester); ingavirin (Valenta Pharmaceuticals, Russia) as imidazolylethanamide pentanedioic acid.

Sensitivity of viruses to anti-influenza drugs was assessed by the level of inhibition of reproduction of 100 EID_{50} of the virus by different drug concentrations [8] in chick embryos. A drug dose suppressing the virus titer in the hemagglutination reaction twice compared to the control was considered inhibitory concentration (IC_{50}). Three independent experiments were carried out for every combination of the drug concentration and viral material in three chick embryos for each of them.

Results. To determine the drug resistance of the Kazakhstan influenza 2015 viruses, chemotherapy drugs with different mechanisms of action were used in non-toxic concentrations for chick embryos. The table presents the results of a study on the sensitivity of influenza viruses A/Aktobe/02/15, A/Atyrau/60/15, A/Atyrau /64/15 and A/ Kostanay /353/15 to antiviral drugs in comparison with the reference strains of the influenza A/H1N1 virus.

Study on the sensitivity of the Kazakhstan and reference strains of influenza 2015 A/H1N1 viruses to antiviral drugs

Strain	Inhibitory concentration*, mg/mL			
	Remantadine	Tamiflu	Arbidol	Ingavirin
A/Aktobe/02/15	6.3±0.4	3.1±0.3	does not inhibit	does not inhibit
A/Atyrau/60/15	3.5±0.3	13.0±0.1	does not inhibit	does not inhibit
A/Atyrau/64/15	3.9±0.7	7.2±0.2	does not inhibit	does not inhibit
A/Kostanay/353/15	does not inhibit	3.4±0.3	does not inhibit	does not inhibit
A/California/04/09 pdm	does not inhibit	3.5±0.02	does not inhibit	does not inhibit
A/Solomon Islands/03/06	6.4±0.02	3.4±0.02	does not inhibit	does not inhibit
A/New Jersey/8/76	12.65±0.2	6.25±0.1	does not inhibit	does not inhibit

*A drug concentration which causes a decrease in the reproduction of the virus in developing chick embryos by 2 times is indicated.

As can be seen from the table, the IC_{50} values against the West Kazakhstan viruses (A/Aktobe /02/15, A/Atyrau /60/15, A/Atyrau /64/15), as well as the reference variant A/Solomon Islands/03/06, were 3.50 to 6.4 mg/mL for remantadine. The A/Kostanay/353/15 strain, like the reference virus A/California/04/09 pdm, showed resistance to remantadine.

Reproduction of the A/Atyrau /60/15 strain was inhibited by the drug Tamiflu at a concentration of 13.0 mg/mL. Three other Kazakhstan influenza 2015 viruses, like the reference strains taken in the experiment, showed a high degree of sensitivity, since their reproduction was suppressed by the drug at low concentrations of 3.1 to 7.2 mg/mL.

All the viruses studied showed absolute resistance to the drugs Arbidol and Ingavirin.

Discussion. Practice shows that it is impossible to select an etiotropic antiviral drug effective against the whole variety of circulating viruses. As is known, remantadine is the most widely used drug among the adamantane series, which blocks M_2 protein and thus stops the regulation of pH level and disrupts the process of virus uncoating. Remantadine was the main drug for the treatment of influenza for more than 35 years. In the early 1980's, the first data on viruses resistant to this drug were published [9]. By 2006, the number of resistant strains had increased to 70-100% in various regions of the world, and later began to decline [10]. Data from numerous studies described in the literature confirm the resistance of the variants of the pandemic A/H1N1/2009 strain to the adamantane drugs [11].

The results of studying the sensitivity of the Kazakhstan strains to remantadine showed that the A/Kostanay/353/15 virus exhibited resistance like the reference variant A/California /04/09 pdm; in contrast, the strains A/Aktobe/02/15, A/Atyrau /60/15, and A/Atyrau/64/15 were found to be sensitive to this drug. This may be one of the major signs of the heterogeneity among the population of influenza viruses circulating in the Republic.

Inhibitors of influenza virus neuraminidase (tamiflu, oseltamivir) are used in clinical practice since the late 1990s, when more than 80% effectiveness of the drug has been shown [12, 13]. They interact with the active center of the enzyme and are competitive inhibitors, disrupting the penetration of viruses into the cell and budding of mature virions from the membranes of infected cells. Use of oseltamivir shortens the average duration of disease by 37%, diminishes the symptom manifestation in 30-38%, and reduces the incidence of influenza-related complications by 67% and complication-associated mortality in high-risk patients by 71% [10]. At the same time, the influenza virus demonstrates a high potential for the development of oseltamivir-resistant strains. For example, resistance to this drug has reached 95-100% by 2007-2009 [14].

At the present time tamiflu is effectively used in the treatment of influenza, because the currently circulating strains related to the pandemic 2009 virus, resistant to remantadine, retain sensitivity to tamiflu. At the same time there are reports on the detection of oseltamivir-resistant pandemic variants of the influenza A virus [15]. In the conducted studies, tamiflu was effective against all viruses taken in the experiment, both reference and Kazakhstan.

In the literature there are a number of references to the effectiveness of arbidol against influenza viruses and absence of resistant strains [16]. The mechanism of action of this drug lies in the violation of conformational changes in the second HA subunit, necessary for penetration through the endosomal membrane, which leads to disturbances in the reproduction of the virus at a stage of the virion assembly [17]. During the work with the Kazakhstan isolates of the influenza virus, those sensitive to arbidol and ingavirin were not detected among them.

Drug resistance in viruses is the result of changes in hereditary properties [18] and develops with repeated administration of drugs [19, 20]. There are described cases of isolation of resistant strains from the samples obtained from patients who had not previously taken specific antiviral agents, which can be explained by the transmission of such strains from person to person [16]. The stability of influenza viruses is caused by mutations in that viral protein, which is the target of the drug action [21, 22].

Drug resistance poses a threat to the effective prevention and treatment of influenza infection, since resistant pathogens are not amenable to standard therapy, which leads to a prolonged course of the disease, increased health care costs, and the risk of death. Patients remain infectious for a longer time, which increases the risk of spreading the viruses among other people.

Conclusions. The study on the resistance of Kazakhstan strains of 2015 influenza viruses to commercial chemotherapy drugs showed their sensitivity to tamiflu, and resistance to arbidol and ingavirin. With respect to remantadine, both sensitive and resistant variants have been detected among the viruses studied, which indicated the heterogeneity of the influenza virus strains circulating in Kazakhstan. The research findings indicate the need to monitor epidemiological surveillance and study drug resistance in viruses.

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2015 Ж. ҚАЗАҚСТАНДЫҚ ТҰМАУ ВИРУСТАРЫНЫҢ ХИМИЯЛЫҚ ПРЕПАРАТТАРҒА СЕЗІМТАЛДЫҒЫ

Аннотация. Тұмау вирусының маңызды сипаттамаларының бірі – препараттарға қарсы төзімділігі. Тәжірибеде көрсеткендей, айналымдағы барлық вирус түрлеріне этиотропты вирусқа қарсы дәрілік препараттарды тиімді таңдау мүмкін емес.

Жұмыстың мақсаты коммерциялық химиялық препараттарға қатысты Қазақстандағы тұмау вирус штаммдарының тұрақтылығын зерттеу. Зерттеулер 2015 жылы оқшауланған A/H1N1 тұмауының вирусының жаңа изоляттарына жүргізілді. Вирусқа қарсы дәрілерге сезімталдығын тауық эмбриондарында препараттардың әртүрлі концентрацияларымен вирустардың 100 $ЭИД_{50}$ репродукциясын төмендету деңгейі арқылы бағаланды.

2015 ж. Қазақстандық A/H1N1 тұмау вирус штаммдары тамифлюге сезімталдығы және арбидолмен ингавиринге тұрақтылығы анықталды. Ремантадинге қатысты зерттелген вирустардың арасында сезімталды және төзімді нұсқалары анықталды, бұл дегеніміз Қазақстан айналымдағы тұмау вирус штаммдарының біркелкі емес екеніндігін көрсетеді. Нәтижелер эпидемиологиялық қадағалауды бақылау және вирустық жұқпалы агенттердің дәрілік төзімділігін зерттеудің қажеттілігін көрсетеді.

Түйін сөздер: тұмау вирусы, химиопрепараттар, тұмауға қарсы дәрілер, сезімталдық, тұрақтылық.

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ЧУВСТВИТЕЛЬНОСТЬ КАЗАХСТАНСКИХ ШТАММОВ ВИРУСОВ ГРИППА 2015 г. К ХИМИОПРЕПАРАТАМ

Аннотация. Одной из важнейших характеристик вирусов гриппа является резистентность к специфическим лекарственным средствам. Практика показывает, что невозможно подобрать этиотропный противовирусный препарат, эффективный против всего многообразия циркулирующих вирусов.

Цель настоящей работы состояла в изучении резистентности казахстанских штаммов вируса гриппа по отношению к коммерческим химиопрепаратам различного механизма действия. Исследования проводили на новых изолятах вируса гриппа A/H1N1, выделенных в 2015 г. Чувствительность к противогриппозным средствам оценивали по уровню подавления репродукции 100 $ЭИД_{50}$ вируса различными концентрациями препаратов в куриных эмбрионах.

Установлено, что казахстанские штаммы вируса гриппа 2015 г. A/H1N1 чувствительны к тамифлю и устойчивы к арбидолу и ингавирину. По отношению к ремантадину среди исследованных вирусов обнаружены как чувствительные, так и резистентные варианты, что свидетельствует о неоднородности циркулирующих в Казахстане штаммов вирусов гриппа. Полученные результаты указывают на необходимость проведения мониторинга по эпидемическому надзору и изучения лекарственной устойчивости вирусов – возбудителей инфекционных болезней.

Ключевые слова: вирус гриппа, химиопрепараты, противогриппозные средства, чувствительность, резистентность.

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HIGH-SENSING DETECTING SYSTEMS FOR X-ray FLUORESCENCE SPECTROMETER

Abstract. In this paper, the characteristics of the signal produced by the action of X-ray radiation on silicon detectors are considered. The electronic scheme of a detection system based on a silicon-lithium p-i-n detector for an X-ray fluorescence spectrometer is proposed. To extract the signal from the detector, a charge sensitive preamplifier was designed on the basis of an operational amplifier. The charge sensitive preamplifier is fully compatible with the Si (Li) strip detector operating in the signal frequency range close to 12.5 MHz. Also, the calculation of the signal frequencies of the detector is proposed, taking into account the size of the detector and stripe contacts. The resulted electronics and calculations are useful for manufacturing of an industrial detecting system based on Si (Li) detectors.

Keywords: detector electronics; filters, signal generation in silicon detectors.

Introduction. Nowadays, the mining and metallurgical complex is one of the basic parts of industries. In the modern world, analyzers that determine the chemical composition of a substance are widely used in mining and metallurgical industries. X-ray fluorescent system has a number of advantages among the analyzers of elemental composition. These include simplicity of analysis and sample preparation, the possibility of conducting both qualitative and quantitative analysis, a short analysis time, the definition of a wide range of elements and ranges of their concentrations. Special mention should be made of the advantage of the X-ray fluorescent method of analysis, such as the rapid analysis of petrogenic elements (Si, Al, Ca, Mg, S etc.). Therefore, improving the sensitivity of devices receiving data on useful minerals is one of the main priorities of instrumentation. An important part of the spectrometer is the sensitivity of the detector and the high stability of the output signals in spectrometers. Such systems based on semiconductor detectors are widely used by X-ray fluorescence spectrometers to determine the real composition of geological samples [1, 2]. Compared to other similar detectors, silicon-lithium detectors have the following advantages: high energy resolution; linearity of signals over a wide range of energies for particles of different types; lack of sensitivity to magnetic fields; stability and small overall dimensions [3-12]. Despite the fact that such systems were invented and put into operation for a long time, the versatility of using different types of silicon detectors makes them relevant for development and research to date.

For the successful operation of detection systems, it is very important to construct suitable electronics, since detection of signals using silicon band detectors is complex. This is due to the following characteristics of the detectors: small multichannel signals, pending intelligent electronics for signal detection (high gain and noise suppression), leakage current (DC)

In [13-15], electronic parts of multichannel silicon detectors were considered. As the analysis of the results of these studies shows, one of the important parts of the system is a filter for extracting signals from the detector.

In this paper, it is proposed to calculate the charge amount, and to develop an electronic signal filter for these detectors. The work is devoted to signal modeling and designing a charge sensitive preamplifier-circuit based on an operational amplifier for X-ray fluorescence analyzer systems. As detector of the system it was used Si (Li) detector.

Methods and experiment. Development of Si (Li) p-i-n structures with a diameter of the sensitive region of ~ 50-50 mm and a thickness of >1.5 mm is a technological challenge. In particular, it is necessary to create a sufficiently extended, uniformly lithium compensated sensitive region. To obtain these characteristics of a large-size silicon detectors, parameters such as temperature, diffusion annealing time, voltage values, and drift conductivity are important. Detectors which obtained with this method with an operating voltage U_{rev} = 100-500 V, at room temperature has a value of I = 0.5-1 μA, the value of the dark current, and has an R = 5 kΩ resistivity. The working area of the detector has metal contacts Au (200 Å).

To successfully reading of the detector signals, it is needed to create a suitable charge sensitive preamplifier. For this purpose, a charge sensitive preamplifier was designed on the operational amplifier which is shown in figure 1.

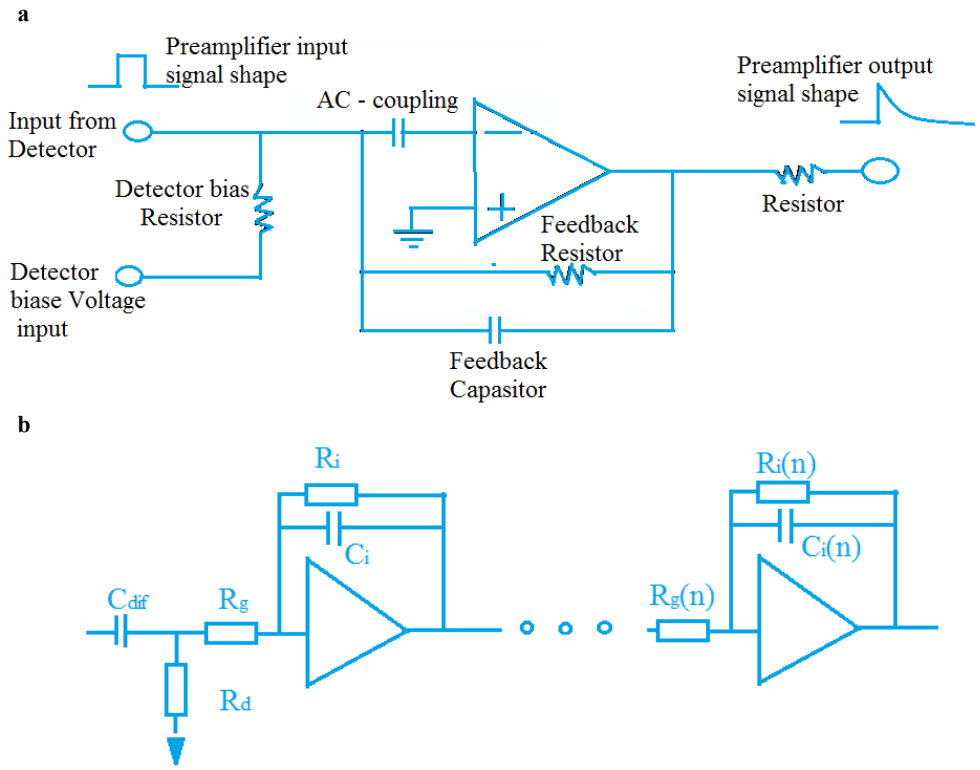

Figure 1 –
a – schematic diagram of the charge sensitive preamplifier based on the operational amplifier;
b – block diagram of the shaper with a single differentiation and n-fold integration.

The first stage of the circuit for the silicon detectors is a preamplifier designed to integrate the electric charge received from the sensor and to amplify the voltage. This is the most important unit, because it determines the overall sensitivity of the system. The preamplifier consists of an operational amplifier configured as a charge sensitive amplifier. The charge sensitive amplifier uses a negative feedback network with a capacitor and a resistor.

A high impedance for the preamplifier is used to bias the detector signal. The sensor is connected to the input of the preamplifier via a coupling capacitor. This capacitor isolates the preamplifier input from any DC bias that can lead to saturation, as well as from the leakage current of the sensor. Thus, a signal is generated.

The charge sensitive amplifier and shaper, which includes the signal transmission lines between the channel blocks, is exposed to various noise and interference. The total fluctuations of the signal in the channel are made up of two components:

– fluctuations of the signal proper, arising during its formation,

– electrical noise of the channel circuit elements, independent of the signal.

Fluctuations of the signal itself due to the probabilistic nature of the formation and collection of electron-hole pairs in the silicon detector have a distribution close to the Poisson distribution, and its width N_{eh} is half the maximum value with sufficient accuracy:

$$N_{eh} = 2.35 * \sqrt{E * \varepsilon * F} \quad (1)$$

where E is the energy loss in the detector, ε is the average energy of formation of one electron-hole pair in silicon, F is the Fano factor equal to 0.12 for silicon.

Let us return to Fig. 1 and consider the operation of the channel from the bandpass filter. A short current pulse produced by an ionized particle charges the capacitance of the detector Cd and the feedback capacitance $C_f = C_{fb}$. This leads to a voltage jump at the output of the amplifier:

$$\Delta U = \frac{Q}{C_{fb} + \frac{C_d}{k}} \quad (2)$$

where k is the loop gain of the preamplifier, Q is the charge in the detector. The rising edge ΔU is determined by the time of charge collection, the speed of the preamplifier and its load, and the decay is the type of the discharge circuit. In the discharge circuit of the feedback capacitance, a high-resistance resistor is most often used (figure 1), less often a digit key [16]. The minimum possible preamplifier front is determined by the acquisition time of the carriers. The mobility of electrons in silicon is $\mu_e = 1250$ cm^2/(V·s), for holes $\mu_p = 450$ cm^2/(V·c). The carrier velocity is $v = \mu \cdot E_f$, where E_f is the electric field strength. Obviously, the collection time depends on the thickness of the detector and is 10-20 nanoseconds for the most common detectors with a detector thickness of 300-400 microns and an operating voltage of -100V. The second factor is the input time constant of the charge sensitive amplifier [17] $\tau_{in} = C_d \cdot R_{in}$ where the input resistance is:

$$R_{in} = \frac{C_{in}}{g_m * C_{fd}} \quad (3)$$

where g_m is the steepness of the input stage, C_{in} is the input capacitance of the preamplifier. The input resistance of the preamplifier is purely resistive and low impedance, so τ_{in} is usually comparable with the time of collection of carriers. The main factor of speed, as experience shows, is the frequency band of the preamplifier, determined from its first pole. Further shaping of the signal and its filtering from noise is performed by the shaper.

The signal conditioning in time and noise filtering is performed by the shaper with the transfer function K (S).

Let us consider in detail the types of shapers most often used for silicon detectors. Since the use of silicon detectors in high-energy physics implies, as a rule, multichannel reading electronics and, as a result, minimization of its size and consumption, the use of very complex shaping chains is not advisable. Let us consider the most frequently used schemes of shapers. The most common type of shaper is the so-called CR- $(RC)^n$ shaper. Its transfer function k (s) without taking into account the signal inverting by the links of the shaper has the form:

$$k(s) \frac{s * \tau_d}{1 + s\tau_d} * \left(\frac{k}{1 + s * \tau_i}\right)^n \quad (4)$$

where τ_d is the time constant of differentiation, τ_i is the integration time constant, k is the amplification factor compensating for the amplitude loss. Usually the shaper is implemented according to the scheme shown in figure 1-b.

Results and discussion. Taking into account the above parameters, it is possible to estimate the total capacitance of a detector with a reverse bias of Cr and an interband capacitance Cs and a volume capacitance Cb [16]. The meaning of the experimental data of Cb is Cb = 300 pF [10]. Cs can be found from this expression:

$$C_s = 2 * (w + L)\left(0.03 + 1.62\frac{w+20}{p}\right)\left[\frac{pF}{cm}\right] \quad (5)$$

where L is the length, and w is the width of the bands, and p is the step. The total capacitance Cr = Cb + Cs = 330 pF. The resistance of the metal electrodes is $R = \rho L/w \cdot t$, where $\rho = 2.44$ μΩ·cm is the resistivity, t is the thickness, for this p-i-n detector R = 0.1 Ω.

From these calculations it can be said that radiation conditions and detector geometry play a key role for the output signal of the detector, and the total working area of the detector determines the frequency of the detector signals. For example, the current density in the bright detector field can be 0.1 nA/cm^2, it gives 160 ns between the events of electrons per cm^2 of the working region [18]. In our case, the active working area is 40 mm x 5 mm = 2 cm^2, so the electrons will affect on detection contact every 160/2 = 80 ns. From the above calculations, we can say that the electronics of the proposed detector operates at a frequency f ≥1/80 ns or 12.5 MHz.

In order to the charge sensitive amplifier to act as a current integrator, the values of the feedback resistor and the capacitor of the charge sensitive amplifier should be chosen so that the time constant should be high. At the same time, the total input capacitance must be low to minimize noise, so the feedback capacity should be small. However, this value is set according to the capacitance of the sensor, and therefore, must be large enough to minimize the cross-linking between contacts. On the other hand, to minimize thermal noise, a high feedback resistance is required.

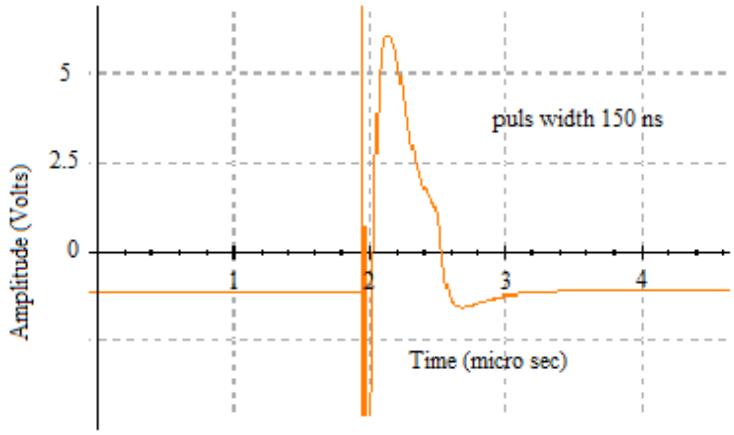

Figure 2 – Voltage at the output from the shaper when the preamplifier pole is compensated for the input pulse from the preamplifier with the resistor in the discharge circuit and withk=1, n=1, T=t/ τ, τ= $\tau_d = \tau_i$

Voltage from the output of the shaper defines by expression:

$$U_{out}(s) = \frac{\tau_{fb}}{1+s*\tau_{fb}} \qquad (6)$$

with κ=1, n=1.

It is seen from figure 2 that the recovery time of the baseline sharply increases, in comparison with the recovery of the shaper after the action of a single voltage pulse.

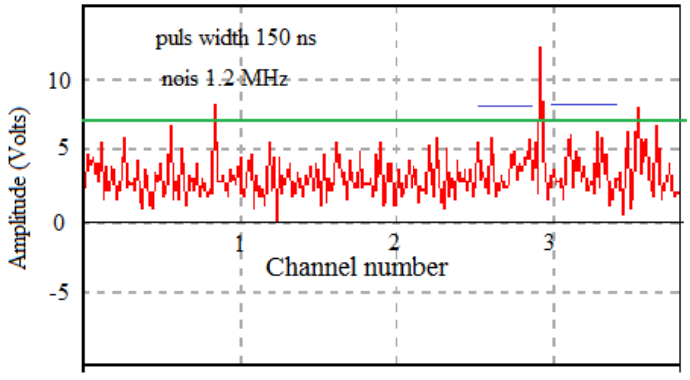

Figure 3 – Spectrum of preamplifier output signal

Figure 3 shows the output signal spectrum of the preamplifier. A bandwidth preamplifier passes a certain frequency range by cutting off a lower frequency and cuts a higher frequency. It is clearly seen from figure 3 that the preamplifier passes the peak frequency of 12.5 MHz with a capture width of $4 \cdot 10^{-7}$ sec.

Next, an electronic circuit can be described which, together with the Si detector, must provide a narrow digital pulse each time the electron acts close to the corresponding band. Fig.4. shows the functional blocks of a typical front circuit used with semiconductor detectors, where the detector converts the energy of the incident radiation into electrical pulses, which are amplified by the preamplifier and generated by the signal processing unit, also called the shaper.

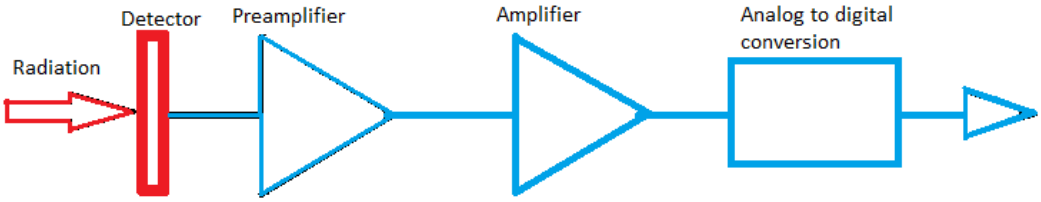

Figure 4 – Operational electronic block of X- ray detecting system

The amplification circuit has the task of increasing the signal-to-noise ratio (SNR), which is achieved by limiting the bandwidth and which, in turn, changes the time characteristic (shape) of the pulse[19, 20]. Therefore, there is a tradeoff between the SNR and the speed of the system. The final block in figure 4 is used to digitize the analog pulse for further processing and/or data transfer.

Conclusion. In the work it was determined that the output of the silicon p-i-n detector is in the region of 12.5 MHz with a capture width of $4 \cdot 10^{-7}$ sec. Also, considering the foregoing considerations, it can be said that the bias voltage sources of the detectors should have a low level of noise and interference, especially in the low-frequency region, since the charge sensitive amplifier for this type of noise is a low-pass filter. Contacts of detectors should have low impedance, much lower than the noise resistance of the input stage, determined by the steepness of its first transistor. The parallel noise of the discharge resistance of the charge sensitive amplifier has a maximum if the feedback time constant is equal to the formation time of the shaper.

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РЕНТГЕНДІК ФЛУОРЕСЦЕНТТІК СПЕКТРОМЕТРЛЕРГЕ АРНАЛҒАН АСА СЕЗГІШ ДЕТЕКТОРЛЫҚ ЖҮЙЕЛЕР

Аннотация. Жұмыста кремнийлік детекторлердегі рентгендік сәулелену арқылы алынатын сигналдардың сипаттамасы қарастырылған. Рентгендік флуоресценттік спектрометрге арналған кремний-литийлік p-i-n детоктор негізіндегі детекторлік жүйенің электронды сұлбасы ұсынылады. Сигналды детектордан алу үшін операциялық күшейткіш негізіндегі екінші ретті жолақты фильтр жобаланды. Фильтр, сигналдың 12.5 МГц-ке жақын жиілік диапазонында жұмыс жасайтын стриптік Si(Li) детектормен толығымен сәйкес келеді. Сонымен қатар, жұмыста детектор мен стриптік контактілердің өлшемін ескере отырып, детектор сигналының жиілігінің есептеуі келтірілген. Келтірілген электроника мен есептеулер стриптік детекторлер негізіндегі өндірістік детекторлік жүйелерді жасауда пайдалы болып табылады.

Түйін сөздер: детектор электроникасы; фильтрлер, детекторде сигналды генерациялау.

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ВЫСОКОЧУВСТВИТЕЛЬНЫЕ ДЕТЕКТИРУЮЩИЕ СИСТЕМЫ ДЛЯ РЕНТГЕНОФЛУОРЕСЦЕНТНОГО СПЕКТРОМЕТРА

Аннотация. В работе рассмотрен характеристики сигнала, создаваемого воздействием рентгеновского излучения в кремниевых детекторах. Предлогается электронная схема детектирующей системы, на базе кремний-литиевого p-i-n детектора для рентгенофлуоресцентного спектрометра. Для извлечения сигнала от детектора был спроектирован полосковый фильтр второго порядка на основе операционного усилителя. Фильтр полностью совместим с Si(Li) стриповым детектором, работающем в диапазоне частот сигнала близко к 12.5 МГц. Также, в работе предложен расчет частот сигнала детектора, учитывая размер детектора и стриповых контактов. Приведенная электроника и расчеты полезны для изготовления промышленной детектирующей системы на основ Si (Li) стриповых детекторах.

Ключевые слова: электроника детектора; фильтры, генерация сигналов в детекторе.

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BODY CONDITION SCORING OF YOUNG BEEF CATTLE OF DIFFERENT GENOTYPES AND ITS RELATION WITH LIVE WEIGHT AND PRODUCTIVITY

Abstract. For the profitable production of beef, it is not enough to have the animals differing in high productivity and quality forages in sufficient quantity. The main task at the production of beef is the correct organization of their rational use. In production groups, animals have different live weight, and norms of feeding of the beef cattle are calculated generally only taking into account their live weight. It is the wrong approach as animals in group can have identical live weight and have various need for energy depending on a body condition. In other words, norms of animals feeding have to be corrected not only depending on live weight, but also taking into account their body conditions. The regrouping of animals depending on body condition becomes necessary reception in technological process of beef production. It will allow to save expensive forages as in the structure of prime cost of beef the big share of expenses is the share of forages (about 60%). The aim of the researches – to define interrelation of live weight with body condition scoring of young stock, to reveal to what extent the live weight changes when the body condition is corrected by 1 point, and to adjust the feeding norms, depending on the animals body conditions. Researches were conducted on young animals of Hereford and Kazakh whiteheaded breeds. For carrying out researches, the method of the correlation, regression and statistical analysis were used. During the researches, it is defined that between the live weight and body condition scoring of animals, the high positive correlation is established (r = 0.74-0.76 for Hereford and r = 0.81-0.79 for the Kazakh white-headed breed). It has allowed to define regression coefficients between signs. It is established that an increase in body condition scoring on 1 point increases the live mass of young stock of Hereford breed on 26.1-26.7 kg, and in calves of the Kazakh whiteheaded breed – on 28.9-32.2 kg which made it possible to determine the necessary changes in the feeding level towards the increase for the young stock of the Hereford breed with 1 point in body condition scoring on 2.45 and 2.67; 2 points on 1.84 and 2.00; 3 points on 1.22-1.33; 4 points on 0.61-0.67 EFU, respectively, for heifer calves and bull-calves. For young stock of the Kazakh whiteheaded breed, these values were: 2.56 and 2.84; 1.92 and 2.13; 1.28 and 1.42; 0.64 and 0.71 EFU. Thus, researches show that observation of body condition of young stock, division of animals into groups with various body conditions and the organization of feeding, depending on body conditions, are necessary receptions for the achievement of economic efficiency at growing of young stock.

Keywords: young beef cattle; Hereford and Kazakh whiteheaded breeds; body condition score; live weight; feeding level.

Introduction. Without knowledge of the nature of development and growth of the body, it is impossible to consciously control the growth and development of animals and to make the most of their breeding.

The management of the herd is in charge of managing the growth and development of the organism. Management is the unifying factor in the organization of production, the correct and prompt solution of management issues on the farm ensures successful production and achievement of high economic indicators. In the past, the poor development of herd management became the main cause of the economic failures of many fattening farms. In Russia, GOST "Cattle for slaughter. Definition of body conditions" is used for determining the body conditions of livestock. They use it when animals are handed over to the meat-packing plant when it is already impossible to do something to improve the body condition of the cattle. Fatness must be determined directly during the fattening period, and on its basis, if necessary, take a quick decision to improve feeding.

In order to effectively manage the herd, it is necessary to have a reliable tool for assessing the body condition of beef cattle, which would allow to make rapid decisions on changes in the livestock feeding program [1, 2]. All rates of feeding young beef cattle are developed depending on the live weight and productivity. Such a tool can be a body condition scoring young beef cattle, which is closely related to live weight and productivity. We used a 5-point nutritional assessment system to assess the fatness of the young stock, although many researchers suggest using a 9-point system [3-6].

In our opinion, to evaluate the fatness of meat cows, a 9-point assessment system should be used, and a 5-point system is sufficient to assess the body condition of the young animals. To substantiate the approach to the solution of the problem, we determined the correlation coefficients between the body condition scoring of young animals, the live weight and the productivity of the young stock. Having discovered a high positive rectilinear connection between these signs, the coefficients of regression between the live weight, productivity and fatness of the young stock were determined.

Animals with unequal heredity and individual characteristics, strict selection by age, live weight and body conditions, respond differently to the conditions of feeding, maintenance and exploitation. This is due to the different genetic potential driven by the different heredity of the organism. Despite the careful selection of animals into groups by age, weight and fatness, each individual, due to unequal heredity and individual characteristics, will react differently to the conditions of feeding and maintenance. However much the breeders try to create the same conditions for all animals, they will differ in speed of growth among themselves. Our research, conducted earlier on meat cows, showed that the duration of pregnancy of the early ripening Angus breed was 272-273 days, while in the Limousine breed, as a longer growing, the period of intrauterine development was 278-280 days, and within the groups the difference in the birth dates of calves reached up to 29 days. This example shows that even during the intrauterine development period, animals differ in growth rate [2].

Young stock with low energy of growth, at the age of 15-20 months, lags 28-31% behind its peers in live weight. Such animals in the group usually have 4-8% of the number of all animals. Growing laggards in the growth of animals lead to a surplus of feed, a decrease in the intensity of growth of other animals, an increase in feed costs per unit of output and a rise in the cost of production and, as a consequence, a decrease in the economic efficiency of production. Animals lagging behind in growth should be discarded during cultivation, without waiting for the end of the fattening cycle.

Therefore, animals in the herd will grow with varying intensity and have different body conditions. The fatness of livestock is understood as the reserves of nutrients and energy reserves deferred in the body in the form of fat. It depends on many factors: on the feeding level of animals, on age, physiological condition, breed and other factors. Fatness has a great influence on the animal's live weight, the amount of pulp in the carcass of beef, the amount of internal fat and important body functions (reproductive abilities, organism resistance and others). Many researchers note that with an increase in the fatness of livestock, the mass of carcass meat, the yield of carcass, the mass and yield of internal fat, the slaughter weight and the slaughter yield are increased [2, 7, 8].

J. Whitey, In Stephens V., Weaver D. claim that the mass of cows, without the contents of the fore-stomachs, with 3 points of body condition scoring has a live weight of 382 kg. With an increase in fatness to 9 points, the live weight reaches 519 kg, that is, it increases by 1.36 times. This is due to the increase in fat and its relative percentage [12].

Many researchers argue that the live weight of animals largely depends on the state of fatness of livestock [9, 10, 12]. But, it should be noted that the live weight cannot be the only criterion for assessing the fatness of cattle and energy reserves in the animal's body, since the live weight itself depends on many

factors, e.g., on the fullness of the scar, the timing of the pregnancy of the cow. Animals with the same live weight can have different fatness, while animals with the same fatness can have completely different live weight [16].

In his studies, Parsons S.F. shows the dependence of the animal body condition on the thickness of subcutaneous fat [12].

The criterion for assigning an animal to one or another category of livestock fatness is the level of development of muscle tissue and the amount of deferred subcutaneous fat. Calves up to three months old have a small number of fat cells. With age, their number increases, and they form solid fat accumulations.

In the earliest stages, fat is the only part of the muscles and is not deposited as a separate tissue. Fatty tissue with age is deposited on the kidneys and in the omentum. Subsequently, lipid tissue begins to occupy a place among the muscle fibers. Depositing fat between the muscle fibers gives the meat a "marbling" degree. In early ripe specialized breeds of beef cattle, intermuscular fat is deposited more than in dairy or combined breeds of cattle.

The next stage, depending on the breed, is the accumulation of fat under the skin in a loose connective tissue. This gives the well-fed cattle a rounded shape. The deposition of subcutaneous fat in cattle when fattening begins with the back of the body - from the base of the tail, ischial tuberosity, knee folds, pelvis, waist, dewlap, etc. [16].

It is known that the number of muscle fibers is laid in the period of embryonic development, and in the postembryonic period of the animal, the increase in the musculature occurs only due to the enlargement of the muscle fibers. Their number after birth does not change, they become thicker and longer. In addition, it was found that the diameter of the muscle fibers depends on the state of fatness of cattle. A well-fed one-year-old calf can have the same thickness of muscle fibers with an old, depleted cow. If the conditions of feeding worsen, the diameter of the fibers decreases and in exhausted animals can be restored to normal size in a condition that the feeding is improved [20].

Since fat tissue plays a diverse role in the body of animals, the body condition of livestock is of great importance for maintaining health, reproductive functions and productivity. In the accumulation of fat in the body there is a well-known sequence of deposits on different anatomical parts. In young animals in the initial fattening period, fat tissue is deposited on the internal organs and between the muscle bundles, then accumulation takes place in the subcutaneous tissue, and at the end of the fattening period in young animals and in older animals, fat is deposited in muscle tissue.

With the deposition of fat in different anatomical areas, there is a certain proportionality. Accumulation of fat in one part is accompanied by an increase in fat in other places. Therefore, the determination of the sequence of adipose tissue deposition gives an idea only of the changes in the correlation of certain proportions.

Intermuscular fat is localized in loose connective tissue in the form of accumulations between individual muscles and group of muscles. Fatty tissue accumulates around large blood vessels and nerves, performing a protective function for them. Intramuscular fat is deposited in separate muscles between the fibers and enters the structure of the cells themselves. Intramuscular fat loosens the bunches of muscle tissue, and this fat determines the "marbleness" of the meat.

Subcutaneous adipose tissue is localized in large numbers around the tail head, on heads of femur, ischial tuberosity, waist, sides along the ribs, behind the shoulder blades, in the pelvic area, on the sternum. Sometimes the deposition of fat reaches a thickness of 4-6 cm or more. Between the time of deposition of lipid tissue and the development of the body, there is a direct link. Knowledge of such regularities made it possible to develop a system of body condition scoring of cattle. Fat deposition prevails in those areas where there is intensive growth in the period after birth [20].

Our research justifies the need to use correlation and regression coefficients between live weight, productivity and system of body condition scoring of young beef cattle to adjust the level of feeding in order to achieve the desired fatness and fodder saving.

The studies were commissioned by the Ministry of Agriculture of Russia at the expense of the federal budget in 2016 as part of the research work of the FSBEI HE "Samara State Agricultural Academy" on the theme "Development of the practice guide on the body condition scoring of beef cattle and its application in herd management".

The aim of this work is to determine the relationship between the body condition scoring of young beef cattle with live weight and the regression coefficient, followed by the use of regression coefficients to calculate changes in the feeding program of young animals.

Scientific novelty. In the course of the studies, the relationship between the body condition scoring and the live weight of young stock of different breeds was revealed for the first time, which allowed to determine the regression coefficients and to calculate the changes in the feeding level of the young animals to achieve the desired live weight and fatness at growing process.

Materials and methods. The material for the study was the young stock at the age of 7 months. The studies were carried out during the annual complex assessment of beef cattle (bonitation) in 2016 in "K.Kh. Polyanskoye" OOO of the Samara region. The object of the study was the relationship between the body condition scores, the live weight and the productivity of young beef cattle [26].

To substantiate the use of the body condition scoring for herd management, the relationship (correlation coefficient and regression coefficient) between the live weight, the average daily gain, and the fatness of the young stock were determined. The correlation coefficient was calculated as a phenotypic correlation for a large sample. The regression coefficient was determined as the product of the correlation coefficient by the quotient of dividing the standard deviation of one characteristic by the standard deviation of another characteristic. For the experiment, four groups of animals were formed from 66 heifer calves and 44 bull-calves of the Hereford breed, 32 heifer calves and 50 bull-calves of Kazakh whiteheaded breed. The fatness of livestock was determined by visual inspection of animals and by palpation, according to the 5-point scale for body condition scoring of young beef cattle.

Biometric data processing is carried out according to the generally accepted methodology [27].

The results of the research and their discussion. During the experiments, correlation and regression coefficients were determined between the live weight of young animals, the average daily gain and body condition of young animals estimated in points. For the determination of the regression coefficient, the correlation coefficient was used, the correlation determinations were the variability of each trait under study.

The live weight, the body condition scoring, the productivity of the young stock and their variability were determined with regard to the sex of the animals.

According to the live weight, the bulls of the Kazakh whiteheaded breed leave behind their Hereford herdmates on 16.7 kg, (7.96%) and heifer calves - on 9.8 kg (4.85%). The greatest variability of live weight was observed in the group of bulls of Hereford breed - 12.0%, in bulls of Kazakh whiteheaded breed - 11.8% (table 1).

Table 1 – Variability of live weight and body condition scoring of young animals

Indicator	Breed			
	Hereford		Kazakh whiteheaded	
	bulls	heifer calves	bulls	heifer calves
Live weight (M), kg	210.0	202.0	226.7	211.8
root-mean-square deviation (σ), kg	25.2	20.2	27.1	22.8
Coefficient of variability (C_v), %	12.0	10.0	11.8	10.8
Error of arithmetical mean, kg	4.40	3.40	4.90	4.90
Body condition scoring	4.5	4.2	4.5	4.1
root-mean-square deviation (σ), point	0.51	0.30	0.50	0.44
Coefficient of variability (C_v), %	11.6	9.8	11.6	10.7
Error of arithmetical mean, point	0.11	0.09	0.10	0.14

Among the heifers of the Kazakh whiteheaded breed, the coefficient of variability was greater. This indicates that the Kazakh whiteheaded breed is less consolidated by the traits under study.

The bulls were the most well-fed, they had the same body condition scoring in both breeds – 4.5 points, with the same coefficient of variability, while the fatness of the heifers was slightly lower,

4.2 and 4.1 points, respectively. Variability in the group of Kazakh whiteheaded breed was higher than that of Hereford breed by 1.1%.

A study of the coefficient of correlation and regression between body condition and live weight of young animals showed a high degree of rectilinear interdependence of symptoms (table 2).

Table 2 – Coefficients of correlation and regression between body condition and live weight of young animals

Indicator	Breed			
	Hereford		Kazakh whiteheaded	
	bulls	heifer calves	bulls	heifer calves
Correlation coefficient (r)	0.74	0.76	0.81	0.79
Regression coefficient (R)	26.7	26.1	32.2	28.9
Accuracy of the correlation coefficient (td)	0.999	0.999	0.999	0.999
Accuracy of the regression coefficient (td)	0.999	0.999	0.999	0.999

In all cases, the correlation coefficient was high, positive and rectilinear, within the limits of 0.74 to 0.81. This is the reason to use it when determining the regression coefficient. It is established that when the fatness of animals changes by one point their live weight changes by 26.1-32.2 kg.

Knowing how much energy feed units are required per kilogram of growth of live weight, it is possible to calculate and make adjustments to the feeding program of young animals taking into account their fatness.

Coefficients of correlation and regression had a high degree ($P>0.999$) of certainty. In the course of the studies, the level of the young stock productivity and the coefficient of correlation and regression between the average daily gain and body condition of cattle were also determined.

Analysis of the performance of young animals (table 3) indicates that they were not high enough in both groups. This can be explained by the fact that the young animals were grown in summer without feeding with concentrated fodder. The bulls of the Kazakh whiteheaded breed differed by the highest productivity among young animals - 858.5 g, which is 7.7 g more than in bulls of Hereford breed with an unreliable difference in the indexes taken into account ($P<0.95$).

Table 3 – Average daily gain and its variability

Indicator	Breed			
	Hereford		Kazakh whiteheaded	
	bulls	heifer calves	bulls	heifer calves
Average daily gain, g	850.8	791.8	858.5	767.7
Root-mean-square deviation (σ), g	112.3	83.9	117.6	96.7
Coefficient of variability (C_v), %	13.2	10.6	13.7	12.6
Error of arithmetical mean, g	17.7	16.1	17.1	20.0

Among the heifer calves, the productivity was higher for the representatives of Hereford breed - 791.8 g, which is more than for their herdmates of the Kazakh whiteheaded breed by 24.1 (3.14%). According to the magnitude of the sign, the root-mean-square deviations of the indicator in the groups are also different.

The coefficient of variability was in the range from 10.6 to 13.7%, with slight oscillations taking into account breed and sex of animals.

The coefficient of correlation and regression between the average daily gain and fatness of the young, determined by a 5-point scale is presented in table 4.

The coefficient of correlation between the productivity of young animals and the body condition scoring was high in all groups, positive in a straightforward manner. It is important to note that among the Hereford young animals, both in heifers and bulls, the correlation coefficient was 0.86. The same correlation coefficient (0.78) was also established in young animals of the Kazakh whiteheaded breed.

The regression coefficient made it possible to reveal that a change in the body condition of young animals by 1 point leads to a change in the live weight of the bull- calves by 136.8 and 148.4 g per day.

Table 4 – Coefficients of correlation and regression between average daily gain and body condition scoring of young animals

Indicator	Breed			
	Hereford		Kazakh whiteheaded	
	bulls	heifer calves	bulls	heifer calves
Correlation coefficient (r)	0.86	0.86	0.78	0.78
Regression coefficient (R)	148.4	100.4	136.8	109.1
Accuracy of the correlation coefficient (td)	0.999	0.999	0.999	0.999
Accuracy of the regression coefficient (td)	0.999	0.999	0.999	0.999

As for the heifers, a change in the fatness of livestock by 1 point leads to a change in the live weight by 100.4 and 109.1 g per day (P>0.999).

Knowing how many kilograms you need to change the live weight to achieve the required fatness, you can determine how much you need to change the feeding level of animals (table 5).

Table 5 – Change in the level (norms) of feeding young animals with live weight of 200 kg, EFU

Body condition scoring, point	Desired body condition scoring, point	Breed			
		Hereford		Kazakh whiteheaded	
		bulls	heifer calves	bulls	heifer calves
1	5	norm+2.67	norm +2.45	norm +2.84	norm +2.56
2	5	norm +2.00	norm +1.84	norm +2.13	norm +1.92
3	5	norm +1.33	norm +1.22	norm +1.42	norm +1.28
4	5	norm +0.67	norm +0.61	norm +0.71	norm +0.64
5	5	norm (5.0)	norm (4.7)	norm (5.0)	norm (4.7)

For example, to achieve the desired 5 points, for bulls of Hereford breed, having a body condition of 3 points, it is necessary to increase the feeding level by 1.33 energy feed units, and for heifer calves – by 1.22 EFU.

Conclusion. Thus, there is a high, rectilinear positive relationship between the live weight of the young stock, the average daily gain, and the body condition scoring. The established coefficients of regression make it possible to determine the change in the live weight of young animals when the body condition is changed by 1 point. This is the basis for making adjustments in the feeding program for young animals, which will ensure the desired fatness by the end of fattening and the high economic effect of growing young stock.

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ӘРТҮРЛІ ГЕНОТИПТІ ЕТТІ ІРІ ҚАРА ЖАС МАЛДАРЫНЫҢ ҚОҢДЫЛЫҒЫН БАЛЛМЕН БАҒАЛАУ ЖӘНЕ ОНЫҢ ТІРІЛЕЙ САЛМАҒЫ ЖӘНЕ ӨНІМДІЛІГІМЕН ӨЗАРА БАЙЛАНЫСТЫҒЫ

Аннотация. Сиыр етін рентабельді өндіру үшін жоғары өнімділігімен ерекшеленетін малдардың, жоғары сапалы азықтардың көп мөлшерде болуы жеткілікті емес. Сиыр етін өндірудегі басты міндет – оларды ұтымды пайдалануды дұрыс ұйымдастыру болып табылады. Шаруашылық топтағы малдардың тірілей салмағы әр қилы болып келеді, ал етті ірі қара малдардың азықтандыру нормасы есептелінген, бірақ та, негізінен олардың тірілей салмағын есепке ала отырып жасалған. Бұл дұрыс емес, өйткені топтағы малдардың тірілей салмақтары бірыңғай болып, қоңдылық күйіне байланысты энергияға деген мұқтаждығы әр түрлі болады. Басқаша айтқанда, малдарды азықтандыру нормасы тірілей салмағына байланысты ғана емес, сонымен бірге малдардың қоңдылық күйіне қарай нақтылануы тиіс. Қоңдылығына байланысты малдарды қайтадан топтастыру сиыр етін өндірудің технологиялық үрдісінде негізгі тәсіл болып саналады. Бұл қымбат азықтандыруды үнемдеуге мүмкіндік береді, өйткені сиыр етінің өзіндік құны құрлымында шығындардың үлкен үлесі (60%) азыққа тиесілі. Зерттеу мақсаты – жас малдардың қоңдылығын баллмен бағалағанда олардың тірілей салмақпен өзара байланыстылығын анықтау, қоңдылығы бір баллға өзгергенде тірілей салмағы

қаншалықты ауытқитынын айқындау және малдардың қоңдылық күйіне байланысты азықтандыру нормасын нақтылау. Зерттеулер герефорд және қазақтың ақ бас тұқымдарының жас малдарына жүргізілді. Зерттеу жүргізу үшін коррелияциялық, регрессиялық және статистикалық талдау әдістері қолданылды. Зерттеу жүргізу барысында малдардың тірілей салмағы мен қоңдылығын баллдық бағалау арасында жоғарғы оң байланыс байқалды (герефорд үшін r= 0,74-0,76 және қазақтың ақ бас тұқымы үшін r=0,81-0,79). Бұл белгілер арасындағы регрессия коэффициентін анықтауға септігін тигізді. Зерттеу кезінде анықталғаны, малдың қоңдылығын 1 балға арттыру герефорд тұқымының жас малының тірілей салмағын 26,1-26,7кг өсіреді, ал қазақтың ақ бас тұқымдарының бұзауларында бұл көрсеткіш 28,9-32,2кг, яғни азықтандыру деңгейіне қажетті өзгертулер енгізуге мүмкіндік берді, қоңдылығы 1 балл герефорд тұқымының жас малдары үшін 2,45-2,57; ал 2 балға 1,84-2,00; 3 балға 1,22-1,33; 4 балға 0,61-0,67, тиісінше таналар мен бұқашықтарға да энергетикалық азық өлшемін арттыруға ықпалын тигізді. Қазақтың ақ бас тұқымының жас малдары үшін бұл көрсеткіштер 2,56 және 2,84; 1,92 және 2,13; 1,28 және 1,42; 0,64 және 0,71 энергетикалық азық өлшемін құрады. Сол себептен жас малдардың қоңдылығын қадағалау, қоңдылық күйіне байланысты азықтандыруды дұрыс ұйымдастыру және әр түрлі қоңдылық күйдегі малдарды топқа бөлу, жас малдарды өсіруде экономикалық тиімділікке жетудің маңызды жолдары болып табылады.

Түйін сөздер: етті ірі қара жас малы, герефорд және қазақтың ақ бас тұқымдары, қоңдылығын баллмен бағалау, тірілей салмағы, азықтандыру деңгейі.

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БАЛЛЬНАЯ ОЦЕНКА УПИТАННОСТИ МОЛОДНЯКА МЯСНОГО СКОТА РАЗНЫХ ГЕНОТИПОВ И ЕЕ ВЗАИМОСВЯЗЬ С ЖИВОЙ МАССОЙ И ПРОДУКТИВНОСТЬЮ

Аннотация. Для рентабельного производства говядины недостаточно иметь животных, отличающихся высокой продуктивностью, и корма высокого качества в достаточном количестве. Главной задачей при производстве мяса является правильная организация их рационального использования. В производственных группах животные обладают разной живой массой, а нормы кормления мясного скота рассчитаны, в основном, только с учётом их живой массы. Это неправильный подход, так как в группе животные могут иметь одинаковую живую массу и иметь различную потребность в энергии в зависимости от состояния упитанности. Другими словами, нормы кормления животных должны корректироваться не только в зависимости от живой массы, но и с учётом состояния упитанности животных. Перегруппировка животных в зависимости от упитанности становится необходимым приёмом в технологическом процессе производства говядины. Это позволит сэкономить дорогостоящие корма, так как в структуре себестоимости говядины большая доля затрат приходится на корма (около 60%). Цель исследований – определить взаимосвязь живой массы с балльной оценкой упитанности молодняка, выявить насколько изменяется живая масса при изменении упитанности на 1 балл, и скорректировать нормы кормления в зависимости от состояния упитанности животных. Исследования проводили на молодняке герефордской и казахской белоголовой породы. Для проведения исследований использовался метод корреляционного, регрессионного и статистического анализа. В ходе исследований определено, что между живой массой и балльной оценкой упитанности животных установлена высокая положительная связь (r = 0,74-0,76 для герефордской и r = 0,81-0,79 для казахской белоголовой породы). Это позволило определить коэффициенты регрессии между признаками. Установлено, что повышение упитанности на 1 балл увеличивает живую массу молодняка герефордской породы на 26,1-26,7 кг, а у телят казахской белоголовой породы на 28,9-32,2 кг, что дало возможность определить необходимые изменения уровня кормления в сторону увеличения для молодняка герефордской породы с упитанностью 1 балл на 2,45 и 2,67; 2 балла на 1,84 и 2,00; 3 балла на 1,22 и – 1,33; 4 балла на 0,61 – 0,67 ЭКЕ соответственно тёлкам и бычкам. Для молодняка казахской белоголовой породы эти значения составили: 2,56 и 2,84;

1,92 и 2,13; 1,28 и 1,42; 0,64 и 0,71 ЭКЕ. Таким образом, исследования показывают, что наблюдение за состоянием упитанности молодняка, разделение животных на группы с различным состоянием упитанности и организация кормления, в зависимости от состояния упитанности, являются необходимыми приёмами для достижения экономической эффективности при выращивании молодняка.

Ключевые слова: молодняк мясного скота; герефордская и казахская белоголовая породы; балльная оценка упитанности; живая масса; уровень кормления.

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THE ELECTRODEPOSITION OF GALLIUM SELENIDE

Abstract. The electrochemical deposition of gallium selenide on a glassy carbon electrode from sulphate electrolytes at a constant potential was carried out. The cyclic voltammetric curves of the glassy carbon electrode in two different electrolytes were studied: sulfuric acid and citrate buffer solution containing gallium and selenium ions. The influence of change in the concentration of gallium ions and the deposition potential on the composition of the resulting precipitate is studied.Increasing of the gallium ions concentration from $6 \cdot 10^{-3}$ M to $1 \cdot 10^{-1}$ M at a constant concentration of selenium ions $2 \cdot 10^{-3}$ M in the electrolyte leads to an increase in the gallium content in the deposit composition. It is established that in order to obtain the stoichiometric composition of the film, the content of gallium (III) ions in the electrolyte must be many times higher than the content of selenium (IV) ions. The results of elemental analysis of the precipitate confirmed that a film of gallium selenide with a content of 26.7 at% gallium was obtained at a ratio of the concentration of gallium ions and selenium of 50: 1 in the sulphate electrolyte at a potential of -0.8 V. Investigation of the morphology of the surface showed that a uniform coating of the surface of the glassy carbon electrode is achieved at potentials of -0.8 and -0.9 V. X-ray phase analysis confirmed the presence of the Ga_2Se_3 phase in the resulting films.

Keywords: gallium selenide, electrodeposition, voltamperometry, thin films.

Introduction. Semiconductor compounds of the III-VI grouphaveattracted great attention of researchers thanks to their suitable structural and optical properties for the application in photoelectronic converters [1]. This group includes gallium monoselenide, GaSe which has hexagonal structure with an optical width of band gap of 2.1 eV and contains Se-Ga-Ga-Se layers and gallium diselenide, Ga_2Se_3, which has a cubic structure with 1.8-2.6 eV width of band gap [2, 3] and crystallizes in α-and β-structural modifications. In Ga_2Se_3structure,one third of cationic centers is free and the structure of compound is, therefore, defective.In turn, the defective compound is used in optoelectronic devices for the passivation of heterogeneous compounds, for switching of the memory of light-emitting diodes [4], in combination with GaP substrate [5]. There is a set of methods to obtain gallium selenide. They are the chemical deposition from a vapor phase (CVD) [6], chemical transfer of vapor in vacuum [7], vapor-phase epitaxy [8], heterovalent reaction of V-VI exchange [9], thermal evaporation [10] and molecular beam epitaxy [11, 12]. The most well-known Stokbarger-Bridgmen method [13] of obtaining gallium selenide monocrystals, Ga_2Se_3 is the synthesis at the directed crystallization when a quartz ampoule with material is stretched in a special furnace and heated to 1473 K with the subsequent slow decrease in temperature. This method requires high purity of materials, and high vacuum and temperature.

Thin Ga_2Se_3films can be obtained by the zol-gel technique at a crystal formation temperature [14]. Compared to the above described method, the electrodeposition method from aqueous solutions to obtain thin films on conductive substrates has a number of advantages and is an inexpensive method making it possible to control thickness, morphology and structure of film during deposition 15-17].In this work, the conditions of gallium selenide electrodeposition on a glassy carbon electrode at a constant potential have been studied.

Methods of study. Voltammetric measurements on a disk glassy carbon electrode with 0.07 cm^2 surface and gallium selenide electrodeposition on flat glassy carbon plates of 1.0 cm^2 area were carried out in a three-electrode thermostatted glassy cell using a silver-chlorine reference electrode and a platinum counter electrode.

Before the experiment, the electrodes were treated with fine abrasive 2000 paper, washed with distilled water and dried in the open air. The sulfate electrolyte with pH = 2.2 (0.45 M Na_2SO_4 + 0.05 MH_2SO_4) and the citrate buffer electrolyte with electrolyte pH = 2.92 were used as background electrolytes. The latter was prepared from 39.3 ml 0.1 M sodium citrate and 60.7 ml 0.1 M HCl. The solutions of gallium and selenium salts (analytically pure), 0.1 M $Ga_2 (SO^4)_3$, 0.1 M $NaHSeO_3$ and 1 M $GaCl_3$ were used. The concentration of gallium ions in these electrolytes was changed from $6\cdot10^{-3}$ to $1.2\cdot10^{-1}$ M and the concentration of selenium ions was maintained constant ($2\cdot10^{-3}$M).

The deposition of gallium selenide was carried out at a constant potential maintained by GillAC potentiostat with Version 5 ACM Instruments software, and at a temperature of 70° C that was maintained by using the LOIP thermostat. The electrolyte mixing was carried out using MM3M magnetic stirrer.

After deposition, the films were washed with distilled water and dried in the open air. Elemental analysis of the contents of components and micrographs of the surface of gallium selenide films were made using the JEOL (Japan "JSM6610 LV") electronic scanning microscope with the capabilities of microanalysis. The phase composition of the films was determined using the DRONE-4/07 instrument with a Co-tube.

Results and discussion. ***Voltammetric measurements on a disk glassy carbon electrode.*** To determine the effect of the concentration of components in the electrolyte on the electrochemical process to reduce the ions, the cyclic volt-amperometric dependencies (CVA) of glassy carbon electrode in a sulfate electrolyte and citrate buffer solution were recorded. The scanning speed of potential was 20 mV/s in the 0 to -1.0 V range and in -1.0 to + 1.2 V range in case of inverse scanning. Eectrolytes with varying concentrations of gallium ions ($6\cdot10^{-3}$ M, $1.2\cdot10^{-2}$ M, $6\cdot10^{-2}$ M, $8\cdot10^{-2}$M, $1\cdot10^{-1}$ M and $1.2\cdot10^{-1}$M) at a constant concentration of selenium ions ($2\cdot10^{-3}$M) were investigated.

Figure 1 shows the CVA of a glassy carbon electrode for the reduction of Se(IV) и Ga(III) ions recorded in the sulfate electrolyte. Apparently, the cathode current increases already at 0 V potential indicating the reduction of Se (IV), which starts at more positive potentials. The Figure 1 sidebar shows the CVA of Se(IV) ($2\cdot10^{-3}$ M) reduction against the background of sulfate electrolyte taken at a cathode potential scan of + 0.3 to -1.0 V. The reduction of Se (IV) is accompanied by the emergence of two peaks at potentials around zero V and at -0.5 V potential. The reduction processes and standard potentials of reactions are described by the equations:

$$H_2SeO_3+4\bar{e}+4H^+=Se+3H_2O \qquad E^o= +0.740\ V \qquad (1)$$

$$Se+2\bar{e}+2H^+= H_2Se \qquad E^o= -0.400\ V \qquad (2)$$

$$H_2SeO_3+6\bar{e}+6H^+=H_2Se+3H_2O \qquad E^o= +0.360\ V \qquad (3)$$

In -0.5 V range of potentials, Se (IV) can be reduced according to equation (3) to form selenide ions.

Gallium ions are not reduced on a glassy carbon electrode in the studied range of potentials (figure 2). The CVD of glassy carbon electrode in a sulfate electrolyte demonstrate the absence of current peaks as the concentration of gallium ions changes from $5\cdot10^{-4}$ to $1\cdot10^{-2}$ M.

On adding gallium ions in the electrolyte (figure 1, curves 3-6), the current of the first peak changes, the current peak shape at -0.5 V becomes smooth, and the reduction current lasts until -0.85 V and reaches the hydrogen reduction range.

Analysis of the anode part of CVA testifies that at the maximum content of gallium in the electrolyte equal to $1\cdot10^{-3}$ M, a maximum amount of selenium is deposited over the electrode as a compound with gallium. Selenium is oxidized from the compound at potentials close to + 1.0 V.

$$Se + 3H_2O \rightarrow H_2SeO_3 + 4H^+ + 4e^- \qquad (4)$$

The results show the formation of compound to proceed at -0.8 and -0.9 V potentials involving selenide ions due to the chemical reaction of positively charged gallium ions with negatively charged selenium ions.

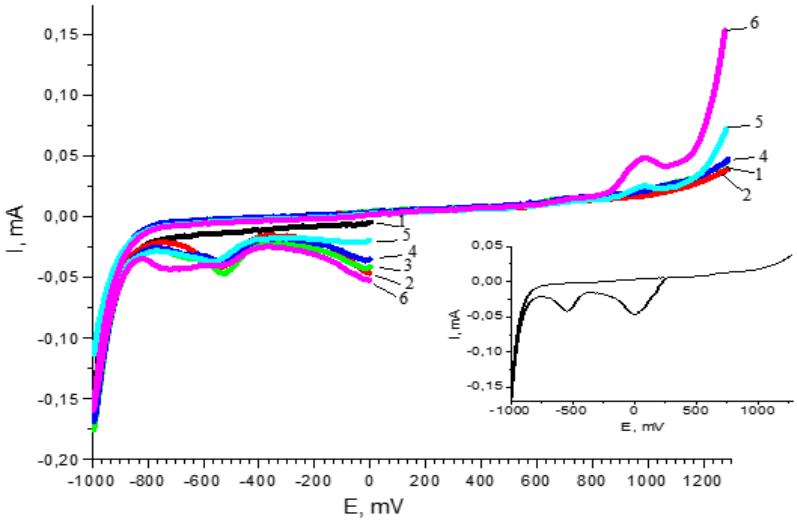


Figure 1 – The CVA of glassy carbon electrode in a sulfate electrolyte at various concentrations of selenium and gallium ions. 1 – support electrolite; 2-6 – Se(IV)-$2\cdot10^{-3}$ M; Ga(III): 3 – $6\cdot10^{-3}$; 4 – $1.2\cdot10^{-2}$; 5 – $8\cdot10^{-2}$; 6 – $1\cdot10^{-1}$M. Side bar: Se(IV)-$2\cdot10^{-3}$ M

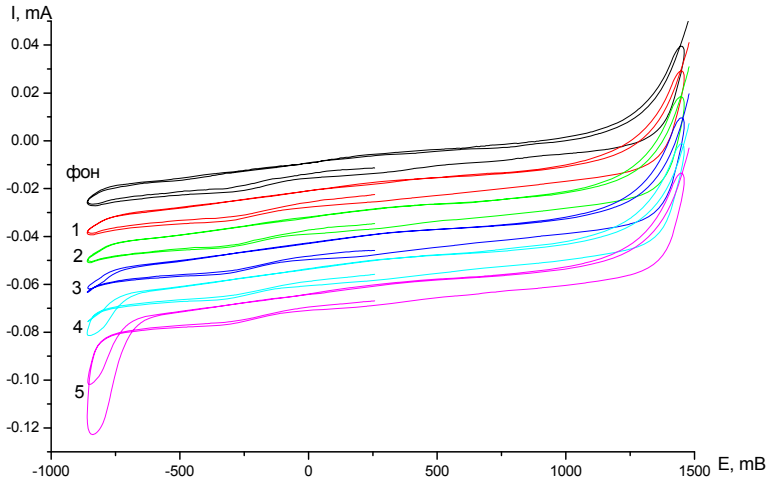


Figure 2 – The CVA of glassy carbon electrode in a sulfate electrolyte at a various content of gallium Ga(III) ions: 1 – $5\cdot10^{-4}$; 2 – $1\cdot10^{-3}$; 3 – $2\cdot10^{-3}$; 4 – $5\cdot10^{-3}$; 5 – $1\cdot10^{-2}$ M

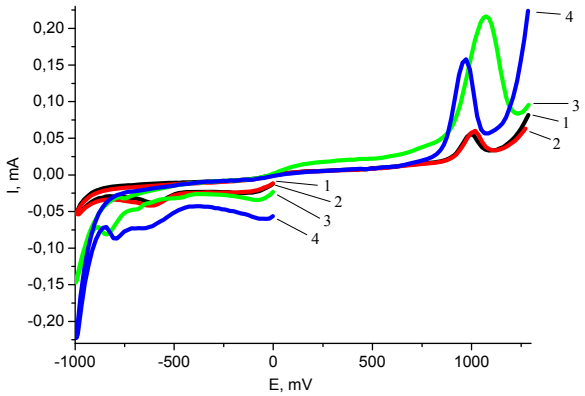


Figure 3 – The CVA of glassy carbon electrode in a citrate buffer solution at a constant concentration of selenium ions and various concentrations of gallium. 1-4) Se(IV)=$2\cdot10^{-3}$ M; Ga(III): 1)$6\cdot10^{-3}$; 2) $1.2\cdot10^{-3}$; 3) $6\cdot10^{-2}$; 4) $8\cdot10^{-2}$ M

The CVA in citrate buffer solution shows that in case of joint presence of selenium and gallium ions in the electrolyte the reduction currents increase with an increase in the concentration of gallium. When the content of Ga (III) is from $6\cdot10^{-3}$ to $1.2\cdot10^{-2}$ M, profile curves coincide with those shown in figure 1 for the sulfate electrolyte. As the concentration of gallium increases (figure 3, curve 3.4) to $8\cdot10^{-2}$ M, the reduction currents at E=- 0.5 V increase and at E=- 0.85 V there appears an additional distinct current peak that can characterize the reduction of gallium ions on a glassy carbon electrode covered with selenium. Analysis of the anode branch of CVA also indicates that in the process of reduction on the electrode there forms a deposit of selenium compound with gallium, the oxidation potential of which lies within +1.0 V (figure 3).

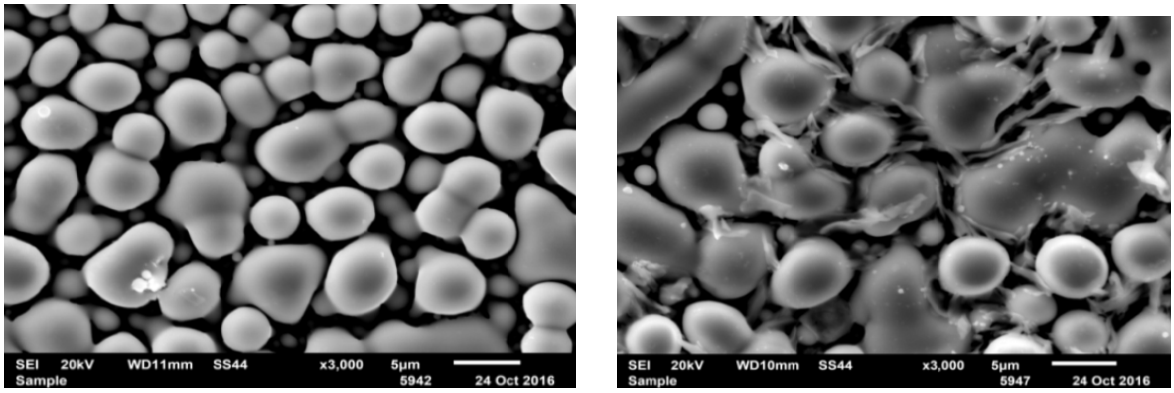
Based on the results, the -0.8; -0.9 V range of potentials was selected to conduct the potentiostatic deposition of gallium compounds with selenium on a glassy carbon electrode.

Electrodeposition of gallium selenide in sulfate electrolyte. The electrodeposition of gallium ions was carried out at $6\cdot10^{-3}$M concentrations of gallium ions and $2\cdot10^{-3}$ M concentrations of selenium ions at -0.8 V potential and 70 °C temperature. The resulting film was investigated by electron scanning microscope with the capabilities of microanalysis that showed 0.03 at% content of gallium. Further, the concentration of gallium ions was increased to $1.2\cdot10^{-2}$ M, and electrodeposition was carried out at -0.8 and -1.2 V potentials. The elemental composition was studied and micrographs of the surface of resulting films were made (table 1).

Table 1 – The elemental composition of as-deposited gallium selenide film on glassy carbon at various potentials (at%)

Substrate	Electrodeposition conditions	Electrolyte composition
GC-93	E=-0.8 V T=70°C t = 30 minute	Ga - 0.51% Se - 99.49%
GC-94	E=-1.2 V T=70°C t = 30 minutes	Ga - 0.54% Se - 99.41%

Table 1 shows that the content of gallium in the deposit has increased to ~ 0.5 at%. The shift of reduction potential to the negative side has affected weakly the increase of gallium.



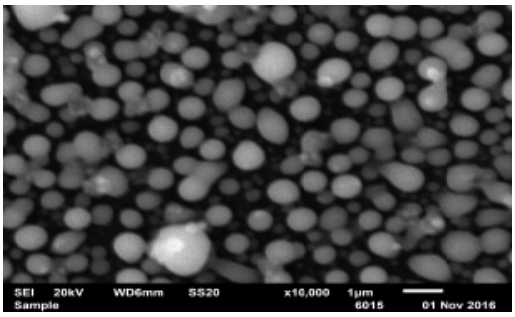
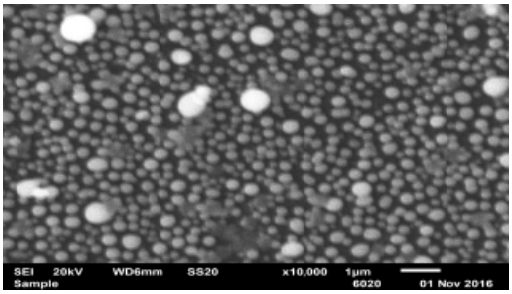
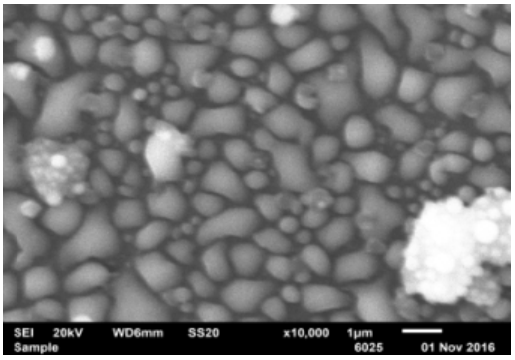
a b

Figure 4 – The micrograph of the surface of films (at 3000 magnification): a – at -0.8V potential; b – at -1.2V potential

The micrograph of resulting sample surface in Figure 4a shows the formation of separate large grains with 4.2- 3.3 μm diameter. The reduction at -1.2 V potential when there starts the parallel reduction of hydrogen, has resulted in disturbance of deposit uniformity due to the formation of filamentary fibers (figure 4b).

In the subsequent experiments, the content of gallium ions in the electrolyte was increased, maintaining a constant concentration of selenium ions equal to $2\cdot10^{-3}$ M. Table 2 shows the results of analysis of the deposited films at -0.8V, -0.9 V and -1.0 V potentials. The best result on the content of gallium, 7.2% is shown by the experiment conducted at -0.8 V potential.

Table 2 – The elemental composition of as-deposited gallium selenide film on glassy carbon at various potentials, and the surface micrograph

Substrate	Electrodeposition conditions	Electrolyte composition	Content in the deposit, at%	Micrographs
GC-95	E=-1.0 V T=70°C t=30 minutes	$6\cdot10^{-2}$ M $Ga_2(SO_4)_3$ $2\cdot10^{-3}$M $NaHSeO_3$	Ga -6.7; Se -93.3	
GC-96	E=-0.9 V T=70°C t=30 minutes	$6\cdot10^{-2}$ M $Ga_2(SO_4)_3$ $2\cdot10^{-3}$M $NaHSeO_3$	Ga-4.5 Se-95.5	
GC-97	E=-0.8 V T=70°C t=30 minutes	$6\cdot10^{-2}$ M $Ga_2(SO_4)_3$ $2\cdot10^{-3}$M $NaHSeO_3$	Ga - 7.2 Se – 92.8	

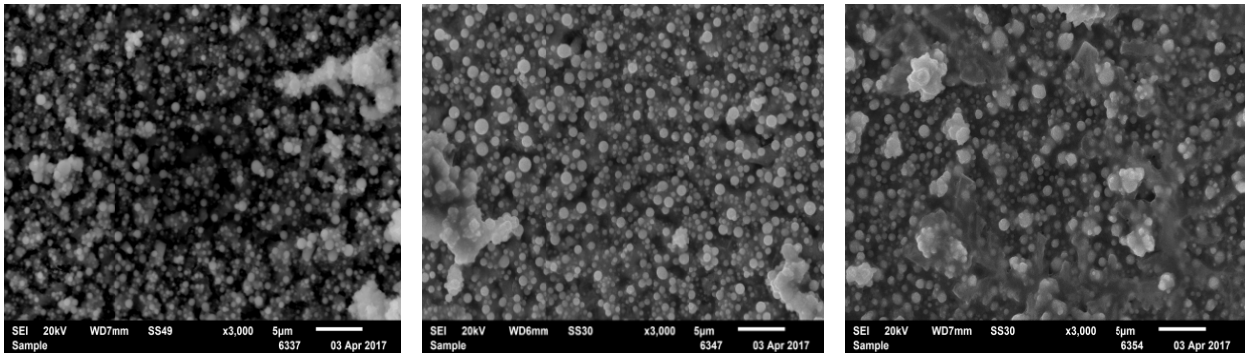
The micrographs in table 2 show that the size grain of the resulting deposit depends on the deposition potential and the content of gallium in the deposited film of gallium selenide.

For further experiments, 1 M $GaCl_3$ solution was used as a source of gallium ions and their concentration in the electrolyte was increased to $1.0\cdot10^{-1}$ M at a constant concentration of selenium ions, $2\cdot10^{-3}$ M. Electrochemical deposition of gallium selenide was carried out at -0.8 and -0.9V potentials. Cleaned and polished glassy carbon substrates were used. Upon electrodeposition, uniform and thick films of red-brown color were obtained and their composition and surface were studied by the scanning electron microscopy method.

Table 3 – The elemental composition of as-deposited gallium selenide film over glassy carbon at E=-0.8 V and E=-0.9 V potentials within 30 minutes

Substrate	Electrodeposition conditions	Electrolyte composition	Contents of components in the film, at.%
GC – 110	E=-0.9 V T=70°C	$1\cdot10^{-1}$ M $GaCl_3$ $2\cdot10^{-3}$ M $NaHSeO_3$	Ga 15.1 Se 84.9
GC – 111	E=-0.9 V T=70°C	$1\cdot10^{-1}$ M $GaCl_3$ $2\cdot10^{-3}$ M $NaHSeO_3$	Ga 15.9 Se 84.1
GC - 112	E=-0.8 V T=70°C	$1\cdot10^{-1}$ M $GaCl_3$ $2\cdot10^{-3}$ M $NaHSeO_3$	Ga 26.7 Se 73.3

As shown in the Table, at -0.8 V potential, within 30 minutes, at a concentration of $1.0 \cdot 10^{-1}$ M $GaCl_3$ and $2 \cdot 10^{-3}$ M $NaHSeO_3$ on a glassy carbon electrode there forms a film with a maximum content of gallium (26.7 Al%). Figure 5 shows a micrograph of the surface of gallium selenide films deposited under the conditions of Table 3. One can see that the even distribution of globules is disturbed by the accumulation of coarse crystals consisting of smaller particles. Figure 5b shows the emergence of dendrites in the form of flowers, which is typical for the deposited films of gallium with selenium.

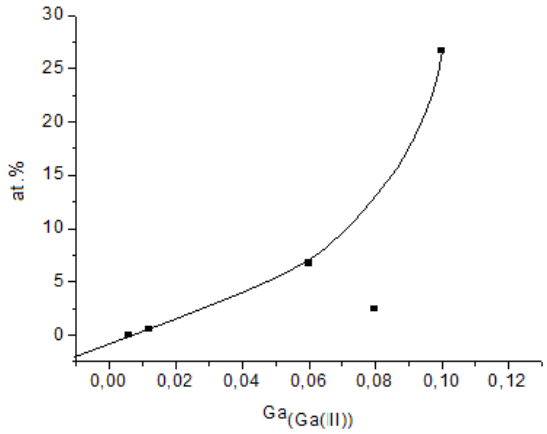


a b c

Figure 5 – The micrographs of the surface of films:
a – E_{oc}= -0.9Von GC – 110; b – E_{oc}= -0.9Von GC – 111; c – E_{oc}= -0.8V on GC – 112

The homogenous formation of spheres with 0.5, 1.1 μm diameter is most typical for the deposits produced by electrodeposition at E_{oc} = -0.9 V.

Figure 6 –
The dependence of the content of gallium
in the deposited film on the concentration of gallium ions
in the electrolyte at a constant potential of -0.8 V
and Se=$2 \cdot 10^{-3}$ M concentration



In figure 6, one can see an increase in the content of gallium in the composition of Ga_2Se_3 film at 1.10^{-1}M $GaCl_3$ concentration in the support electrolyte.

Thermal treatment of electrodeposited films. To confirm the phase composition and carry out X-ray phase analysis, the deposited films of gallium selenide were annealed in a muffle furnace in atmospheric air by a two-stage process: first, at 200° C during 10 minutes,and second time at 500° C during 15 minutes. After annealing, the film acquired a grey color, the adhesion to substrate was dense, and the surface was homogeneous.

X-ray phase analysis of thin films of gallium selenide electrodeposited on glassy carbon plates was made according to the conditions of table 3. Figure 7 shows the bar radiograph indicating the dependence of the intensity of X-ray reflexes on the interplanar spacings. One can see that graph 7 contains Ga_2Se_3, phase reflexes corresponding to the interplanar spacings 1.93, 1.94, 3.15 according to the ASTM tables. It is noted that the intensity of reflexes increases with an increase in the content of gallium in the deposit. The radiographs also show strong reflexes from the glassy carbon (GC) substrate, since the resulting films do not exceed the thickness of 5 microns. The selenium oxide impurity may indicate the oxidation of a part of selenium on the surface during annealing.

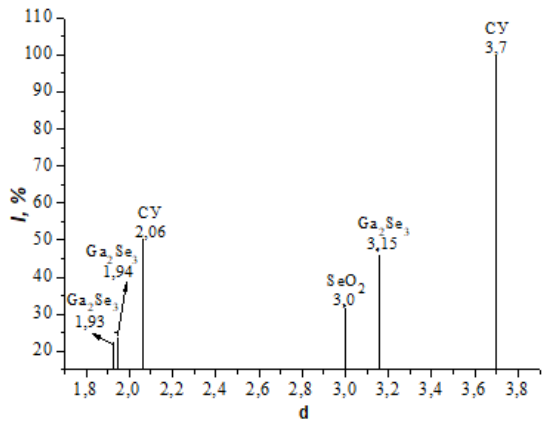


Figure 7 – The dependence of the intensity on the interplanar spacing for GC – 112 (glassy carbon sample) (table 3)

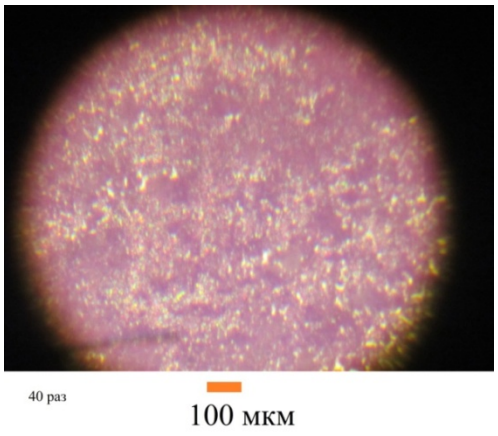


Figure 8 – The pattern of gallium selenide film surface (sample GC-112)

Study on the morphology of the surface of films after thermal treatment was performed using an optical microscope and an atomic-forced microscope, JSPM 5200 (JEOL Japan).

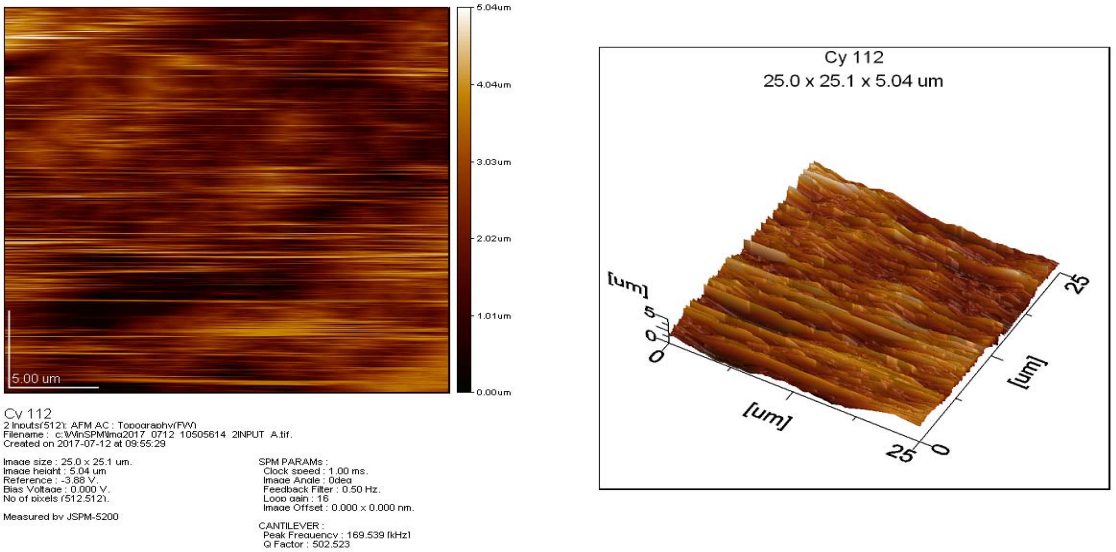


Figure 9 – The pattern of GC-112 sample surface obtained by atomic-force microscopy

The pattern produced by the optical microscope is an evenly coated surface of the deposit (figure 8). The results of atomic-force microscopy (AFM) show that the coat height reaches 5 microns after annealing. The film surface grows in one direction and on the 25x25 μm stretch represents planes growing in parallel.

Conclusions. The electrochemical deposition of gallium selenide on a glassy carbon electrode from sulfate electrolytes at a constant potential has been carried out. Gallium selenide films of up to 5-micron thickness, with the content of 26.7 at% gallium and 73.3 at% selenium have been produced. The composition is close to the stoichiometric composition of Ga_2Se_3 compound. X-ray phase analysis has confirmed the presence of Ga_2Se_3 phase in the resulting films. Study of the surface morphology has shown that uniform coating of the glassy carbon electrode potentials can be achieved at -0.8 and -0.9 V potentials.

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ГАЛИЙ СЕЛЕНИДІН ЭЛЕКТРОТҰНДЫРУ

Аннотация. Тұрақты потенциалда күкірт қышқылды электролиттен галий селенидін шыны көміртекті электродта электрохимиялық тұндыру жүргізілді. Шыны көміртекті электродтың циклдік вольтамперлі қисықтары галий және селен иондары бар екі түрлі электролитте: күкірт қышқылды және цитратты буферлі ертінді де зерттелді. Қабат құрамына галлий ионының концентрациясының өзгерісі мен тұныру потенциалының әсері зерттелді. Галлий ионының концентрациясын $6\cdot10^{-3}$М -ден $1\cdot10^{-1}$ М-ге дейін үлкейткенде тұнба құрамында галлийдың максимальды құрамына алып келеді, өз кезегінде селен ионының концентрациясы тұрақты $2\cdot10^{-3}$М болып қалады. Стехиометриялыққа құрамдағы қабат алу үшін электролитте галлий ионы (III) селен ионына(IV) қарағанда артығырақ болуы керек. Тұнбаның элементтік анализ нәтижесі күкірт қышқылды электролитте галлий ионының селен ионына қарағанда концентрациясының қатынасы 50:1 болғанда, -0,8В потенциалында құрамында 26,7 ат% галлий бар алынатындығын анықтады. Беттің морфологиясының зерттеулері шыны көміртегі электроды бетінде -0,8 және -0,9 В потенциалдарында біркелкі жабынды түзілетіндігін көрсетті. Рентгенофазалық анализ нәтижесі алынған қабаттарда Ga_2Se_3 фазасының бар екендігін растады.

Түйін сөздер: галлий селениді, электротұндыру, вольтапмерметрия, жұқа қабаттар.

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ЭЛЕКТРООСАЖДЕНИЕ СЕЛЕНИДА ГАЛЛИЯ

Аннотация. Проведено электрохимическое осаждение селенида галлия на стеклоуглеродном электроде из сернокислых электролитов при постоянном потенциале. Исследованы циклические вольтамперные кривые стеклоуглеродного электрода в двух различных электролитах: сернокислом и цитратном буферном растворе, содержащих ионы галлия и селена. Исследовано вляние изменения концентрации ионов галлия и потенциала осаждения на состав получаемого осадка. Увелечение концентрации ионов галлия от $6\cdot10^{-3}$ М до $1\cdot10^{-1}$ М при постоянной концентрации ионов селена $2\cdot10^{-3}$ М в электролите приводит кувеличению содержания галлия в составе осадка. Установлено, что для получения стехиометрического состава пленкисодержание ионов галлия(III) в электролите должно во много раз превышать содержание ионов селена (IV). Результаты элементного анализаосадка подтвердили, что при соотношении концентраций ионов галлия и селена 50:1 в сернокислом электролите, при потенциале -0,8В получили ,пленку селенида галлия с содержанием 26,7 ат% галлия. Исследование морфологии поверхности показало, что однородное покрытие поверхности стеклоуглеродного электрода достигается при потенциалах -0,8 и -0,9В. Рентгенофазовый анализ подтвердил наличие фазы Ga_2Se_3в полученных пленках.

Ключевые слова: селенид галлия, электроосаждение, вольтапмерметрия, тонкие пленки.

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MEAT PRODUCTIVITY OF THE YOUNG STOCK OF THE KAZAKH JABE HORSES AFTER THE AUTUMN FATTENING

Abstract. In the article, some zootechnical measures that allow to significantly increase the quantity and quality of horse meat in the conditions of autumn fattening are considered. Proceeds from the sale of young animals are doubled for each colt, both due to the increase in live weight (41.6-48.5 kg), and due to higher prices for horse meat of higher fatness (1000-1200 tenge per 1 kg of meat).

During a relatively short period of fattening (76 days), the young stock, released from the summer heat in a state of lower average fatness, reached the highest condition. Studies have shown that during the first 20 days of feeding, the average daily gain of colts reached 1160-1400 g per day. Then on the 30th day of feeding, the average daily gain decreases and reaches 750-840 g, and at the end of the fattening on the 70th day of feeding - 20-100 g.

When slaughtering young horses after autumn fattening, carcasses were obtained with a high slaughter yield (53.8-56.5%), a large content of pulp (78.3-82.5%) with a relatively low bone content (17.5-21.7 %). The highest yield of pulp in all groups of young animals was in the first grade (47.5-50.6%), then in the second grade (32.7-34.8%). The yield of pulp outside the grade (kazy + zhal) reached 14.3% in 6-month-old colts, 17.5% in 18-month-old colts and 18.7% in 18-month-old colts. Offal products are of great importance in the future use of horse breeding reserves.From the colts of different ages, a mass of the tongue was obtained from 0.48 to 0.83 kg, the liver from 2.51 to 4.68 kg, the kidney from 0.91 to 1.41 kg, the heart from 1.07 to 2.64 kg. From the small colon, a delicacy product like karta is made, the length of which reaches 0.7-1.9 m. The thin intestine is used as a shell for kazy and chuzhuk, its length is from 14.7 to 16.9 m.

Net profit from the sale of colts of different ages for meat ranges from 46.2 to 112.2 thousand tenge. The profitability is high from 59.8 to 76.4%.

Keywords: young stock, growth, carcass, slaughter yield, pulp, bones, offal, profit, profitability.

Introduction. Productive horse breeding in Kazakhstan is a promising, developing and highly efficient livestock sector. In terms of meat productivity, horses are not inferior to specialized breeds of cattle. Slaughter yield in horses reaches 52-60%, and the yield of meat in carcasses is up to 81% [1]. Meat has a high nutritional value due to a complete set of essential amino acids and a favorable ratio between them, as well as the presence in it of biologically valuable fat. Horse meat is recognized as a dietary food product[2].

Favorable conditions for diversified animal breeding, including horse breeding, are available in all regions of Kazakhstan. The presence of large areas of natural forage lands [3], where it is possible to keep horses all year round at the pasture, combined with an abundance of gramma grass, good watering and absence of bloodsucking insects on pastures (zhailau) promote the development of productive horse breeding and the production of cheap products.

However, the efficiency of meat horse breeding in the areas of herd horse keeping is constrained by the fact that local Kazakh horses of these regions have insufficiently high live weight, undersized and late-ripening, since they finish their growth by 6-7 years. At the same time, local Kazakh horses are well adapted to the harsh conditions of pasture and winter-grazing keeping. Therefore, the development of meat

horse breeding in the areas of herd horse keeping is associated with the problem of increasing the meat qualities of local Kazakh horses [4].

One of the methods for the most rapid increase in live weight, size and early maturity is the crossing of local Kazakh mares with stallions of Kushum, Mugalzhar breeds and Kazakh Jabe type.

In modern conditions, the vital need is to find new methods of work in horse breeding, which would ensure the acquisition of horses that meet the modern requirements of productive horse breeding in relation to local conditions.

Practice has shown that these requirements are met by the newly created Embensky and Kozhamberdinsky inter-breed types of Mugalzhar breed [5], the Jangali factory type of the Kushum breed [6] and the Seleti factory type of the Kazakh horses of Jabe type [7] grown in pasture and winter-grazing keeping and steadily transferring their economically important traits to young stock.

The main goal of breeding horses of newly created intra-breed and factory types of domestic breeds is the production of meat based on the year-round use of natural pastures. Now they are used as improvers of local Kazakh horses in various natural and climatic zones of Kazakhstan.

The object of the research is the young stock of the Seletinsky factory-type of the Kazakh Jabe horses of the stud farm "Altai Karpik Saydaly Sarytoka" of the Irtysh district of the Pavlodar region.

The aim of the work is to study the meat productivity of young stock of the Kazakh horses of Jabe type of different ages after the autumn fattening.

Methodology of the work. For the experiments, three groups of colts were singled out at the age of 6, 18 and 30 months for autumn fattening. The technology of keeping young animals in the "Altai Karpik Saydaly Sarytoka" stud farm in the Pavlodar region was typical of the herd breeding zone. The maintenance of young horses at fattening was pasture without additional feeding. Autumn fattening was carried out from early October to mid-December on feather grass-fescue-sagebrush pastures [8].

When setting and at the end of the fattening period, all experimental stallions were weighed. The increase in live weight over the fattening period and the ability of battening were determined by weighing every 10 days [9].

Before setting up the fattening experiments, individual weighing of the stallions on the electronic scales, recording the brand numbers, determining the age and fatness of the colts were carried out. The fatness was determined in accordance with the requirements of GOST 32225-2013 [10].

In order to study the meat qualities of stallions of different ages, control slaughter was carried out at the slaughterhouse of the stud farm using the ARSRI of horse breeding methods [11] and in accordance with the technological instructions [12] adopted in the meat industry.

For a more objective assessment of the marketability of meat, the horse carcasses were butchered according to the scheme adopted for the state trade network of the Republic of Kazakhstan according to ST RK 1303-2004 [13]. Each of the cuts obtained during the butchering of horse carcasses has a specific purpose. To make zhal, fatty crest of the neck was used. Backrib part (from the 7th to 12th rib) with pulp served to produce kazy.The upper layer of muscle tissue with fatty watering from the silverside went to the production of zhaya. Cutting from the outer back-lumbar part was used to make the products of sur-et. Muscular tissue of the cervical and humeroscapular parts with the addition of internal fat went to the production of sausage products of chuzhuk. Karta was produced from the small colon.

The economic efficiency of fattening of colts of different ages was established on the basis of the following indicators:

- productivity in kg per head;
- fattening costs;
- cost of 1 dt of gain;
- profit from fattening;
- profitability.

The data obtained in the experiments were processed biometrically [14].

Results of the work. The fattening qualities of young Kazakh Jabe horses. Fattening of horses is one of the most important economic measures that allow to increase the production of horse meat and improve its quality by grazing on natural pastures [15,16]. Using the biological features of herd horses and feather grass-fescue-sagebrush pastures of the steppe zone of the Irtysh region, we increased the production of horse meat, increased fatness and profitability.In summer, because of the heat and a large number of

bloodsucking insects, horses lose their fatness. In the fall period, with precipitation falling, the secondary vegetation of cereal and wormwood associations takes place. During this period we conducted autumn feeding, the results of which are given in table 1.

Table 1 – Results of the autumn fattening of young stock (nby 10)

Indicators	Age in months		
	6	18	30
Duration of fattening, days	76	76	76
Live weight at the beginning of fattening, kg	171.2±1.38	288.7±2.09	342.4±2.96
Live weight at the end of the fattening, kg	215.6±2.17	330.3±2.53	390.9±3.04
Live weight gain, kg	44.4±0.79	41.6±0.98	48.5±1.02
Average daily gain, g	584.2±11.76	547.4±10.95	638.1±12.06

As can be seen from the data of Table 1, in the autumn period the young horses of all the groups had a high gain in live weight. In 6 and 18 months-old colts, the increase was mainly due to the growth of muscle tissue, and in 30 months-old - due to muscular, and also due to large deposition of adipose tissue [17, 18]. The highest average daily gain in stallions was observed in 30 months old youngsters (638.1 g) compared to 6 and 18 months old colts, the difference was 9.2 and 16.6%.

Thus, during the autumn fattening, the colts after the summer heat, having a lower average fatness in a relatively short period of time, have reached a higher average fatness.

It was established that the stallions of all three age groups during the first 20 days of fattening (from October 1 to October 20), when the secondary vegetation starts, is rapidly added to the live mass. The character of the curve of the average daily live weight gain in all three groups of young animals was almost the same. A few high average daily gain during the first 20 days of feeding are observed in 30 months old colts of 1400 g and in 18-month-old horses of 1200 g. In 6 months old colts, this figure was 1160 g. Then, on day 30, the average daily gain in all groups of young stock declines. By the end of the fattening, the average daily gain reaches 20-50 g per day.

The high average daily growth of young horses during the first 20 days of feeding is explained by the ability of horses to quickly compensate for the loss in mass in a relatively short period of time during the summer heat, besides, in the autumn period, the grass stand has the excessive nutritional value [19]. At the beginning of fattening in the body of horses, there is a rapid growth of muscle tissue, and at the end of the feeding, there is the deposition of fatty tissues [20]. When the horses attain a higher average fatness, the average daily gain in experimental stallions decreased to 50-20 g per day.

Meat productivity of young stock after the autumn feeding. In vivo evaluation of horses in terms of the size of live weight, growth intensity and body type do not fully characterize their meat productivity. Therefore, in zootechnics, the following main indicators were adopted to characterize the meat productivity and quality of meat: yield of the carcass, slaughter yield, mass of muscle and fat tissue, content of edible parts of carcass, chemical composition and calories of meat [21].

The most valuable in terms of meat quality are horses, capable of slaughtering a large yield of carcass and pulp at a relatively low content of bones.

Quantitative and qualitative indicators of meat productivity are determined by hereditary, pedigree and individual characteristics of horses, technology of keeping, and other non-hereditary factors [22].

In order to study the meat qualities of colts of different ages, they were slaughtered at the slaughterhouse of the stud farm after the autumn fattening (table 2).

Table 2 – Meat productivity of colts of different ages (nby 2)

Indicators	Age in months		
	6	18	30
Preslaughter live weight, kg	214	331	389
Weight of carcass, kg	121	178	216
Slaughter yield, %	56.5	53.8	55.5

As can be seen from the data in Table 2, according to the weight of the carcass, 30-month-old stallions outperform the young stock at 6 and 18 months old by 75.5 and 21.3%. The largest slaughter yield (56.5%) was for colts of 6 months age, with a gradual decrease with age. The size of the slaughter yield primarily depends on the size and volume of the gastrointestinal tract, especially in horses kept year-round at the pasture forage.

All carcasses of the colts of the studied groups were visually assessed. Since all the stallions had ат above average fatness, then within a single age there was no noticeable difference in the fatty watering of the carcasses; in the carcasses of 6 and 18 months old colts, the color of the bacon was white, and in the carcasses of 30-month-old stallions it was pale yellowish.

In the carcasses of the 6 months old colts, the fatty watering evenly covered the entire dorsal part, with an increase in the thickness of fat to 1 cm on the lumbar part. On the upper part of the carcass, the fatty ridge was slightly manifested.

In the carcasses of colts at the age of 18 months, the fatty crest was 1.5-2.0 cm of thick. In the carcasses of this age, deposits of adipose tissue on the abdominal wall and especially in the groin are noticeable.

In the carcasses of the stallions of 30 months of age, the fat crest was well expressed, its thickness reached 3 cm. The fat layer on the rib part of the chest, back, waist and abdominal part is well pronounced.

In the process of the ontogeny of horses, various parts of the body grow unevenly. The axial part of the skeleton and the corresponding musculature grows most intensively than the peripheral parts [23]. Based on this, we studied the change in the mass of different parts of the carcass of colts of different ages (table 3).

Table 3 – Weight ratio of different parts of the colts carcasses of different ages (in kg)

Parts of the carcass	Age in months		
	6	18	30
Slaughter	0.8	1.9	2.1
Zhal	0.5	1.6	2.9
Humeroscapular	40.9	58.1	68.9
Shank	1.9	2.4	3.0
Dorsal	7.6	13.8	18.7
Kazy	14.0	26.0	32.9
Back	49.2	66.7	79.6
Flat bone	3.6	3.9	4.1
Shin	2.5	3.6	3.8
Whole carcass	121	178	216

From table 3, it can be seen that the largest weight falls on the back part in all three groups of colts (from 49.2 to 79.6 kg), followed by humeroscapular part (40.9-68.9 kg), the cut of the kazy (14.0-32.9 kg) and the dorsal part (7.6-18.7 kg).

The least amount falls on such parts of the carcass as a flat bone (3.6-4.1 kg), shin (2,5-3,8 kg), shank (1.9-3.0 kg) and slaughter (0.8-2.1 kg).

When studying the morphological composition according to varieties and the whole carcass of the stallions, the ratio of the trimmed meat and bones was determined (table 4).

Table 4 – Morphological composition of the carcass of stallions of different ages

Age in months	Weight of carcass, kg	Composition of the carcass			
		Pulp		Bones	
		kg	%	kg	%
6	121	94.8	78.3	26.2	21.7
18	178	146.8	82.5	31.2	17.5
30	216	177.6	82.2	38.4	17.8

From the data in table 4, it can be seen that the morphological composition of carcasses of stallions of different ages was not the same. The yield of pulp in the carcasses of 18 and 30 months old colts was 52.0 kg (54.8%) and 82.6 kg (87.1%) higher compared to 6-month-old colts. The absolute content of the bones in the carcasses of 18 and 30 months old colts was more, but on the relative content of bones at 6 months old colts, these figures were higher by 4.2 and 3.9%. By the yield of pulp per 1 kg of bones, in colts, the large differences were not observed, so in 6 months old colts they were equal to 4.4 kg, in 18-month-old stallions - 4.7 and in 30 monthly colts - 4.6 kg.

Individual varieties of carcasses are characterized by the different ratio of muscle tissue to other tissues. This is due to the peculiarities of the anatomical structure and the nature of the work performed by this or that part of the body.

The best in the nutritional values are those varieties of the carcass that contain the largest amount of muscle and fat tissue, with a low bone content (table 5).

Table 5 – Ratio of tissues in carcass by varieties in stallions of different ages

Parts of the carcass by varieties	Tissues	Age in months					
		6		18		30	
		kg	%	kg	%	kg	%
Zhal	Pulp	0.5	0.53	1.6	1.1	2.9	1.6
	Bones	–	–	–	–	–	–
Kazy	Pulp	13.1	13.82	24.1	16.4	30.3	17.1
	Bones	0.9	3.4	1.9	6.1	2.6	6.8
Variety I	Pulp	48.0	50.63	69.8	47.5	84.8	47.7
	Bones	8.8	33.6	10.7	34.3	13.5	35.1
Variety II	Pulp	33.0	34.81	49.4	33.7	58.0	32.7
	Bones	11.5	43.9	12.6	40.4	15.0	39.1
Variety III	Pulp	0.2	0.21	1.9	1.3	1.6	0.9
	Bones	5.0	19.1	6.0	19.2	7.3	19.0
The whole carcass	Pulp	94.8	100	146.8	100	177.6	100
	Bones	26.2	100	31.2	100	38.4	100

Table 5 shows that the yield of pulp in different varieties of carcasses in stallions of different ages is not the same. The highest yield of pulp in all groups of young stock is observed in Variety I (47.5-50.6%) and in Variety II (32.7-34.8%). The least amount of pulp is contained in the Variety III (0.21-1.3%).

A large content of bones in all groups of horses is contained in Variety II - from 39.1 to 43.9%, then in Variety I - from 33.6 to 35.1% and in Variety II - from 19.0 to 19.2%. Zhal and kazy belong to the outside of the variety, here the content of bones was from 3.4 to 6.8%.

In the meat of the 6 monthly colts there was 9.0%of fat, 20.3% of protein, in 18 months old stallions - 14.2 and 19.4%, respectively. In the meat of 30 monthly stallions, the fat content is higher - 21.4%, but the protein content is less - 17.6%. These data are consistent with the work of other researchers [24], who note that the amount of protein in horse meat varies between 16.9-22.6% and fat - 11.8-24.5%.

As you know, some national products made of horse meat, are in great demand among the local population (figure 1–3).

Such dishes as zhal, zhaya, kazy are rightfully considered delicatessen. They are distinguished by high nutritional value and good taste qualities.

Output of offal. The growth of internal organs characterizes the general development and state of metabolic processes in the body. The early ripeness of animals and feeding have a great influence on their development.

In more early ripened animals, internal organs finish their growth earlier than late-ripened ones.

With full-fledged feeding, the growth terminates quickly and an adult animal is formed, in connection with which the completion of the formation of internal organs occurs earlier [25].

Figure 1 – Zhal (fatty crest of the neck)

Figure2 – Cut of zhaya

Figure 3 – Kazy

According to the methodology [11], all organs were divided into offal products of the first and second categories. The offal products of the 1st category contained liver, kidneys, heart, tongue and meat trimmings.

The by-products of the second category contained stomach, intestines, lungs, diaphragm with trachea. At the slaughtering house of the stud farm, the small colon goes for processing for karta, and a shell for kazy and chuzhuk is made from the thin part of the intestine. Data on yields of offal are given in table 6.

Table 6 – Absolute and relative yield of the offal of the I and II categories

Name of the offal	Age in months					
	6		18		30	
	mass, kg	% to the carcass	mass, kg	% to the carcass	mass, kg	% to the carcass
Tongue	0.48	0.40	0.72	0.40	0.83	0.38
Liver	2.51	2.07	3.80	2.13	4.68	2.17
Kidneys	0.91	0.75	1.05	0.59	1.41	0.65
Heart	1.07	0.88	1.79	1.00	2.64	1.22
Meat trimmings	2.27	1.87	3.50	1.97	4.28	1.98
Total of the 1st category offal	7.24	5.98	10.86	6.10	13.84	6.41
Lungs	1.92	1.59	2.88	1.62	3.32	1.54
Spleen	0.47	0.39	0.90	0.50	1.19	0.55
Diaphragm and trachea	1.65	1.36	3.40	1.91	5.28	2.44
Total of the 2nd category offal	4.04	3.34	7.18	4.03	9.79	4.53

From Table 6 it can be seen that the absolute mass of internal organs increases with age of stallions, and their relative weight decreases or remains without significant changes. These data indicate that the development of muscle tissue and skeleton is a longer process than the development of internal organs.

When analyzing the weighing data of internal organs, their increase with age was revealed. So the absolute weight of the liver in 30 and 18 monthly colts is on 2.17 and 1.29 kg greater, respectively, of kidneys - on 0.50 and 0.14 kg, of heart - on 1.57 and 0.72 kg, of spleen - on 0.72 and 0.43 kg.

It was found that the length of the thin intestine in 6 months old colts was 14.7 m, in 18 monthly stallions - 16.2 m and in 30 months old colts - 16.9 m. The length of the small colon was 0.7, 1.2 and 1.9 m, respectively.

Economic efficiency of fattening of horses of different ages. The technology of herd horse breeding provides for the year-round keeping of horses on pasture.

Production is based on the organization of feeding of horses on natural pastures, as the cheapest way of its production. As a basis for calculating the economic efficiency, the cost of fattening for young animals was taken in 6, 18 and 30 months age, their cost and income from the sale of stallions for meat (table 7).

Table 7 – Economic efficiency of fattening of the Kazakh horses of Jabe type of different ages

Indicators	Age in months		
	6	18	30
Live weight after fattening, kg	215.6	330.3	390.9
Live weight gain, kg	44.4	41.6	48.5
Mass of carcass, kg	121	178	216
Expenses for fattening, tenge	23000	36000	48000
Cost of 1 dt of growth, tenge	51802	86538	98960
Purchase price of 1 kg of meat, tenge	1000	1100	1200
Revenues from sales, tenge	121000	195800	259200
Profit, tenge	46198	73262	112240
Profitability, %	61.8	59.8	76.4

From the data in table 7 it can be seen that higher profits were received from 30 and 18 monthly colts (112240 and 73262 tenge) compared to 6 monthly stallions (46198 tenge). However, the profitability is higher in 6 months old and 30 months old stallions by 2.0 and 16.6% compared to 18 monthly stallions.

Thus, during the autumn period, the fattening of young Kazakh Jabe horses of different ages gives a high economic efficiency and allows not only to pay back all costs due to the increase in live weight and fatness, but also to bring sufficient net profit.

Discussion of the results. The growth and development rates of young horses of the Kazakh Jabe type are expressed in intensive growth with favorable and decreasing growth rates in unfavorable seasons of the year. During the autumn feeding, stallions of different ages gained live weight. So, for 76 days of fattening, 6-month-old colts gave 44.4 kg of live weight gain, and 18 and 30 monthly stallions - 41.6 and 48.5 kg. The average daily gain, in this case, was 584, 547 and 638 grams per day, respectively. When analyzing the dynamics of the average daily live weight gain, it can be seen that the highest growths in stallions of all ages are observed in the first 20 days of feeding from 1160 to 1400 g, in the next 20 days, the gain decreased slightly and ranged from 580 to 700 g per day. At the end of the fattening period, the average daily gain was low and amounted to 20 to 100 g**.**

Conclusions. Meat productivity of young Kazakh horses of Jabe type of different ages after the autumn fattening has been characterized by high values. Thus, at slaughter, the carcass mass in 6 monthly colts has reached 121 kg, in 18 monthly colts - 178 kg and in 30 monthly stallions - 216 kg. The slaughter yield was 56.5; 53.8 and 55.5%.

When studying the morphological composition of carcasses in colts of different ages, it was established that in 6 months old colts the relative bone content (21.7%) is higher than in 18 and 30 monthly colts (17.5 and 17.8%). The content of the pulp in the carcass was an advantage in 18 and 30 monthly stallions (82.5 and 82.2%), while this figure in 6 monthly colts was 78.3%.

The economic efficiency of fattening of the young Kazakh Jabe horses is high. The net profit per head from 6 monthly colts is 46.2 thousand tenge, from 18 monthly - 73.3 and from 30 monthly - 112.2 thousand tenge. In this case, the profitability is 59.9 to 76.4%.

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КҮЗГІ ЖАЙЛЫМНАН КЕЙІНГІ ҚАЗАҚТЫҢ ЖАБЫ ЖЫЛҚЫСЫНЫҢ ЖАС ТӨЛДЕРІНІҢ ЕТ ӨНІМДІЛІГІ

Аннотация. Мақалада күзгі жайлым кезінде жылқы етінің мөлшері мен сапасын айтарлықтай көтеруге мүмкіндік беретін зоотехниялық іс-шаралар қарастырылған.

Жобаны іске асыруда жас төлдердің тірі салмағы екі есеге ұлғаяды, әр жеке бас ереке құнандар да (41,6-48,5 кг), жоғары қонымдылықтағы жылқы етінің бағасы (1 кг ет 1000-1200 теңге).

Жас төлдер жайлым аралығын (76 күнде) салыстырғанда, жаз ыстығынан шыққан орташадан төмен қонымдылықтағылар, жо,ары деңгейге жетті.

Зерттеулер көрсеткендей, бағудың алғашқы 20 күнінде құнандар орташа тәуліктік салмақ қосу тәулігіне 1160-1400 г болды. Кейін бағудың 30 тәулігіне орташа тәуліктік өсім төмендеп, 750-840 г көрсетті, бағудың 70 тәулігіне – 20 – 100 г аралығында болды.

Жас жылқы төлдерін күзгі семіртуден кейін сойғанда ет шығымы жоғары болды (53,8-56,5%), сүйек мөлшері (17,5-21,7%), таза еті (78,3-82,5%). Барлық жас төл топтарында таза ет шығымының жоғарғы көрсеткіші (47,5-50,6%) бірінші сұрыпта, кейін екінші сұрыпта (32,7-34,8%). Сұрыптан тыс жағдайда еттің шығымы (казы+жал) 6 айлық төлдерде 14,3 %, 18 айлықтарда – 17,5% және 30 айлық төлдерде 18,7 % құрады. Жылқы шаруашылығында қосалқы өнімдерді дамытудың маңызы зор. Түрлі жас мөлшердегі айғырлардан алынған тілдер салмағы 0,48 тен 0,83 кг, бауыр 2,51 ден 4,68 дейін кг, бүйрек 0,91 ден 1,41 дейін кг, жүрек 1,07 ден 2,64 кг дейін. Тоқ ішектен қарта дайындалады, оның ұзындығы 0,7-1,9 м. Ащы ішектен қазы және шұжық үшін қолданылады. Ұзындығы 14,7 до 16,9 м.

Түрлі жастағы айғырларды етке өткізгенде таза пайда 46,2 ден 112,2 мың теңгеге дейін. Рентабельділік жоғары 59,8 ден 76,4%.

Түйін сөздер: жас төл, өсім, ұша, сойыс шығымы, таза ет, сүйектер, қосалқы өнімдер, түсім, рентабельділік.

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МЯСНАЯ ПРОДУКТИВНОСТЬ МОЛОДНЯКА КАЗАХСКИХ ЛОШАДЕЙ ЖАБЕ ПОСЛЕ ОСЕННЕГО НАГУЛА

Аннотация. В статье рассмотрены некоторые зоотехнические мероприятия, позволяющие значительно увеличить количество и качество конины в условиях осеннего нагула. Выручка от реализации молодняка увеличивается в два раза за каждого жеребчика, как за счет прибавки живой массы (41,6-48,5 кг), так и за счет более высоких цен на конину высшей упитанности (1000-1200 тенге за 1 кг мяса).

За сравнительно короткий промежуток нагула (76 дней) молодняк, вышедший из летней жары в состоянии нижнесредней упитанности, достигли высшей кондиции. Исследования показали, что за первые 20 дней нагула среднесуточный прирост жеребчиков достигал 1160-1400 г в сутки. Затем на 30 день нагула среднесуточные приросты снижаются и достигают 750-840 г, а в конце нагула на 70 день нагула – 20-100 г.

При убое молодняка лошадей после осеннего нагула получены туши с высоким убойным выходом (53,8-56,5%), большим содержанием мякоти (78,3-82,5%) при относительно невысоком содержании костей (17,5-21,7%). Наибольший выход мякоти во всех группах молодняка был в первом сорте (47,5-50,6%), затем во втором сорте (32,7-34,8%). Выход мякоти в отрубе вне сорта (казы+жал) достигал у 6 месячных жеребят 14,3%, у 18 месячных – 17,5% и у 30 месячных жеребчиков 18,7. Большое значение в перспективе использования резервов коневодства имеют субпродукты. От жеребчиков разных возрастов получена масса языка от 0,48 до 0,83 кг, печени от 2,51 до 4,68 кг, почек от 0,91 до 1,41 кг, сердца от 1,07 до 2,64 кг. Из малой ободочной кишки изготовляется деликатесное изделие карта, длина которой достигает 0,7-1,9 м. Тонкий отдел кишечника используется в качестве оболочки для казы и чужука, длина ее составляет от 14,7 до 16,9 м.

Чистая прибыль от реализации жеребчиков разных возрастов на мясо составляет от 46,2 до 112,2 тысячи тенге. Рентабельность при этом высокая от 59,8 до 76,4%.

Ключевые слова: молодняк, прирост, туша, убойный выход, мякоть, кости, субпродукты, прибыль, рентабельность.

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ENERGOACTIVE MULTILAYERED CONSTRUCTION OF FENCING WITH A THERMAL-ACCUMULATING LAYER

Abstract. In work, based on the principle of operation of systems of passive use of solar energy, an energy-active multi-layer construction of a building fence with a heat-accumulating layer of increased thermal efficiency was developed. The choice and the design decision of the developed design of the energy-active fencing is substantiated. The effectiveness of the application of the structure is based on the fact that the construction of the enclosure includes a heat-accumulating layer of phase-transfer heat-accumulating material based on liquid paraffins and a heat-reflecting coating that increase the heat-storage capacity and increase the energy efficiency of the enclosure. The technical result of the developed fence design is an increase in resistance to the heat transfer of the fence, an increase in the heat storage capacity of the outer fence, and overall, a reduction in heat losses and an increase in the energy efficiency of the building.

Keywords: heat-accumulating materials, energy efficiency, construction, paraffin, heat transfer.

Introduction. Creation of conditions for reducing energy intensity and increasing energy efficiency by reducing energy consumption and reducing the ineffective use of fuel and energy resources is the main goal of the state program "Energy saving-2020" and ensures energy and environmental security of the country, stimulates the introduction of new innovative solutions and relates to the strategic tasks of the state [1].

Reduction of heat losses in buildings now depends on the competent design of external fences, and the degree to which they meet modern requirements for thermal protection of buildings. So close attention to the design of energy-efficient enclosing structures is explained, on the one hand, by the important place they occupy in the structure of the building, and on the other hand by the role they play in solving the problem of saving energy resources and raising the level of thermal protection of buildings.

Setting the purpose of the work. In the design of exterior enclosures of buildings, passive solar energy systems have been widely used in recent years, which are based on an organic combination in the construction of a layer of material with a large heat-accumulating capacity and a heat-insulating light-penetrating layer [2-6]. In the process of insolation, the transparent layer passes to the inner layer solar radiation and prevents the heat transfer in the opposite direction due to the greenhouse effect by thermal radiation, thermal conductivity and convection from the surface of the heat-storage layer.

In this connection, based on the principle of operation of systems of passive use of solar energy, the goal was to develop an energy-active multi-layer fencing structure of a building with a heat-accumulating layer of increased thermal efficiency.

Justification of the choice of the constructive solution. As an analog of the energy-active design, the working principle and construction of a flat solar collector with an air coolant were chosen [7]. In solar heating systems, a flat solar collector is one of the main elements that effectively use the energy of solar

radiation to heat an air or liquid coolant. A feature of energy-efficient flat solar collectors, and primarily of the heat-absorbing layer in it, is the ability to actively absorb heat not only of direct, but diffusive as well as reflected radiation, both in cloudless skies and in light cloud cover.

Recently, a number of systems and instruments have been developed that use the energy of solar radiation to power the building's premises [8,9]. However, these systems have not yet found wide application due to their relative high cost, lack of proper justification of the technical and economic efficiency of their use in the enclosing structures of buildings to increase the resistance to heat transfer of the fence and the generation of additional heat for heating the building.

Important in the development of energy-efficient fencing structures is the choice of the type of coolant. When determining the type of coolant of the reservoir, it is important to take into account factors such as the level of comfort created, the climate of the terrain, the compatibility of the reservoir with the building design, the simplicity and relative cost of the reservoir design.

According to the purpose of the work, the possibility of saving energy for heating using solar energy is considered, therefore, air-active air-type structures that provide a relatively simple way of transferring solar heat to a room will be more preferable.

When they are used, there are no problems associated with the addition of additional antifreeze additives to the coolant to prevent multiple freezing and thawing in liquid systems.

When solving the problem of compatibility of heat-storage structures with the design of external fencing, it is important to take into account the advantage of placing an energy-efficient air-type structure in the walls of the south or south-west orientation or to integrate them into the fence construction in the deaf or fence piers.

It is known that when placing energy-efficient structures on the roof of a building, the length of the ducts to heated rooms or to the heat accumulator, usually located close to the ground level, increases, which reduces the efficiency of the system. Therefore, the merit of energy-efficient air-type structures is their greater compatibility and organic connection with the outer enclosing structures of the building, which allows to increase the thermal efficiency of external fences in the process of solar insolation.

Energy-efficient air-type structures also have a lower cost compared to liquid systems due to the possibility of reducing costs for installation, repair and maintenance.

When justifying the dimensions of the energy-active structure, it should be taken into account that in order to achieve the best heat transfer conditions between the heat storage material and the circulating air, the panel should be placed in the structure at a small distance from its internal surfaces in order to obtain the greatest possible pressure drop. However, one should keep in mind the lower specific and volumetric heat capacity of air, and therefore the dimensions of the space for air circulation should be optimized for each specific energy-active construction.

The efficiency of solar energy-active designs largely depends on the choice of heat-accumulating material in the panel. Perspective and economically expedient heat-accumulating materials are energy-saving materials with a hidden form of energy storage, which include phase-transfer heat-accumulating materials [10-12]. In phase-transfer heat-storage materials, the transfer of thermal energy occurs during a phase transition, when the material passes from a solid state to a liquid state. Unlike the known heat-accumulating materials in phase-transfer heat-accumulating materials, the heat release occurs due to the creation of a crystalline structure, and the accumulation is due to the destruction of the structure during melting.

When using phase-transfer heat-accumulating materials in enclosing structures, a number of requirements are imposed, the essential ones being: the maximum enthalpy of melting and phase transition of the material from solid to liquid; required operating temperature of melting and phase transition and its high stability; good reproducibility of the thermophysical properties of the material over a large cycle of melting and crystallization; compliance with environmental safety standards; inertness with respect to structural materials.

In the energy-active construction, in accordance with the results of the scientific justification [13], the material of a phase transition based on commercial paraffins is adopted as the heat-accumulating material. The heat-accumulating material based on paraffins adopted in the fence design is distinguished by its high heat capacity and relatively low melting point of the phase transition, insignificant shrinkage and corrosive inertness with respect to the metal.

The thermal performance of energy-active structures with a heat storage panel is affected by the velocity of the coolant in the channel. Experience in the design of solar collectors shows that the air consumption per 1 m^2 of the solar panel varies from 5 to 30 liters/s, but it is noted that the optimal air flow rate is usually 10-14 liters/m^2·s. It is taken into account here that its increase from 10.1 to 15 l/m^2·s leads only to a slight improvement in the thermal performance of the panel, causing an increase in energy consumption for air pumping.

It is known that the efficiency of a solar energy-active panel and the density of incident solar radiation depends on the orientation of the translucent panel. In view of the fact that the design being developed is located or built into vertical outer fences, the highest intensity of the solar radiation flux for a vertical surface falls on the horizon of 2000-2900. This orientation corresponds to the south and south-west direction. However, it should be noted that strict orientation to the south or to the south-west of the vertical enclosure with heat storage panels is not critical, since a slight (up to 150) deviation of the vertical guard from this sector causes a slight decrease in thermal performance.

His indicates the advisability of using energy-active structures with heat-storage layers on the external surface of buildings that are not only strictly latitudinal, but also on buildings oriented with small deviations from this direction.

When choosing translucent coatings for energy-efficient structures, it should be borne in mind that an increase in their number raises thermal productivity, but at the same time leads to a significant increase in its cost. However, practice shows that the optimal for the purposes of space heating is the use of double-pane glazing of the thermo-accumulating panel.

One of the most difficult questions in designing an energy-efficient design, as an analog of a flat solar collector, is to ensure the impermeability and tightness of its connections. The prevention of leakage of the heat-transfer medium has not less value for an air-storage heat-storage panel than for a liquid-type reservoir. Infiltration of cold air through the joints of the translucent coating and leakage of heated air through the connections of ducts and air ducts can significantly reduce the heat and power characteristics of the panel. Therefore, the tightness of the joints of the constructed energy-active design was considered one of the important factors in ensuring the efficiency of its operation.

Description of the developed fencing construction. Thus, the study of construction experience and a review of the results of research on the operation of energy-active structures and on the design of flat solar collectors has made it possible to determine ways to solve a number of technical issues on the development of an energy-active design and increase its thermal efficiency.

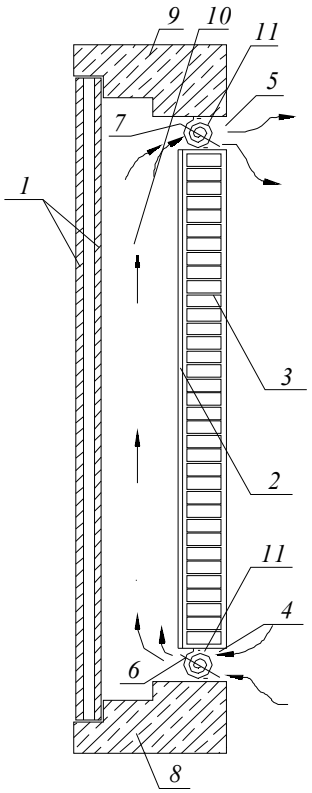
As a result of the analysis of various fencing design variants, the following constructive solution of the energy-efficient design adapted to hot climatic conditions was chosen and satisfying the compatibility problems of the designed structures with the external enclosing structures of the building in accordance with figure.

The technical result of the developed fence design is an increase in the resistance to the heat transfer of the fence and an increase in the heat storage capacity of the outer fence using a wall panel with heat-accumulating material based on commercial paraffins in their construction.

The effectiveness of the developed design is based on the fact that the construction of the enclosure includes a heat-accumulating layer of phase-transfer heat-accumulating material based on liquid paraffins and a heat-reflecting coating that increase the heat-storage capacity and increase the energy efficiency of the enclosure.

The developed energy-efficient construction of the building wall enclosure includes a double translucent coating 1, a reflective foil 2 film, a wall panel 3 filled with phase-transfer heat-storage material, based on commercial paraffins with a melting point of 25-50 °C and a total enthalpy of melting and phase transition 205-212 J/g. The dimensions of the module of the structure along the external faces are assumed to be equal to the size of the window sash and the pier. In the upper and lower parts of the guard there are channels 4 and 5, in which the thermostatable shutters 6 and 7 are installed. The guard has a lower 8 and a top 9 part. The heat medium flows through the inlet 4 and is discharged through the outlet 5, passing through the duct 10. The flaps are controlled by the thermostat 11.

To ensure high tightness of the butt joints of air ducts and a translucent coating, weatherproof glue is used. To tightly connect the energy-efficient structure to the window or wall binder, a special presser and elastic airtight gaskets are used.



Energy-active design of the enclosure with a thermo-accumulating layer

Solar radiation, penetrating through the transparent double coating 1, enters the reflective foil 2. The air heated by the foil 2 rises through the channel 10 and exits from the outlet 5 into the room, and cold air enters through the inlet at the level of the floor 4. Thus, air circulation and space heating are carried out. Together with the heating of the air in the channel 10, the heat accumulating panel is heated, filled with phase-transfer heat-accumulating commercial paraffin, to the melting temperature and above. If the air in the room is heated above the permissible temperature, the shutters 6 and 7 that regulate the thermostat 11 are closed, the sun's rays heat the air in channel 10, and part of the solar energy passes through the retro-reflective layer 2 to the inner heat-storage panel 3 and, while heating it, accumulates in it. At night and overcast, indoor air is heated from the wall panel 3, both with open and closed flaps. Due to the tight contact between the heat reflective layer 2 and the panel 3, the heat from the panel is transmitted to the room when the flaps are closed. Layer 2 serves as a heat-reflecting layer for the inner panel 3, which in its turn, due to the phase transition (crystallization) of the heat-accumulating liquid paraffin, keeps the heat in the room. Regulation of air temperature in the room is carried out by regulating the degree of air circulation through the channel 10 by opening the shutters 6 and 7 controlled by the thermostat 11 more or less. When the room temperature rises, the damper under the influence of the thermostat is covered and due to the heat in the room the heat storage material of panel 3 melts and accumulates heat, when the temperature decreases - the flaps open and the heat is transferred to the building.

Justification of the developed fencing construction. To justify the thermal efficiency of the application of the energy-active multi-layered construction of the enclosure with the heat-accumulating layer, calculations were performed by the method [14]. Calculations were made for a two-story individual residential building with a total area of 120 m^2 for the climatic conditions of the city of Turkestan. The thermal efficiency of the building fencing was estimated by the specific consumption of heat energy for heating for the heating season, depending on the area of the fence. The calculation results showed that the specific heat consumption for heating the building with the traditional structural solutions of the building was 95 kJ/(m^2·°C·day), and for the area of energy-active structures 20 and 40 m^2, 89 kJ/(m^2·°C·day) and 84 kJ/(m^2·°C·day). The share of heat compensated by the use of energy-active structures of the fence with a heat-storage layer, with the area of energy-active structures 20 m^2 was 6% and at an area of 40 m^2 – 11%.

Conclusions. The proposed constructive solution of the energy-efficient multi-layered fencing provides a reduction in heat losses and an increase in the energy efficiency of the building. At the same time, the fence structure has an increased heat capacity due to the use of the heat-storage layer from the phase-transition heat-accumulating material based on the commodity paraffin. The accumulation of heat in the fence panel regulates the thermal regime in the room, and the heat-reflecting layer of the foil and the heat-accumulating layer from the phase-transition heat-storage material serve as a heat-shield layer in the enclosure.

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ЭНЕРГОАКТИВНАЯ МНОГОСЛОЙНАЯ КОНСТРУКЦИЯ ОГРАЖДЕНИЯ С ТЕПЛОАККУМУЛИРУЮЩИМ СЛОЕМ

Аннотация. В работе, основываясь на принципе работы систем пассивного использования солнечной энергии, представлены данные по разработке энергоактивной многослойной конструкции ограждения здания с теплоаккумулирующим слоем повышенной тепловой эффективности. Обоснован выбор и описано конструктивное решение разработанной конструкции энергоактивного ограждения. Эффективность применения конструкции основана на том, что в конструкцию ограждения входит теплоаккумулирующий слой из фазопереходного теплоаккумулирующего материала на основе жидких парафинов и теплоотражающее покрытие, которые увеличивают теплоаккумулирующую способность и повышают энергоэффективность ограждения. Техническим результатом разработанной конструкции ограждения является повышение сопротивления теплопередаче ограждения, увеличение теплоаккумулирующей способности наружного ограждения, и в целом, уменьшение тепловых потерь и увеличение энергоэффективности здания.

Ключевые слова: теплоаккумулирующие материалы, энергоэффективность, конструкция, парафин, теплопередача

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ЖЫЛУАККУМУЛЯЦИЯЛАУШЫ ҚАБАТТЫ ЭНЕРГОБЕЛСЕНДІ КӨПҚАБАТТЫ ҚОРШАУ КОНСТРУКЦИЯЛАРЫ

Аннотация. Жұмыста күн энергиясын пассивті қолдану жүйесі жұмысына негізделген, жылу тиімділігі жоғарыжылуаккумуляциялаушы қабаты бар ғимараттардыңэнергобелсенді көпқабатты қоршау конструкциялары жасалынғаны жайында мәліметтер берілген. Жасалынған энергобелсенді қоршау конструкциясының құрылымдық шешімі негізделіп, айқындалған. Конструкциялардың қолдану тиімділігі сұйық парафиндер негізінде фазалық ауысу қабілетті жылуаккумуляциялаушы қабат пен жылушашыратушы беткейден құралатын қоршау конструкцияларының жылуаккумуляциялаушы қасиеті мен қоршаулардың энерготиімділігін жоғарылататын оңтайлы құрамына негізделеді. Жасалынған қоршау конструкциясының техникалық нәтижесі қоршаулардың жылуөткізуді қарсылығын жоғарылату, сыртқы қоршаулардың жылуаккумуляциялаушы қабілетін күшейту, жылуды жоғалтуды төмендету және ғимараттардың энерготиімділігін өсіру болып табылады.

Түйін сөздер: жылуаккумуляциялаушы материалдар, энерготиімділік, конструкция, парафин, жылуберілу.

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SYIYNDYK BREED TYPE – EDILBAY SHEEP'S EXTERIOR – PRODUCTIVE PECULIARITIES

Abstract. Syiyndyk breed type – edilbay sheep's were created by absorptive crossing of local Kazakh fat-rumped sheep's azgir type with edilbay sheep. Thorough-bred breeding of edilbay sheep in a new economic and environmental conditions for a long time, as well as free crossing with hybrid , which was achieved by absorptive crossing of local Kazakh fat-rumped sheep with edilbay sheep, created a new interspecies ecological type of these sheep.

In modern conditions of market economy, demand for goods necessitates breeding of resilient sheep ensuring high returns for mutton production. In order to solve this issue the most important thing is to study biological features of sheep, especially when creating new high-potential types and breeds. Now there are extensive array of fat-rumpededilbay sheep types with quite high greasy meat productivity and harsh wool, which have an important role in improvement of fat-rumped herd in Atyrau region and republic. One of the significant biological feature of these sheep is consolidated heredity, representative, high greasy meat productivity and high energy growth of lambs at young age. Also their wool productivity is well expressed. The head of sheep is massive, but not rough, medium-sized, comparative tight, with pronounced hawk-nose, buck's hawk-nose expressed better and their nasal bones at the line of humb are wider. The examining type of sheep has high prematureness peculiarity. The data describing age-related changes of their backbone : they quickly grow in height, in a year and half they reach 98.8% of withers at hump size of an adult one. Describing holumetric datum: chest depth, chest breadth, heart girth depth grows more slowly in comparison with other depths (89.7%).

In general an average body weight of buck is 102.7 kg, youngsters' at the 14-16 months is 60.0 kg, or 79% of adult buck and dam's body weight. In order to form genetic structure of dam in selection group there laying and improving genealogical lines, on which basis form two breed lines of these sheep with concentration on main selecting features.

Keywords: breed, slaughter, bulk, herd, prematureness, syiyndyk type, breed type.

In Kazakhstan one of the main directions of pastoral industry is fat-rumped, which gives a big amount of cheaper mutton, harsh and half-harsh wool, leather and fur-bearing materials. Fat-rumped sheep is at the second place by it's amount in republic. Basic mass of them is at the semidesert, desert and dry steppe zones in Atyrau, Aktobe, East Kazakhstan,West Kazakhstan, Karagandy, Kostanay and Pavlodar regions.Thus development and efficiency of pastoral industry's these direction is affected by climate changes, grazing conditions in summer and winter.

Types of sheep such as edilbay, saryarka, Kazakh half-harsh and harsh wool fat-rumped are of interest in Kazakhstan in order to increase the meat production for fuller utilization of reserves. At the present time, among all survived species the most breeding value and practical interest have edilbaysheep , which is the brightener of all republic's harsh wool fat-rumped sheep massive. The best herds of edilbay sheep are in West-Kazakhstani "Birlik" JSC and Atyrau region's "Syiyndyk" LLP.

Country's harsh wool fat-rumped sheep as a wide-spread breed of sheep in republic's different areas have popular ecological differentiation. Among Kazakh fat-rumped sheep stand out edilbay sheep, which have such differentiation as a interspecies zonal ecological and breed types. These types diverse in constitutional- exterior peculiarities. They linked to the feature of realization hereditary norms in a state of

this or that environment, to the rate of metabolic processes and prevailing growth of this or that breed's productivity. Differences between breed's used in selection work by their efficiency and constitutional-exterior peculiarities foster the creation of new population within one breed.

Edilbay sheep's herd of `Syiyndyk ` stud farm were created by absorptive crossing of local Kazakh fat-rumped sheep's azgir type with edilbaysheep, which are imported from Zhangalin region of Oral oblast and partial pure breeding.

Accumulation cross breeding was developed and applied as a selection technique back in the middle of the century in transformation of rig-wool sheep breeding to fine-wool sheep breeding. The experience of applying of the accumulation cross breeding of local sheep with improving breed depends on the correct choosing of the improving breed, on the quality of the uterine composition, on the selection of the individuals most suitable for the purpose, and on the creation of the most favorable conditions for the development and consolidation of positive qualities.

In the "Suyunduksky" breeding livestock farm was created a large array of the edilbay type fat-rumped sheepwith the enough high meat-and-fat capacity and brashy wool, which has crucial importance on the improvement of the fat-rumped sheep herds in the Atyrau region, as well as, in the transformation of meat-and-fat sheep breeding of other farms of the breeding zones of kazakh fat-rumped rig-wooled sheep.

Animal farms are characterized by consolidated heredity, typicality, high potential for meat-and-fat productivity and high energy of lamb growth at young ages.

A very valuable biological feature of these sheep is that it is good for both adults and young cattle to use favorable forage and climatic conditions that develop in desert and semi-desert zones in certain seasons of the year.

In the "Suyunduksky" breed livestock farm was created a selected group of broad ewe sheep numbering 1,000 animals with a live weight of 67.9 kg of adult ewe and 2.15 kg amount of wool shorn (table 1). In general, sheep have a living weight of 102.7 kg on the average, and young cattle at the age of 14-15 months reaches 60.0 kg or 79% of the live weight of adult ram and ewe, accordingly.

Table 1 – Efficiency of selected group of edilbay sheep

Sex and age group	S	Live weight, kg	Amount of wool shorn, kg
		M ±	M ±
Stud-ram	145	102,7±0,82	2,54±0,01
Adult broad ewe sheep	1050	67,9±0,12	2,15±0,03
Gimmer of 15-16 months	1134	48,5±0,37	1,59±0,02
Ram of 14-15 months for a breeding sale	410	59,7±0,38	1,96±0,01

Table 2 shows the average index of measurements of gimmers of 1.5 years, adult ewes and stud-rams.Comparison of the measurements of the growing and full-aged ewe sheep shows that the sheep studying types of the "Suyunduksky" breeding livestock farm have a high prematureness. This is characterized by age changes in their skeleton. As it is shown in the table, they grow most rapidly in height, reaching 98.8% of the adult height by one and a half years of age at the shoulders. The body length (96.4%) also develops very quickly, then the measurements that characterize the volumetric parameters: the depth of the chest, the width of the chest, and the measurement of the chest circumference develops much slower in comparison with other measurements. Measurements of the body of stud-rams are similar to the animals of the former Furmanov state breeding types [2].

The experience of the top breeding livestock farms shows that the presence in the herd of highly productive linear animals characterized by certain differences in the degree of expression of the most important economic-useful characteristics, and correct usage of these animals in breeding are effective means of improving the breeding productive qualities of the herd [3-5].

To form a genetic structure in the breeding group of the broad ewe sheep three genealogical lines are coded and developed, on the basis of which the production lines of these sheep with specialization on the leading selectable characters are formed.

Table 2 – Measurements of edilbay ewes

	LLP "Suyunduksky"			"Birlikskiy" breeding livestock farm (named after I. N. Popov)		
	1.5 year oldewes	Adult ewes	Adult stud-rams	1.5 year old gimmers	Adult ewes	Adult stud-rams
Height at the shoulder, cm	74,4	75,3	83,5	75,0	76,3	83,2
In the percentage from adults	98,8	100		98,3	100	
Body length, cm	70,2	72,8	82,1	76,0	78,3	82,2
In the percentage from adults	96,4	100		97,1	100	
Depth of the chest, cm	31,2	33,0	36,1	33,1	35,5	39,5
In the percentage from adults	94,5	100		93,2	100	
Width of the chest, cm	18,7	20,4	22	20,1	20,6	23,4
In the percentage from adults	91,7	100		97,6	100	
Width of the hook bones, cm	19,1	20,0	21,2	20,7	21,8	22,8
In the percentage from adults	95,5	100		95,4	100	
Chest circumference, cm	90,7	101,1	106,7	94,8	99,1	110,4
In the percentage from adults	89,7	100		95,7	100	
Circumference of the pastern, cm	7,1	8,2	9,1			
In the percentage from adults	86,6	100				

Edilbay sheep are comparatively distinguished by high living weight and according to that fact they slightly inferior only to the sheep of the Gissar breed. Generally, sheep of large breeds bring newborn lambs with a high mass(weight). The live weight of the Edilbay sheep of the breeding farm at birth varies considerably depending on many factors: live weight of ewe, fodder and weather conditions, age of ewe, in number of how many were born and other lambs are born with an average live weight of 4.8-5.5 kg and further grow and develop rapidly.

Table 3 – Live weight of the Edilbay lambs (kg)

Group	Atbirth				At the age of 4-4.5 months			
	Sheep		Lambs		Sheep		Lambs	
	п	M ±	п	M ±	п	M ±	п	M ±
Edilbay sheep of Syiyndyk breeding plant	212	5,3± 0,12	227	5,0± 0,05	119	37,0± 0,092	111	34,7±1,35
Edilbay sheep of Gurievsk exp.station (A. Zhanderkinand etc.)	215	5,5± 0,22	231	4,7± 0,22	218	36,2± 0,13	216	34,07±0,15
Edilbay sheep of Central Kazakhstan (K. Kanapiya)	187	5,4± 0,06	148	5,1± 0,06	187	35,0± 0,31	148	33,4± 0,31

As can be seen from table 3, compared with Edilbay sheep of Central Kazakhstan, Syiyndyk lambs were characterized by quite satisfactory growth and development in the embryonic and suckling periods.

During the suckling period, the Edilbay lambs of the Suyiyndyk breed type develop more or less quickly. During the first month of life, the daily increase in the lamb's live weight is 350-400 g, and in subsequent periods of post-embryological growth and development, the rate of growth is somewhat reduced. These sheep are related to early ripening sheep with high energy growth in the first year of life.

In the process of creating a new type of Edilbay sheep in Syiyndykpedigree-cattle breeding farm, there was studied the reproductive capacity of elite and selective flocks of uterus. It was studied for a number of years, taking into account the fertilization of the ewe during artificial insemination, also the number of hatching ewe and their fertility.

An analysis of the reproductive capacity of the fat-rumped sheep of the pedigree-cattle breeding farm, shows that theyhave a satisfactory fecundity and it varies from 106 to 115% with a sufficiently high safety of the lambs for weaning.Observation over recent years for two breeding flocks showed that the yield of newborn lambs per 100 cognate uterus was 105-108%.The viability of sheep of any breed in working conditions is determined by the amount of animal waste, the higher the safety of the sheep population, so they are better adapted to local climatic conditions of nature.In our example, the mortality of lambs from birth to weaning from the ewe was 3.5-4.2%.

In recent years, wool prices and the sale of pedigree animals have significantly decreased, because of the lack of purchasing power of farms of various forms of ownership.However, in 1997, “Suyundukki” LLP received 626 thousand tenge from sheep breeding of net profit mainly due to the sale of sheep for meat at an agreed price. In addition to this, in 1998 and 1999 the profit from sheep breeding was among 1720 and 1450 thousand tenge.As a result of many years of scientific research and selection and breeding work, the scientific employees of KazNITIO (Kazakh scientific research institute of sheep breeding) and specialists of the pedigree-cattle breeding farm in Syiyndyk, Atyrau region created a flock of sheep with a population of more than 20 thousand head, persistently transmitted by inheritance of specific morphological, productive and other economic characteristics inherent in the animals of this breeding plant .

A distinctive feature of the deduction of a new breeding type of edilbay sheep is that there was used a classical method of transforming cross-breeding of local Kazakh fat-rumped coarse-wooled sheep of the Azgir offspring with imported Edilbay rams from the West Kazakhstan region and purebred breeding of the Edilbay sheep.In this case, as a producers along with purebred animals, there were used high-breed local sheep with a highmutton meat productivity.This provided a new population of fat-rumpedcoarse-wooled sheep, well adapted to local desert and semi-desert conditions of feeding and keeping with excellent performance of wool and meat productivity.

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ЭКСТЕРЬЕРНО-ПРОДУКТИВНЫЕ ОСОБЕННОСТИ ЕДИЛБАЕВСКИХ ОВЕЦ СУЮНДУКСКОГО ЗАВОДСКОГО ТИПА

Аннотация. Едилбаевские овцы суиндикского заводского типа были созданы путем поглотительного скрещивания местных казахских курдючных овец азгирского типа с едилбаевскими баранами. Многолетние чистопородного разведения едилбаевских овец в новых хозяйственных и природных условиях, а также при свободном скрещивании с помесями, полученными при поглотительном скрещивании местных курдючных овец с едилбаевскими баранами, образовался новый внутрипородный экологический тип этих овец.

В современных условиях рыночной экономики спрос на продукцию диктует необходимость разведения овец крепкой конституции жизнестойких, обеспечивающих высокую рентабельность пройзводства баранины. Для решения этой задачи наиболее актуально изучение биологические осбенности овцы, особенно при создании новых, более высокопродуктивных типов и пород. В сегодняя создан болшой массив курдючных овец в типе едилбаевских с достаточно высокой мясо-сальной продуктивностью, грубой ордовой шерстью, имеющий решающее значение в совершенствовании стад курдючных в Атырауской области и в республике. Очень важный биологической особенностью этих овец является консолидированной наследственности,

типочности, высоким потенциалом мясо-сальным продуктивности и высокой энергией роста ягнят в молодом возрасте. Достаточно хорошо выражена у них шерстная продуктивность. Голова овец массивная, но не грубая, средней величины, относительно узкая, с ясно выреженной горбоносостью, у баранов горбоносость выреженно резче и носовые кости по линии горба у них шире. Так же изучаемые овцы данного заводского типа обладает высокой скороспелостью. Данные, характеризующие возрастные изменения развития их костяка, они быстро растут в высоту, достигая к полутора годам высоты в холке 98,8% от величины во взрослом состоянии. Характеризующие объемные показатели: глубина груди, ширина груди, промеры обхвата груди развиваются значительно медленней в сравнении и другими промерами (89,7%).

В основном бараны имеют живую массу в среднем 102,7кг, а моладняк в возрасте 14-16 месяцев достигает 60,0 кг, или 79% массы тела взрослых баранов и маток. Для формирования генетической структуры в селекционной группе маток хозяйства заложены и совершенствуются генеалогические линии, на базе которых формируются две заводские линии этих овец со специализацией по ведущим селекционируемым признакам.

Ключевые слова: порода, убой, туша, стада, скороспелость, суюндукский тип, развеления, заводской тип.

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ЕДІЛБАЙ ҚОЙЫ СҮЙНДІК ЗАУЫТТЫҚ СҮЛЕСІНІҢ ЭКСТЕРЬЕРЛІ – ӨНІМДІЛІК ЕРЕКШЕЛІКТЕРІ

Аннотация. Нарықтық экономика жағдайында еліміздің қой шаруашылығы жас қой етін өндіруге, яғни төлдерді туылған жылы жоғары қарқында өсіп-жетілуімен азықты өнімге тиімді айналдыру қасиетімен ерекшеленетін құйрықты қой тұқымдарын өсіруге мамандандырылуда.

Мақалада, Атырау облысы Құрманғазы ауданындағы, «Сүйіндік» мал зауытында жергілікті азғыр тармағы қойларының өнімділік және тұқымдық қасиеттерін жақсарту мақсатында, оларды еділбай қой тұқымының қошқарларымен айқыш будандастырудың классикалық әдісі және ішінара еділбай қойларын жаңа табиғат жағдайларында таза өсіру нәтижесінде, етті – майлы өнімі мал, тез жетілгіштік қасиеті жоғары, Батыс Қазақстанның шөл және шөлейт аймақтарының қатаң жағдайларына жақсы бейімделген қылшық жүнді құйрықты қойлардың екі желіден тұратын сүлесінің жаңа шығарылғандығы баяндалды.

Бұл тұқым берік бітімімен, жақсы жетілген сүйектілігімен, мүйізсіз, дөңестеу тұмсықты, ұзынша басымен ерекшеленеді. Тұрқы тұтаста кең, терең кеуделі. Шоқтығы тарлау, арқа мен бөксесі кең. Мойыны қысқалау. Аяқтары мықты, тұяқтары өте берік. Құйрықтары үлкен көлемді, тартыңқы. Саулықтарының құйрықтарының көлемі шамалы шағындау.

Асыл тұқымды сақа саулықтарының салмағы 70-80кг-ға дейін жетеді. Қошқарлары 95-105 кг, 16 айлық тұқымдық қошқарлары 65-70 кг, тұсақтары 55-58 кг, тартады. Бұл көрсеткіштер еділбай қой тұқымының стандарты деңгейінен 10,0-18,0% жоғары. Құйрықты қозыларды 4-4,5 айлығында енесінен бөліп, етке өткізуге болады. Бұл жаста қозылардан толық құнарлы және диеталық жұғымды қозы еті алынады.

Алынған ұрпақтың шоқтығының биіктігі, тұрқының ұзындығы, кеуде тереңдігі және бақай орамы сияқты дене өлшемдері көрсеткіштеріне еділбай тұқымы қошқарларының нәсілдік қасиеттерінің әсері басымырақ екендігі аңғарылады. Кеуде орамы мен сербен аралығы деңгейінің ұрпаққа берілуінде ата-ененің нәсілдік қасиеттерінің аралық сипаты сақталады деп тұжырымдауға болады.

Сонымен қатар берілген кестелерден селекциялық асылдандыру жұмыстарының нәтижесінде сүйіндік қойларының дене тұлғасының ірілене және кесектене, яғни олардың еттілік қасиеттерінің де жетіле түскендігі байқалады. Сүйіндік еділбайының дене тұрқының ұзындығы бірлік еділбайы тұқымдастарына қарағанда 6 (қошқарлар) және 3,3 (саулықтар) см-ге қысқалау келеді, яғни, бұл біріншілерінің дене тұлғасының көлемді де жұмыр келетінін, сүйектілігінің нығая түсетіндігі тағы да бір дәлелдейді.

Түйін сөздер: тұқым, мал сою, ұша, табын, тез жетілгіштік, сүйіндік сүлесі, өсіру, туыс саласы, зауыттық сүле.

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THE GROWTH OF INTELLECTUAL POTENTIAL XX CENTURY IN KAZAKHSTAN

Abstract. The article describes the dominant role of educational movement in the formation of the Kazakh national intelligence. In a pre-revolutionary Russian part of Central Asia, there were possibilities of development of Islamic integration, a pan-turkizm, and ethnic nationalism. The literate of the Tatar population played the significant role in the distribution of the ideas of Muslim-Turkic unity. The reasons of the defeat of a pan-turkizm in Kazakhstan consisting in the religious indifference of nomads and powerful influence of daily occurrence of the interethnic relations which led to the wide circulation of the Russian culture which was the conductor of westernization of the Kazakh society reveal. The critical role in the choice of a civil way of development of Kazakhs was played by the Russian and Kazakh educators creating the Russian-Kazakh schools and the Kazakh schools with teaching in Russian. Founders of the Kazakh national movement Alash mainly studied at the Russian-Kazakh schools of northern and western districts of the region and in higher educational institutions of the European part of Russia. The Kazakh national project was supported later by the Soviet power during the realization of national-orientated policy.

Key words: national development, intelligence, Alash party.

The article describes the formation of the Kazakh national intelligence as a part of the national and educational growth at the beginning of the 20th century. With socio-economic and political processes that took place in Kazakhstan during that time, they had a profound impact on the spiritual and educational sphere of life of the Kazakh society. The formation of the national intelligentsia was a complicated and lengthy process, hampered by the colonial regime, the discriminatory tsarist policies, which adversely affected the quantitative growth of specialists in the field of the national economy, particularly in industry, culture, education and other important spheres of public life. The socio-economic and political processes that took place in Kazakhstan at the beginning of the 20th century had a profound impact on the spiritual and educational sphere of life of the Kazakh society. The radical changes in the socio-economic and political life of Kazakhstan contributed to a significant transformation of the public consciousness of the people and caused the awakening of national identity, defining the formation of new ideas, thoughts, and views in the Kazakh society.

The accession of Kazakhstan to Russia has led to the fact that to the study of geography, natural resources, economy, history, ethnographies began to come, scientists, travelers here. In the 18th century, in 1769 I headed one of the first expeditions to edge P.S. Pallas. The work "Travel on Different Provinces of the Russian Empire" (1773) became her result. In 1772 N. Rynkov published "Day notes of travel of the captain N. Rychkov to Kyrgyz kaysatsky steppes in 1771". The issue in 1832 of books by A.I. Levshin "The description of the Kyrgyz – the Cossack, or Kyrgyz-kaysatsky hordes and steppes" became a significant stage of studying of Kazakhstan by Russians. Dahl occupies one of the central places among the representatives of the Russian culture who have made an invaluable contribution to studying of folklore, life, and customs; he was the officer at the Orenburg governor 1833-1841. In 1833 while collecting material about a pugachevsky revolt Orenburg and Uralsk were visited by A.S. Pushkin.

In the 19th century among researchers of Kazakhstan, there were world-renowned scientists, such as P.P. Semyonov-Tian-Shansky (1827-19H years), head of the Russian Geographical Society. He explored

the Central Tien Shan, Semirechyyu, and Central Asia traveled around Altai. Under his management the multivolume research "Russia has been made and published. Complete geographical description of the fatherland". Two volumes from them: "The Kyrgyz edge" and "The Turkestan region," are devoted to Kazakhstan and Central Asia. Here geographical conditions, natural wealth, history, the life of Kazakhs are described. Also N.A. Severtsev, I.V. Mushketov studied geography, flora, fauna of Kazakhstan, his natural minerals. The big contribution to the studying of the edge was made by the orientalist, the turcologist, the ethnographer, the academician of the St. Petersburg academy V.V. Radlov (1837-1918). He studied customs, ceremonies, folklore of the people of Altai, the northern areas of Kazakhstan, examined Semirechye. His publications "Samples of National Literature of Turkic Tribes" contain the Kazakh fairy tales, epic works, lyrics. Also, great scientist-orientalist, the archeologist, the linguist, the academician V.V. Velyaminov-Zernov (1830-1904) in books "Research About the Kasimovskikh Tsars and Tsarevitches," "Historical Data about the Kyrgyz-kaysakakh" has consecrated many nodal questions of the history of Kazakhstan. Dobromyslov, Aristov, Krasovsky studied the history of that area. General-staff officers, officials of the Russian administration, political exiled were also engaged in the collection of data on history, ethnography, geography.

In the cultural development and social thought in Kazakhstan in the second half of the 19th century, the critical role was played by scientific organizations and cultural and educational institutions. Departments of the Russian Geographical Society have been open in Orenburg (1868), in Omsk (1877), then section in Semipalatinsk, and in 1897 – department in Turkestan. They published collections where materials on history, ethnography, geography were published.

In the cultural development and social thought in Kazakhstan in the second half of the 19th century, the critical role was played by scientific organizations and cultural and educational institutions. Departments of the Russian Geographical Society were open in Orenburg (1868), in Omsk (1877), then section in Semipalatinsk, and in 1897 - department in Turkestan. They published collections where materials on history, ethnography, geography were published. The Kazakh intellectuals cooperated in them, for example, I. Altynsarin who published the researchers in his collections was the corresponding member of the Orenburg office of geographical society. In the second half of the 19th century in Kazakhstan regional statistical committees which published the "reviews" of areas containing materials statistically, stories, ethnography, culture were created. For example, Abay took part in work of the Semipalatinsk regional statistical committee. Also, other scientific organizations were engaged in studying of Kazakhstan: Society of the agricultural industry, fans of archeology and history of the East, supporters of natural sciences, anthropology and oriental studies. In Kazakhstan, public libraries began to open. One of the first public libraries was open in 1883 in Semipalatinsk.

The accession of Kazakhstan to Russia influenced the development of education. Children of wealthy parents got an education in madrasah of Bukhara. Samarkand, Khiva, Tashkent. Children of ordinary nomads, generally boys, received literacy elements in the Muslim schools. Educational institutions of secular character began to open in connection with the requirement of training of officials of the colonial experts: translators, clerks. Those were, the Asian school opened in 1786 in Omsk, in 1789 Government school in Orenburg, in them the Russian and Kazakh children studied. In 1825 the cadet corps in Orenburg, and in 1846 - in Omsk was open, they trained military experts and administrative officials. The first Kazakh secular school was open in 1841 in the Bukeevsky khanate, and in 1850 in Orenburg at the Boundary Commission. Poorly female education developed. Only thanks to I. Altynsarin's efforts in 1887 the women's school in Irgiz was open. In 1890-1896 the Russian-Kazakh women's schools in Turgai, Kostanay opened. Karabutake, Aktyubinsk. The first professional educational institutions were the Turkestan teacher's seminary founded in 1879, and the Orenburg Kazakh teacher's school began in 1883. Later teacher's academies in Aktyubinsk, True, Semipalatinsk, Uralsk were open. For all pre-October period, they trained 300 Kazakh teachers. Also in the 19th century agricultural and medical assistant's schools were free, but there was no higher educational institution.

During the 19th century several powerful bards, including Makhambet Otemisov and Shortanbay Qanauwlï, chose as their theme the diminution of the Kazakh way of life under increasing Russian pressure. Among the western Kazakhs of the Little Zhuz, this oral literary development reached its culmination in the second half of the 19th century and the early 20th century in the works of Buhar Zhıraw, who

combined the didacticism of the zhıraw with the quick wit of the improvising aqın. His poetry frequently treats such issues as the types of behavior that are appropriate to different stages of life.

Kazakh oral poetry of the 19th century displays breadth and diversity unmatched by any other Turkic oral literature. The Kazakh literary concept of humanity was in a complex interdependency of the natural and the human realms that expressed through numerous metaphors dealing with animal life and the forces of nature. A didactic element is essential in these works, but its basis is fundamentally human; religious models may appear, but they are one model among others and do not claim the absolute priority that they do in the works of literature of other Muslim Turkic peoples.

Chokan Valikanov, Ibray Altınsarın, and Abay Qunanbaev (Abay Ibrahim Kunanbay-ulï) – all of whom were writing during the mid- and late 19th century – mark the beginning of a new and essentially modern self-consciousness among the Kazakh intelligentsia. Valikanov was the first Kazakh to receive a full Russian education, and Russian novelist Fyodor Dostoyevsky befriended him. A

After 1905, restrictions that had earlier been imposed by Russia on the publication of works in the Kazakh language were eased. Kazakh-language newspapers such as Ayqap, Alash, and Qazaq, each with a different cultural and political orientation, soon emerged. The generation of Kazakh writers active at that time, including Omar Qarashuwlï and Ahmed Bay Tursunov (Aqmet Baytūrsyn-ulï), was chiefly engaged in pedagogic and political activities. The poet Turmaghanbet Iztileyov was executed by Soviet leader Joseph Stalin in 1939 for his translations of Persian classical literature into Kazakh.

The outstanding figure of Kazakh literature during the Soviet era was Mukhtar Auezov. He graduated in Russia and Uzbekistan, later he became a successful writer who published some of Kazakh stories. He started to write during his education in university. By the 1920s he had begun to study Abay, who played had been a significant role on his upbringing. Auezov wrote his novel Abay. Epic in scope, it depicts the social environment from which Abay emerged. It was both a moving narrative and a unique document of Kazakh life during the period of the Russian conquest and after that when Kazakhs faced fundamental economic and cultural choices for which their traditional culture had not prepared them.

The beginning of the 20th century was a new stage in the development of intellectual potential. Culturally, this was expressed in the assimilation first of representatives of the social elite, a narrow stratum of people, European culture and new values. Representatives of the national intelligentsia in the course of receiving education in European educational institutions were influenced not only by the national movement in the East, but also by the bourgeois revolutions of the West, the growing pressure of oppositional-minded compatriots to the tsarist regime. "The emergence and development of the periodical press in turn contributed to the development of capitalism, commodity-money relations, transport and communications, further colonization of the region". During this period, the competition between the nascent national bourgeoisie and the ruling Russian bourgeoisie, as well as the penetration of foreign capital, necessitated the reform of the education, press and communication system. The first Russian revolution of 1905-1907, the first world war of 1914-1918, the national liberation movement of the Kazakhs of 1916, the development of capitalism and, finally, the Great October Socialist Revolution were important milestones in the new history of the Kazakh people. A small national intelligentsia in these conditions began the fight for independence and freedom, and getting rid of the double oppression of the colonial yoke of tsarism and the local patriarchal-tribal clan. The main achievement of the Kazakh intelligentsia was that it noticed the growing Russification on time and began searching for means to bring the Kazakh society into motion, using for this purpose the social and political freedoms granted by the first Russian revolution; the intelligentsia sought to rescue the Kazakh people from tsarist oppression and patriarchal-tribal backwardness by shedding the light of knowledge and progress. Undoubtedly, it was a path of difficult struggle, complex conflicts and searches. At the beginning of the 20th century, educational activity in the spirit of a democratic cultural tradition was vigorously developing in Kazakhstan. It started with the opening of primary schools, especially Russian-Kazakh ones. Kazakh youth were trained in secondary special educational institutions of Tashkent, Orenburg, Omsk, and also in Kazan, Petersburg, Tomsk University, and later many of them were sent for teaching activities in rural areas, and some - in medical, cultural, educational and administrative institutions. The national Kazakh intelligentsia focused the people on the development of the country on the path of independence, conducted propaganda for gaining knowledge, engaging in science and art. In this process, a great role was given to Kazakh literature, which contributed to the portrayal of the life of the Kazakh people and the protection of its interests. The

development of education was also promoted by the publication of the periodical press, among which was the most popular newspaper ‘Kazakh’, whose editor was the famous enlightener Ahmet Baitursynov, and a secretary Mirjakyp Dulatov. Also, "the development of national culture and education was greatly influenced by the magazine "Ayqap", published in 1911-1915, which contributed to the development of literature, language and national identity".

Opposite processes - the intensive development of new trends in public life - on the one hand, and the existence of strong foundations of feudal antiquity - on the other created a somewhat complicated situation in the literature. In the conditions of a sharpened class, ideological struggle, the division among writers became more acute, which openly raised public problems in their works and polemics. The primary motives of the works of representatives of the reactionary trend in the Kazakh literature of the twentieth century were the idealization of the past, the preaching of Islam, the support of the anti-popular policy of autocracy. This time in history represented growth of the intelligence such as Sultanmakhmut Toraigyrov, Mukhamedzhan Seralin, Sabit Donentayev, Spandiyar Kubeev, Beimbet Mailin, Ahmet Baitursynov, Mirzhakyp Dulatov, Shakarim Kudaiberdiyev, Magzhan Zhumabayev, Zhusupbek Aimauytov. They continued the traditions of Abai Kunanbayev in their literary works. Their publicistic statements on the pages of revolutionary democratic publications ridiculed the vestiges of patriarchal relations, religious fanaticism, fought for social equality, opposed the colonial policy of tsarism and capitalist exploitation, called upon the people to enlighten, settled and agriculture, raised the issue of the emancipation of women. At the beginning of the twentieth century, Kazakhstan's cultural ties were reinforcing. Progressively-minded poets and writers, increasingly turning to Russian and West European classics, began translating the works of Pushkin, Lermontov, Tolstoy, Krylov and other leading Russian classics, including their translations and transcriptions from Western European culture. The genre composition of Kazakh literature also became diverse: it was during this period that the first Kazakh novels, dramas, stories were written, critical articles, essays began to emerge for the first time, and the satire developed. Kazakh literature has stepped onto a qualitatively new stage of development, and the publication of books in the Kazakh language had had a significant positive impact on the development of education in the region. In a short period, there were about 200 books published, including translated works of Russian writers. There were also samples of Kazakh folk art, compositions of the East classics, religious and heroic poems. It should be noted that in order to study the history, nature, and geology of the region more thoroughly, departments of the Russian Geographical Society, statistical and other scientific and industrial committees were created in Kazakhstan; along with Russian scientists, Kazakh researchers such as Ahmet Baitursynov, Alikhan Bukeikhanov, Bakytzhan Karataev, Zhakyp Akpaev, Zhahansha and Khalil Dosmukhamedov, etc., embarked on invaluable scientific works, which has been used as the most valuable sources so far. To sum up, it is imperative to emphasize that since the period when there was an irreconcilable struggle between the ideology of chauvinistic colonialism and the ideology of freedom and independence, the public consciousness of the people was ambiguous and constituted a complex phenomenon. Actively disseminated by prominent representatives of the advanced Kazakh intelligentsia, the ideas contributed to the desire of society to develop education and culture, the formation of self-awareness, exerted a tremendous influence on the sense of justice, the morality of the people. The Kazakh intelligentsia considered the protection of national and public values and interests to be the primary task of their political activity. They were marked by the desire to establish an independent statehood, to free people from colonial oppression, to fight for public values, such as the right of every person and every people to freedom of self-determination and free access to the achievements of world educational practice and culture.

In 1917, following the fall of the Russian empire, Alash Orda, a provisional Kazakh government formed by members of the Alash nationalist party, partially filled the power vacuum in present-day Kazakhstan. Alash Orda constituted an essential achievement of the quickly developing Kazakh intelligentsia, but a mere twelve years earlier, at the time of the 1905 revolution, neither Alash nor any other organized Kazakh elite group existed. At that time, the Kazakh elite consisted of two loosely organized camps of intellectuals: those who saw the Kazakhs’ path to modernity as intimately connected to the secular European tradition through Russia, therefore called the secular intellectuals and those who saw it linked to the Islamic world, the religious intellectuals. This dichotomy continued to characterize Kazakh intellectual discourse through the revolution of 1917, after which the religious intellectuals became increasingly estranged, especially following the fall of Alash Orda to the Soviets.

Alash, as an elite group, was aligned with the secular side of the Kazakh intelligentsia, and its rise to power saw the fall of the religiously-oriented portion of that intelligentsia. While these groups held the same basic tenets – that Kazakh society had fallen into backwardness and required significant reforms, including sedentarization – they put forth competing visions for the future. Considering its historical context, the secular vision's relative success poses an interesting question about the formation of a Kazakh national intelligentsia and related nation-building attempts. Kazakhs had long lived under Russian rule and watched as Russians took their land and destroyed their traditional lifestyle. This paper will explain why, then, they ended up supporting the secular intellectuals, given the opportunity to support anti-Russian, Islamic-oriented groups. This paper will show that Alash's recognition of both Russian and Tatar threats to Kazakhness explains its relative success.

There has been much work on the causes of Alash's rise. For example, Gulnar Kendirbaeva, a historian of Kazakh nationalism, argues that Alash's position favoring gradual sedentarization of the Kazakhs was critical to their success. While a valuable contribution, her study is also exemplary of two underlying problems with the existing literature. First, its exclusive focus on land overlooks the fact that the Kazakh intelligentsia was, in fact, concerned with other significant issues at this time. These included education, language, customary law, and religion in addition to land. Second, and more importantly, because the primary land issue was Russian seizure of Kazakh lands to accommodate Russian peasant migrants (discussed in more detail below), this narrow scope suggests that Russians were the only significant outside force in Kazakh political life, which is not true. Indeed, Russia played a significant role in Kazakh political developments, and the secular intelligentsia's support of gradual sedentarization played a vital role in its success. At the same time, a very significant Tatar legacy remained from the years of Tsarist state-sponsored Tatarization.

The central problem for the early 20th-century Kazakh intelligentsia was the "national and cultural survival of the Kazakh people, i.e., the preservation of Kazakh culture and mentality – 'qazaqtyq' (Kazakhness)," which was rooted in nomadism. Thus, when confronted, for example, with Russian incursions onto Kazakh lands, threatening Kazakhs' ability to lead a nomadic lifestyle, they redefined Kazakhness to reconcile Kazakh identity with the necessity of sedentarization.

To fully understand this redefinition of Kazakhness, it is essential to consider the Kazakh intelligentsia's beliefs concerning the development of nations. Historian Peter Rottier argues that a critical aspect of the intelligentsia's conceptualization of Kazakhness was their acceptance of the Russian intelligentsia's belief in the linearity of the historical development of nations, which resulted because of history as "a way to explain both the roots of the Kazakh nation and its future development." The Kazakh intelligentsia reconciled the historical importance of nomadism in Kazakhness with sedentarization by "presenting settlement as the next stage in developing an advanced society," even if it was being forced upon them.

Thus, the survival of the Kazakh people depended upon a reconceptualization of Kazakhness. Such a reconceptualization required at least partial adoption of another civilization's tradition, for it required a new understanding of modernity. In the Kazakh case, the reconceptualization relied mostly on Russian civilization. While this is not surprising given the Russian education of most Kazakh intellectuals, it meant that they were faced with the conundrum of promoting the same, or at least similar, policies as their colonial overlords, while opposing the colonial rule. To do so required them to incorporate aspects of traditional Kazakhness connected to, but not dependent on, nomadism and to limit appropriation of Russian ideas in their new conception of Kazakhness whenever possible. This would help accomplish the central goal of the reconceptualization of Kazakhness, which was to provide as much continuity as possible in Kazakh identity while eliminating the role of nomadic lifestyle in that identity.

Saulesh Esenova offers excellent support for this view in a study of Shezhyre, a "genealogical register of all Kazakh tribes and lineages compiled…as a part of the Kazakh resistance to Russian colonization" in the early 20th century. Shezhyre was "closely associated with pastoralism," which allowed groups like Alash, which, not incidentally, took its name from the mythical founding ancestor of Kazakhs, to attack "the historic commitment of Kazakhs to pastoralism," while forming a single Kazakh identity connected to their language and history.

While Russification – notably the seizure of Kazakh lands—was the most immediate threat to Kazakhness, and thus a favored topic of scholars of Kazakh nationalism, Tatarization presented an equally significant threat to Kazakh identity.

Such political activity of the masses was connected to the Revolution of 1905 and subsequent politicization of the steppe. Alikhan Bukeikhanov, the most prominent early 20th-century Kazakh intellectual, believed the experience of 1905 was instrumental in forming the intelligentsia. In a 1910 contribution to a Constitutional Democrat (Kadet) publication, he wrote, "The entire steppe was engaged in the political sphere, and captured by the liberation movement's flow. A lively conversation on the needs of the Kirgiz [Kazakh] people began," in 1905, in which "religious and agrarian questions stood before questions of political freedom."

In the years following 1905, Kazakh intellectuals gained venues through which to express their views on threats to Kazakhness. The first such venue, the new State Duma in St. Petersburg, and was short-lived. A total of nine Kazakhs were elected to represent the steppe in the first two Dumas, after which Kazakhs lost their right to participation in imperial politics with the second Duma's dissolution in June 1907. These Kazakhs aligned themselves with the Kadets, primarily due to that party's support of all nationalities' "right to free cultural self-determination," and participated in the Muslim caucus of the Duma. By doing so, they showed their devotion to the preservation of Kazakhness, in some form, and attempted to use their positions in the capital to forward those goals.

Kazakh intellectuals also poured energy into publishing, writing, often in verse, and distributing books and pamphlets highlighting the Russian threat to Kazakhness, especially through seizure of land. Increasing government willingness to use repression to stop anti-colonial sentiment did not stop Mukhamedzhan Seralin from pushing for permission to begin publishing a Kazakh-language journal. In 1910, he received permission, and he began printing Ai qap [Oh, Alas!] in 1911.

Following Seralin's lead, Akhmet Bukeikhanov and other secular intellectuals began publishing Qazaq [Kazakh] in 1913. These periodicals became the venues of choice for the religious and secular intelligentsia. Ai qap provided a podium for Seralin and like-minded Islamic-oriented intellectuals concerned, first and foremost, with religion as a means of spreading their views, while Qazaq provided Bukeikhanov and other secular intellectuals to their venue. Interestingly, as has already been noted, both publications shared an overarching goal. They strove to preserve Kazakhness and save Kazakh identity from destruction by outside forces. The immediacy of Russian threats, especially regarding land, caused fierce anti-Russian sentiment in both groups. Nevertheless, both groups and periodicals discussed far more than the land issue. They also both devoted significant attention to questions of education and language.

On these issues, Qazaq editor Akhmet Baitursynov formulated the secularized intelligentsia's position, writing, "[i]n order to save our independence, and we must attempt…to rise to a state of enlightenment," a major part of which was promoting the Kazakh language. Moreover, he believed this was the priority in preserving Kazakhness because, "[t]he modern Kazakh intelligentsia, having received their education in Russian schools and Tatar medreses [religious schools], already begin to feel contempt for the Kazakh language, and begin to speak Russian or Tatar among themselves." Especially when compared with Seralin's belief that more significant connection with the Tatars was necessary to promote the advancement of Kazakh society, Baitursynov's writings, together with Karkaralinsk Petition, recognize that Tatars and Russians presented relatively same threats to Kazakhness.

Recognition of the Tatar threat to Kazakhness in the 1905 Karkaralinsk Petition has often been overlooked. Indeed, Bukeikhanov claims that its focus on religious issues was the result of a "Turkophile victory," despite the fact that the remainder of the petition contained many ideas Bukeikhanov himself supported. The reason for such misinterpretations is that the Petition does not so much as mention Tatar influence in a negative light. This does not, however, imply lack of recognition of the Tatar threat. Preferably, a careful reading and comparison with clearly pan-Turkist demands, with special consideration of what the petitioners did not demand, reveals an implicit recognition of negative Tatar influence.

Education provides an especially potent example of the recognition of Tatar threat. The petition's point on education, which appears immediately after that on religion, and which is the longest point in the document, is extremely critical of the existing educational situation. The essential complaint is, "aul schools [i.e., state schools] do not pursue a goal of enlightenment, but rather something unknown". This "something unknown" shows, above all, distrust of Russian intentions. The petitioners may not have stated a bright idea of what precisely Russian intentions were, but, based on context, it seems quite clear that the unknown intention of educational policy was to further Russification of the Kazakhs in some way.

Nevertheless, the petition indicated support for secular education, an essential value of Westernized intellectuals, and an antithetical value to the Islamic-oriented intellectuals calling for

Thus, though wary of Russian influence in education, the petitioners supported continued instruction of Russian in primarily Kazakh-language schools to enable further educational opportunities. Moreover, they wanted an increase in opportunities for Kazakhs to enroll in Russian secular education, provided it did not threaten their Kazakhness through private Russian-language instruction.

While the position stated in the Karkaralinsk Petition on education may be primarily directed at minimizing Russifying educational policies, comparison with an appeal of Muslims from southern Kazakh lands to the Duma shows implicit concern for negative Islamic influence. There, the authors present an extreme pan-Turkist position:

Existing native (Russian-native) schools do not benefit us in any way, for the simultaneous study of two subjects is not accessible to our young children, a result of which is that they do not achieve the results they should in either subject…Therefore, the schools mentioned above should be closed.

Not only did they oppose an expansion of secular education; they explicitly condoned the elimination of such schools. The Kazakhs compiling the Karkaralinsk Petition were likely confronted with this option but concluded secular Russian-sponsored education was more likely to benefit the Kazakhs than Tatar-sponsored religious education. This should not come as a surprise, for the appeal for religious education also calls on the Duma to "completely abolish" the Kazakh Muslims' customary law, and stipulates, "their affairs should be handled…by shari'a." Without a doubt, the Karkaralinsk petitioners did not desire a replacement of Kazakh customary law with Islamic law, for doing so would merely replace undue Russian influence with undue Tatar influence, threatening Kazakhness differently.

One might conclude that this is the extreme Islamic traditionalist position and that petitioners would have agreed most with Jadid (Muslim reformist) perspectives. Indeed, Jadid intellectuals, who were primarily Kazan and Crimean Tatar, did support secularized education. They did not, however, support secular education in Russian schools. Instead, they called for the secularization of the curriculum in Muslim schools, allowing them to provide an education comparable to that of Russian schools, while still teaching some religious subjects. The petitioners' support for at least the continuation of Russian-Kazakh schools, therefore, contradicted not only the traditionalist but also the reformist Islamic-oriented perspective.

Thus, while the 1905 petition focused on limiting the Russian threat to Kazakhness, it cannot be considered a denial of the existence of a Tatar threat to Kazakhness. Preferably, it represents a prioritization of threats to Kazakhness, concluding that limiting the Russian threat was more immediately necessary, while still recognizing that Tatars posed a significant threat. The prominence of Islam that so worried Bukeikhanov is not a sign of pan-Turkist sentiment, but of the use of Islam as a motivator. So for the Kazakhs, it was just that: Islam could be used to mobilize Kazakhs, and its preservation was one of their goals, but threats to the Islamic aspect of Kazakhness did not form the core of Kazakh demands. This was true in 1905, as well as in 1916, on the outbreak of a mass revolt in response to the Tsar's conscription of Kazakh labor for the war with Germany, and in 1917, when they voted for Kazakh representatives to the All-Russian Constituent Assembly.

In the 1916 revolt, Islam seems to have played different roles. Some religious leaders supported anti-Russian actions, framing them as holy war, while others opposed the revolt altogether. Even those who favored rebellion did not call for the creation of an Islamic Kazakh state, because a non-Islamic nomadic state structure was much more familiar. Most importantly, Islam motivated revolt, a mobilizing call, but not an actual goal or model for further development. As in 1905, Islam was merely a way to get Kazakhs to act, not formative of the core of their demands.

Thus, when given a chance to elect representatives to the Constituent Assembly and regional and all-Kazakh congresses, they overwhelmingly chose members of the secular intelligentsia, who became the Alash party. The reason for this support was that these intellectuals showed consideration of the religious question, but did not focus too heavily on it, in the same fashion as the 1905 Petition. The best method to understand their positions is to look at the Alash Party Program and Kazakh congress minutes.

Like earlier statements on the part of both the secularized intelligentsia and Karkaralinsk petitioners, Alash intellectuals' positions presented at the Kazakh congresses and in the Alash Party Program were primarily focused on curbing Russification, but also showed recognition of a significant Tatar threat to

Kazakhness. This understanding of a dual threat to Kazakhness was most evident in the discussion of religion and education. While the program itself included little on either of these issues, they were discussed at much greater length in regional congresses and the All-Kazakh Congresses, convened in July and December of 1917.

This condensing of central Kazakh goals in the platform is likely since autonomy depended on support from other autonomies following the fall of the Tsarist system in February. Religion and education were significant issues for the Kazakhs, but not nearly as important to other autonomies as political and administrative reforms. For that reason, the Alash platform's first sentence read, "Russia should become a democratic, federative republic," the first section expanded on that demand, the second described the autonomy's place within that system, and the third declared fundamental political freedoms.

When the platform did reach the issue of religion, its position was:

Religion should be separated from the state. Every [religion] should be free and equal. The Kirgiz [Kazakhs] should have a separate muftiate. Kirgiz mullahs should keep Marriage, birth, death and divorce records.

The first two sentences were likely included to further establish Alash's credentials as a supporter of a democratic federative Russian republic but also served to protect Kazakh Islam from Russian interference. Likewise, the final sentence was a non-crucial demand, designed mostly to protect from the Russian threat. The third was by far the most significant demand for the Kazakhs and was meant not only to protect against Russian interference with Islam but also to limit Tatar influence in Kazakh Islam.

Creating a separate Kazakh muftiate accomplished two goals: first, it enabled more significant connection to the Muslim world and protected the Islamic aspect of Kazakhness; second, it sheltered Kazakh Islam from Tatar control and thereby protected non-Islamic aspects of Kazakhness from Tatar Islamic influence.

The July All-Kazakh Congress, in particular, provides support. There, Kazakhs from nearly all regions agreed to support the temporary inclusion of Kazakh lands in the Orenburg Muftiate's jurisdiction, until the creation of a Kazakh department within the Muftiate. A next All-Kazakh congress, meeting in December 1917, clarified the exact nature of this demand, stipulating that "all Kirgiz affairs should be examined by only the Kirgiz department together with the muftiate," and that all activities within the Kazakh department should be carried out in Kazakh. By far the likeliest reason for such explicit demands for the treatment of Kazakh religious affairs is the desire to limit Tatar power.

Elsewhere, this desire is expressed even more explicitly. The April Turgai Regional Congress shows extreme suspicion of Tatar control of Muslim institutions. One of its demands was the "proportional representation of Tatars and Kirgiz" in elections for religious officials, apparently aimed at setting limits on Tatar religious influence. Based on these expanded positions, the rationale behind Alash's support of a separate Kazakh muftiate is clear. The creation of such a muftiate would simultaneously shield Kazakhs from pervasive Tatar influence in religious institutions, and allow cultivation of the Islamic aspect of Kazakhness.

Alash's position on education, like that on religion, reveals a recognition of a Tatar threat to Kazakhness. Two points demonstrate this extraordinarily well. The platform declared that Kazakh schools must have Kazakh language instruction and that the Kazakhs should have their own secondary and tertiary educational institutions. The former primarily addresses Russifying educational policies, for Tatar had already been all but eliminated in Kazakh schools. The call for Kazakh secondary and post-secondary education, however, aimed to diminish both Russian and Tatar power through education. The lack of such institutions meant that Kazakhs, who were coming to value education more highly, could pursue studies past the primary level only in Russian or Tatar schools, both of which had their motives, and presented a threat to their Kazakh students' Kazakhness.

Responding to the same dual threat, the December All-Kazakh Congress recommended the creation of "national schools" and a committee for the composition of Kazakh language textbooks for primary and secondary schools. Use of the word "national" as a descriptor for the prevalent type of schools is telling. Their purpose would be to support Kazakh national consciousness through the promotion of Kazakhness, and the committee would ensure that the textbooks used in those schools would be devoid of all threats – Russian and Tatar alike – to Kazakhness. This would allow decreased dependence on Russian and Tatar schools, while also reinforcing the Kazakhness of those who would go on to higher education in non-

Kazakh schools. Alash's position on education was thus, as it was with religion, to create a uniquely Kazakh system, drawing from both Russian and Islamic models, but not wholly adopting either.

Conclusions. Alash intellectuals gained wide support within the Kazakh population because they supported a uniquely Kazakh path, recognizing both the Russian and Tatar threats to Kazakhness. Although they supported a reconceptualization of Kazakhness to diminish the role of nomadism, allowing Kazakh society to progress, and looked to civilizations with which the Kazakhs had had a contact for models, they did not propose complete adoption of any such model. For these generally secularized intellectuals, the history of Russians and Tatars among the Kazakhs had shown that complete adoption of either model would mean the destruction of Kazakhs as a unique people. Therefore, as both civilizations attempted to gain power, Alash intellectuals selectively chose aspects of each civilization model, while also maintaining aspects of traditional Kazakhness.

Persistent Tatar influence in Kazakh education and religion, after the shift in Russian policy to anti-Tatarization, make Alash's positions on those issues most revealing of that group's placement between the two models of civilization. On education, Alash accepted the Russian model of secular education, with the caveat that instruction should be conducted in Kazakh. Likewise, they accepted the liberal idea of a secular state, while also promoting the Islamic aspect of Kazakhness, and fostering a connection with the greater Islamic world. In each of these positions, Alash intellectuals considered both the Russian and Tatar threats to Kazakhness and attempted to construct a position that could limit both threats, while also furthering the progress of Kazakh society.

Kazakh society, for its part, after the politicization of the steppe in 1905, showed suspicion of both Russian and Tatar presence and power. In 1905, the Karkaralinsk Petition called for Islamic revival but lacked pan-Turkist sentiment. In 1916, Kazakhs participating in the anti-Tsarist revolt demonstrated that for them, Islam was primarily a motivator, and not cause in and of itself. Therefore, when presented with choices between Alash intellectuals recognizing both the Russian and Tatar threats, and more pan-Turkist movements, whose members saw no detriment to greater Kazakh-Tatar ties, they chose the former precisely because it had correctly recognized the dual threat to Kazakhness.

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XX ғас. БАСЫНДАҒЫ ҚАЗАҚСТАНДА АҒАРТУШЫЛЫҚ ҚОЗҒАЛЫСТАР

Аннотация. Қазақ ұлттық қозғалысының қалыптасуындағы ағартушылық қозғалыстардың әсері қарастырылады. Революцияға дейінгі Орталық Азияның ресей бөлімінде ислам интегрализмі, түркішілдік және этникалық ұлтшылдықтың даму мүмкіндігі жүзеге асырылды. Мұсылман – түркі идеяларының кең таралуына үлкен үлес қосқан білімді татар халқы болды. Қазақстандағы түркішілдіктің жеңіліске ұшырау себептері , қазақ социумын батыстандыруда көшпенділердің діни енжарлығы тұрғысынан орыс мәдениетінің кең таралуына әкелуі,күнделікті ұлтаралық қатынастардың күшті әсері қарастырылады. Қазақтардың ұлттық жолын таңдауда маңызды рольді орыс – қазақ және қазақ мектептерін қалыптастыруға орыс тілінен білім беретін ағартушылар ат салысқан қазақ және орыс ағартушылары болды.

Қазақ ұлттық Алаш қозғалысының негізін қалаушылар незінен Ресейдің европалық бөлігіндегі жоғары оқу орындарында және солтүстік және батыс аудандарының орыс-қазақ мектептерінде білім алған. Олардың бәсекелестері түріктер, оңтүстік аудандардағы кең таралған халықтың сауатты бөлігін оқытатын жаңашыл мектептерде оқыды.

Түйін сөздер: ұлттық қозғалыстар, алаш партиясы, зиялы қауым.

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ПРОСВЕТИТЕЛЬСКОЕ ДВИЖЕНИЕ В КАЗАХСТАНЕ В НАЧАЛЕ XX ВЕКА

Аннотация. Рассматривается влияние просветительского движения на становление казахского национального движения. В дореволюционной российской части Центральной Азии существовали возможности развития исламского интегрализма, пантюркизма и этнического национализма. Большую роль в распространении идей мусульмано-тюркского единства сыграли образованные слои татарского населения. Раскрываются причины поражения пантюркизма в Казахстане, заключающиеся в религиозной индифферентности кочевников и мощном влиянии повседневности межэтнических отношений, приведших к широкому распространению русской культуры, являвшейся проводником вестернизации казахского социума. Важную роль в выборе национального пути развития казахов сыграли русские и казахские просветители, создававшие русско-казахские школы и казахские школы с преподаванием на русском языке. Основатели казахского национального движения Алаш преимущественно обучались в русско-казахских школах северных и западных районов края и в высших учебных заведениях европейской части России. Рассматривается влияние просветительского движения на становление казахского национального движения. В дореволюционной российской части Центральной Азии существовали возможности развития исламского интегрализма, пантюркизма и этнического национализма. Большую роль в распространении идей мусульмано-тюркского единства сыграли образованные слои татарского населения. Раскрываются причины поражения пантюркизма в Казахстане, заключающиеся в религиозной индифферентности кочевников и мощном влиянии повседневности межэтнических отношений, приведших к широкому распространению русской культуры, являвшейся проводником вестернизации казахского социума. Важную роль в выборе национального пути развития казахов сыграли русские и казахские просветители, создававшие русско-казахские школы и казахские школы с преподаванием на русском языке. Основатели казахского национального движения Алаш преимущественно обучались в русско-казахских школах северных и западных районов края и в высших учебных заведениях европейской части России. Их конкуренты тюркисты, обучались в но-вометодных школах, распространенных в южных районах, где их идеи разделялись образованной частью населения.

Ключевые слова: национальные движения, партия Алаш, интеллигенция.

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GEOSYSTEM ANALYSIS OF DEVELOPMENT OF LANDSLIDE LANDSCAPES OF THE SOUTH-EASTERN SLOPE OF GREATER CAUCASUS

Abstract. The southeast tip of Greater Caucasus which is entering borders of Azerbaijan and being part of the Alpine and Himalaya geosynclinal belt, is characterized by high dynamism exogenous the relief forming the processes having essential impact on development of a landscape situation. In this regard there is a need of development of various methods for creation of scenarios of possible changes of a geoecological situation in various massif having harmful consequences, by identification of relationships of cause and effect. For this purpose, in this work possibilities of forecasting of landslides in natural area of Greater Caucasus with use of available geological and geomorphological, climatic and landscape data, and also visual supervision were analysed. These data allowed to reveal the main distinctions of factors of a relief situation, hydroweather conditions in certain physiographic areas in which landslides, character and intensity of the land use, to some extent influencing a descent of landslides and subject to their destructive influence are shown.

Keywords: processes, slope, exodynamic, landscapes, erosion, factor, sub district, Caucasus.

1. Introduction. Questions of identification of the reasons of geodynamic processes – taluses, scatterings and landslides are many years in the center of attention of the geographical public of the country because of harmful consequences of these phenomena for the social sphere and economic activity of all mountain regions [14].

The southern and Northeast slope of Greater Caucasus differ the complex geomorphological structure, being shown in difficult structure of alternation of water-permeable layers of breeds, an interlacing of tectonic violations, and also the high seismicity which quite often is hardly noticeable, but a decisive factor of slipping and a collapse of mass of breeds.

The inclination of a terrestrial surface saving in considerable energy of all mass of breeds of a slope has essential impact on development of landslide processes. But, as we know, big biases of slopes not always lead to landslides, even on sites close located to landslide massifs. So, slopes with strong maternal breeds are steady, slopes with alternation of layers of friable breeds and clays are the most subject to influence of geodynamic factors. Big biases of slopes, especially characteristic for the Southern slope of Greater Caucasus Range lead to landslides of landslide character, in a root changing shape of a landscape of this site [12, 13].

On degree of stability to impact of landslide processes of the territory of a massif active and active sites are differentiated on rather steady, so-so. Within a mountain meadow zone steady sites in the landslide relation are characterized by existence of clearly expressed subalpine and Alpine landscapes. Such sites can be subject to influence of others exodynamic processes – to a soil erosion, accumulation and movement of taluses and the scatterings constituting not smaller danger to a landscape and all ecological situation (figure 1).

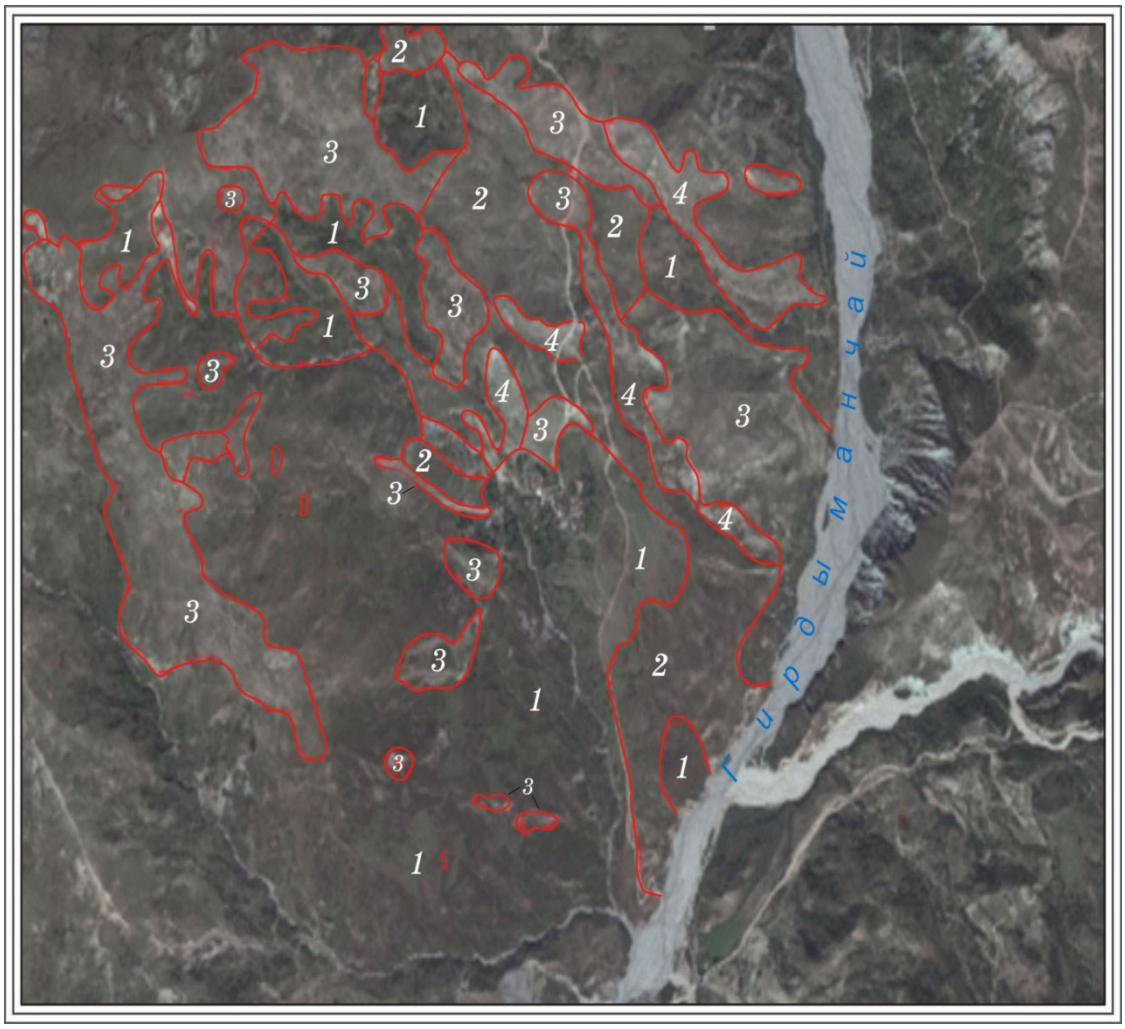

Figure 1 – Space image of part of the studied territory of a river basin of Girdymanchay of the 2010 with the allocated contours of the soils, different degree of erodibility. Scale 1 : 25 000;
1 - not bald-headed sites; 2 - slightly eroded sites; 3 - moderately eroded sites; 4 - severely eroded sites

It is known that an important element of development of landscapes is transfer of chemical particles as part of circulation of substances. In this regard mountain landscapes of Greater Caucasus are low-studied and demand the analysis of impact of exogenous processes on changes of quantity and a ratio of various chemical elements and their connections in soils and vegetation depending on intensity of various natural phenomena. For these purposes experts of various profile – geographers, soil scientists, botanists, the chemists which common efforts can help to reveal an overall picture of occurring geochemical changes can be attracted [17-19].

The geodynamic situation in Apsheron peninsula substantially becomes complicated the intensive town planning, being accompanied development of social and industrial infrastructure that leads to change of an initial relief and strengthening of factors of an landslide forming.

2. Objects and methods of researches. The southeast tip of Greater Caucasus which is active from the point of view of a descent of landslides, always drew attention of researchers of various disciplines – geologists, geomorphologists, landscape scientists, soil scientists, etc. trying to establish the reasons of this destructive process, to give an assessment of extent of influence of this or that factor on this phenomenon. The main landslide massifs, lithologic structure of breeds of landslide slopes, the basic landscape elements of separate large landslides were during this time defined [1-3].

These works were performed during field visual researches, and also the cameral researches meaning measurements on topographic maps, revealing the biases of a surface stimulating slipping of mountain masses.

Measurements of the cracks formed as a result of landslides on different massifs and definitions of their temporary dynamics allow to carry out in a certain degree territory division into districts on activity of breeds for the purpose of identification most of the landslide territories. The description of a landscape situation, its separate components promotes detection of the distinctions which were showed through a certain time occurring also under the influence of geodynamic processes.

The interpretation of space images gives the chance of them to interpretation for detection of geomorphological and landscape features of consequences of landslides both their spatial and temporary dynamics in the presence of pictures of different years. In Azerbaijan many years were spent works on creation and improvement of various means and methods of interpretation of space data for definition of the directions of development of the harmful natural phenomena [10-12].

3. The received results. Materials of numerous researches of an environment of Greater Caucasus available in existence can give the chance to reveal prerequisites of emergence and development of landslide processes and to create a certain group of landslide massifs for the purpose of development of protective measures on prevention of their harmful consequences. The material on physiographic and synoptic division into districts of natural area of Greater Caucasus within Azerbaijan was for this purpose processed and a number of the factors causing a descent of landslide masses is defined.

Divaryan landslide stream, beginning on a northwest slope of the mountain Matur, on the left coast of Girdymanchay, at the absolute height of 2200 m, it is stretched at distance of 2,9 km to the course of Girdymanchay and finishes the activity at the absolute height of 1400 m. In an amphitheater and a transitional zone width of a landslide stream reaches 10-15 m, and on a carrying out cone more than 2,5 km. Its landslide materials narrowed the course of Girdymanchay to 3-5 m. The modern landscape of a landslide difficult also is characterized by existence of cracks, ridges, shaft, bushes, hollows, pools, boggy sites and fresh landslide materials.

As the digital model of a relief of the Divaryan landslide, created on the basis of the GIS technology shows, wavy character of a surface causes diversity of landscape structure of landslide weight. Namely, camber of a middle part of a landslide with the best conditions of moisture accumulation, most likely, is the reason of development of shrubby and wood vegetation on relatively weak inclined sites, including, sites of a cone of carrying out (figure 2).

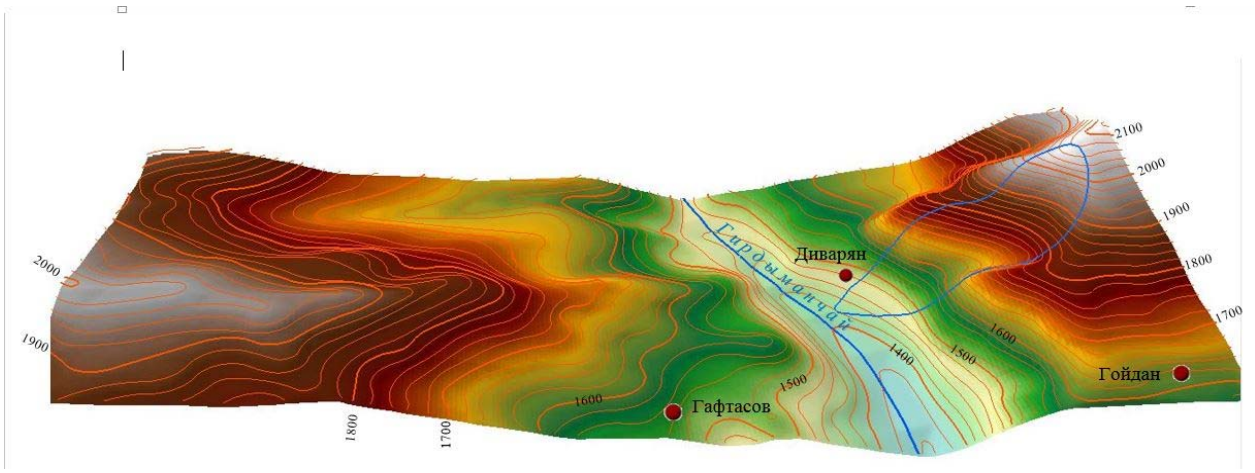

Figure 2 – Digital model of a relief of the Divaryan landslide located on the left river bank Girdymanchay. This model is received on the basis of processing of a space picture of high resolution of 2012 and 2013. Continuous horizontals are carried out through each 20 meters

The similar model is created and for the Demirchi landslide which has been also located on the Southeast slope of Greater Caucasus Range, which development down can influence changes of the bed of the river (figure 3). Unlike the Divaryan landslide the surface of this landslide has a hollow form. Demirchi landslide stream, beginning to the East from the Lagich pass in river Demirchichay headwaters (a river basin Pirsaat) at the absolute height of 2000 m, proceeds to 1700 m. Its length is 25 km, width is 100-500 m. It develops within mountain meadow and mountain-steppe landscape types.

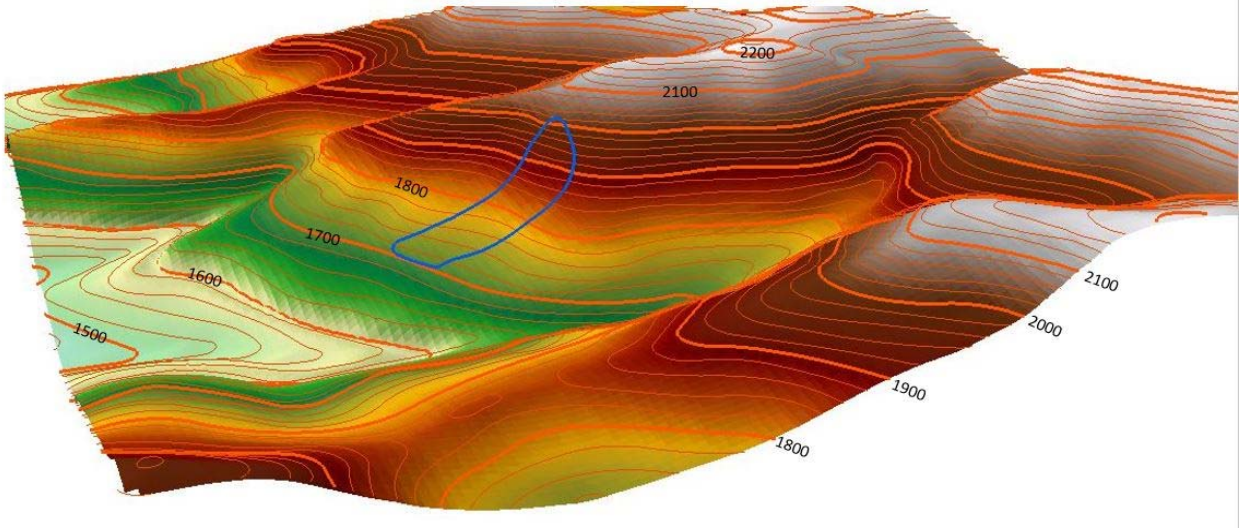

Figure 3 – Digital model of a relief of the Demirchi landslide located in a river basin Pirsaat.
This model is received on the basis of processing of a space picture of high resolution of 2012 and 2013.
Continuous horizontals are carried out through each 20 meters

Mountain territories of Greater Caucasus are included in limits of several physiographic areas. The Gonagkend area covers in the structural relation the Tufan anticlinorium, the Shakhdag-Hyzisynclinorium, the Tengi-Beshbarmag anticlinorium, east suburb of the Zagatalo-Govdagsynclinorium and Hussarmono-cline. Due to the formation at various absolute heights of a number of intermountain hollows conditions for development of settlements, agriculture and cattle breeding which however, can serve as the reason erosive, but not landslide process are created. The landslide phenomena here have the natural character connected, apparently, with fluctuations of seismic activity, nature of the spreading breeds, washing-away activity of the rivers, especially, during high waters and an atmospheric precipitation, including, storm rains. The intermountain hollow of Shakhdyuzu (2400-2700 m) is used as a summer pasture. The relief of the area possesses the big range of heights (200-4460 m) and therefore altitudinal zonality is presented here in a full range. Due to the fall in the southeast direction of absolute height of a relief and aridity strengthening in hillsides reduction of a river drain and disappearance of mountain landscape belts, an aridization of the woods, expansion of areas of dry steppes and semi-deserts towards low-mountainous is observed.

Height differences on the Southern slope of Greater Caucasus Range which generally covers the Zagatalo-Lagich physio geographic area which is stretching from the West, from the Georgian border to a river Girdimanchay valley in the east on 220 kilometers, with cool slopes are made by 2800-2900 meters. Biases of a surface change in limits 30º-45º that probably is a leading factor of development of landslide processes, along with showers, characteristic and for the Northeast slope of Greater Caucasus and high seismicity. Number of the rivers (Mazymchay, Belokanchay, Kurmukhchay, Dashagilchay, etc.) crosses the Southern slope across, forming valleys with cool slopes. In the territory the broad-leaved woods which however can't serve fixing from breed sliding by a factor, mountain meadows and subnival landscapes dominate.

Shemakhi (Mountain Shirvan) the physio geographic area surrounded from the West Akhsu's river, from the North a watershed of Greater Caucasus Range, from the East the Gobustan low-mountainous, and from the South the Shirvan steppe is characterized by high seismicity (8-9 points) which probably plays the leading role in coupling violation between the mass of breeds and a descent of landslides. In the territory of the area where unlike previous, with more humid climate, mountain-steppe, forest-steppe, mountain and forest and mountain meadow landscape complexes prevail.

Studying of a geodynamic situation in Apsheron which is part of Greater Caucasus becomes an actual scientific and practical problem for life support of the most part of the population of the country which has concentrated on the territory of the Baku agglomeration, enduring construction boom which is capable to aggravate earlier existing problems and to create new in connection with intensive high-rise construction in the Baku amphitheater. Today the main landslide massifs in city boundaries are known and the most probable causes of a descent of landslides on these sites are established. However with expansion of city boundaries and advance of housing construction, including, elite, for example, to the South from the downtown towards the Bail ledge there are new dangers to life of people on once weak-populated site of Apsheron.

The territory of Apsheron and the city of Baku is included in limits of the Gobustan-Apsheron physio geographic region of natural area of the Southeast tip of Greater Caucasus which is the landslide dangerous territory for all South Caucasus [4]. The most part of the area consists of low-mountainous with a wide circulation arid denudation processes and in the tectonic relation enters limits of the Shamakhi-Gobustan synclinorium and a southeast extremity of the mega anticlinorium of Greater Caucasus [11]. Owing to a relief of low-mountainous and plains, and also high aridity of climate in the territory landscapes of semi-deserts and dry steppes dominate. Here the halophytic plants is most of all developed.

The territory of Greater Caucasus is included in limits of several synoptic areas.

The Oguz-Ismailli area is exposed to influence of the centers of the cold air located over the Kara Sea, Scandinavia, the South of Eastern Europe and Kazakhstan, getting in the territory through the Caspian Sea and the Azor maximum. Seldom air masses get through the territory of Georgia. Sometimes warm air of a subtropical anti-cyclone gets. Three subdistricts are allocated.

In a high-mountain subdistrict average annual temperatures make 0°-7°C, middle January temperature -5°-10°C (frost), and middle July +5+17°C, an average annual amount of precipitation of 1000-1300 mm. The most damp period – the end of spring beginning of summer. During this period there can be an activization of a role of ground waters in development of landslides.

The Guba-Shamakhi area more than other areas is affected by cold air masses Arctic and middle latitudes and the Central Asian anti-cyclone. On the contrary, influence of a tropical anti-cyclone is shown here poorly, and the Azor maximum in comparison with other areas – is strong.

Mountain subdistrict – average annual temperature reaches +5+7°C, middle January +4º+6ºC, middle July +14º+15ºC less. The average annual amount of precipitation makes 400-600 mm that says that the role of an amount of precipitation in an landslide forming is less, than their quality in comparison with the previous area though the maximum of a precipitation here is observed, as well as in the Oguz-Ismailli area at the end of spring beginning of summer.

The territory of the Apsheron peninsula and the city of Baku is included in limits of the Apsheron-Gobustan synoptic area differing from others by strong North southern air streams. Influence of area of a high pressure formed Kara, Scandinavian and Azor maximum over Southeast Europe is the main reasons of it. Within this area two subdistricts are allocated: subdistrict of Apsheron and Gobustan subdistrict.

In a subdistrict of Apsheron average annual temperature makes +14+15°C, middle January +3+4 °C, middle July +24+26°C, the average annual sum of a precipitation of 100-250 mm, the greatest number of a precipitation drops out in the fall, the winds of the northern direction which are called “xazri” (or the Baku north), often being accompanied a storm dominate. Storms, fogs and phenomenon snowfalls seldom repeating.

In the Gobustan subdistrict average annual temperature makes +11+13°C, middle January -1-3°C, middle July +22+25°C, the average annual sum of a precipitation of 150-300 mm, the greatest number of a precipitation drops out in the fall. Northern and northeast winds dominate, during the hair dryer the strong southwest wind blows. Storms, fogs and snowfalls are observed more often than in the Apsheronsubdistrict.

Apparently from the provided data, climatic conditions of these subdistricts strongly don't differ and can't be considered as a leading factor of emergence of landslides.

4. Conclusions. The numerous researches directed on development of actions for prevention of a descent of landslides are based on the purposes of reduction of biases of hillsides, the phytomeliorative works meaning restoration of a close vegetable cover on broken massifs. Such approach proceeds from insufficient understanding of an essence of the mechanism of this process covering not simply terrestrial surface, but rather powerful cover of sedimentary breeds with a certain stratification, sometimes some tens meters. Quite often in publications of various character expression "sliding of soils" that proceeds from misunderstanding of a geological and geomorphological essence of landslide process, the superficial relation to possible consequences of this phenomenon meets.

At the same time, attempts of melioration of landslide massifs which are ineffective are made. They, are generally directed on alignment of a surface and restoration of a close soil and vegetable cover, including, by implementation a forest plantation.

These measures lead to temporary stabilization of a geodynamic situation that actually, is the beginning of a new cycle in development of landslide process. Planting of trees improves soil and ecological, but not a geological and geomorphological situation as roots of trees aren't capable to constrain movement of mass of breeds sufficiently. Numerous landslides within a mountain and forest belt of Greater Caucasus within Azerbaijan, strongly changed all shape of a landscape can serve as an example, introducing before not meeting elements in its horizontal structure.

5. Alleged actions. In this regard there is an urgent need in the large-scale inventory of landslide massifs meaning drawing up detailed landscape, geological and geomorphological, soil and geobotanical sketch maps, including, with use of materials of space shooting [23-25]. Cartographic materials have to be added with the meteorological data including information on an annual course of air temperature, quantity, character and a mode of loss of a precipitation, average annual and average monthly air temperatures.

In the description of the landslide massif information on a humanitarian and economic situation of the landslide site, including data on number of settlements, number of their population, type of the settlement, features of their arrangement, quantity and character of the enterprises, the social objects located in this territory has to take an important place.

Accumulation and processing of large volume of data is able to afford to carry out comparison of the probable factors causing process of a descent of landslides and to reveal the key factor which hasn't been considered by initial consideration, for the purpose of search of opportunities of its neutralization [9, 12, 13, 20-22].

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ГЕОСИСТЕМНЫЙ АНАЛИЗ РАЗВИТИЯ ОПОЛЗНЕВЫХ ЛАНДШАФТОВ ЮГО-ВОСТОЧНОГО СКЛОНА БОЛЬШОГО КАВКАЗА

Аннотация. Юго-восточная оконечность Большого Кавказа, входящая в пределы Азербайджана и являющаяся частью Альпийско-Гималайского геосинклинального пояса, характеризуется высокой динамичностью экзогенных рельефообразующих процессов, имеющих существенное влияние на развитие ландшафтной ситуации. В этой связи необходимо разработать различные методы для создания сценариев возможных изменений геоэкологической ситуации в различных массивах, имеющих пагубные последствия, путем выявления причинно-следственных связей. С этой целью в этой работе были проанализированы возможности прогнозирования оползней в природной области Большого Кавказа с использованием имеющихся геологических и геоморфологических, климатических и ландшафтных данных, а также визуальных наблюдений. Эти данные позволили выявить основные особенности факторов условий рельефа, гидроклиматические условия в некоторых физико-географических районах, в которых проявляются оползни, характер и интенсивность землепользования, в какой-то мере влияющие на сход оползней и их разрушительное воздействие.

Ключевые слова: процессы, склон, экзодинамический, ландшафты, эрозия, фактор, подрайон, Кавказ.

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TRENDS, PROBLEMS AND PROSPECTS OF THE IPO'S MARKET DEVELOPMENT

Abstract. The globalization of the world economy leads to a change in the landscape of the world's fund infrastructure, the priority of financial capital over the economy, the stimulation of competition and integration processes in the capital markets. The last decade demonstrates the intensive development of new financial centers in emerging markets, which motivate the movement of financial resources to the points of innovative growth. The competitive struggle between the stock markets of developed and developing countries, the transformation of financial instruments, simplification of listing procedures provide an increasingly wide choice for issuers and investors.

The purpose of this research was to study the main current trends in the development of stock exchanges and the qualitative characteristics of the initial public offering, as well as analysis of the current state of the stock market of the Republic of Kazakhstan. Moreover, we analyzed the experience of using this financial instrument by Kazakhstan's companies to attract sources of financing for sustainable economic development.

The research resulted in the identification and description of current trends in international practice of attracting long-term capital, understanding of which is the opportunity to use this experience for the targeted development of the national stock market. For the Republic of Kazakhstan, located in the centre of the Asia-Pacific region, this is a unique opportunity to ensure the dynamic development of the country's stock market, having entered it into the global financial architecture.

Keywords: IPO, stock exchanges, competition, financial centers, capitalization, AIFC.

Introduction. Financial flows and business practices are becoming increasingly global, which stimulates the development of new innovative growth points in the architecture of financial markets for more effective capital raising. The changing external operating environment: the liberalization and deregulation of protected domestic markets, the increasing number of indexes for tracking the performance of shares in different countries stimulates the desire of business to work all over the world. At the same time, the development strategy of the company forces top managers to consider the possibility of attracting capital, not only on the local stock market (provided with sufficiently developed level of it), but also on the global stock market. In response to this requirement of time, stock exchanges are forced to make efforts to remain competitive by opening new specialized sites and simplifying listing procedures for them, expanding their geographical presence through mergers and acquisitions, consolidation, formation of strategic alliances.

Kazakhstan's stock market, being an element of the global stock market, demonstrates significant progress, and, nevertheless, refers to the least developed sectors of the domestic financial system. In our view, this problem requires careful study. Its relevance is also due to the fact that access to financial resources is the main restriction for the economic development of Kazakhstan and the achievement of its strategic goals for the level of welfare by 2050. This problem also was noted by the experts of the Organization for Economic Development in the special report on Kazakhstan [1], as well as by experts of the Global Economic Forum in the annual ranking of countries on the level of competitiveness [2].

In the system of the variety of instruments of the financial market, a special place is occupied by the instrument of initial public offering of shares, which reflects the intensity of investment processes in the

stock markets and formalizes the channels of access to sources of financing. A positive example of the strategic vision and use of the geopolitical potential of Kazakhstan for the development of the stock market is the creation of the International Financial Center Astana, as well as the practice of using the IPO tool on the local stock market.

In this regard, the study of the current state, trends in the global IPO market, as well as practical experience and prospects for the development of this financial instrument is relevant for the Kazakhstan stock market in its initial stage of development but an important element of the financial system for securing long-term and sustainable financing of the economy.

Methods. The methodology of the author's research is based on methods of economic analysis (economic monitoring), statistical research (statistical observation method and grouping method), abstraction method. The basis of the research is the system approach, the dialectical method of cognition, the logical method, the methods of analysis and synthesis. The theoretical basis was the scientific work of foreign and domestic scientists, reports of the World Economic Forum and OECD. Information basis are reports of auditing companies Ernst & Yang and PricewaterhousCoopers, statistics World Federation of Exchanges.

Results.

1. Competition of stock exchanges: demulturization, consolidation, strategic alliances and financial technologies. The competition of stock exchanges and trading platforms of developed countries leads to the development of processes of consolidation and integration of stock exchanges in order to pool resources and increase liquidity. As equity markets become increasingly global, the world's leading exchanges are transformed through diversification, expansion of the business area, technological and innovation development. One of the tools of transformation is the process of demutualization [3], which involves the conversion of state or unit stock exchanges into profitable public companies. In 2006, after more than two centuries of work as a non-profit institution, the New York Stock Exchange became a publicly traded company.

The intensive competition of exchanges and, as a result, the loss of income, led to the need for consolidation as one of the ways to achieve expansion of the sphere of influence and improve liquidity by signing strategic alliances and cooperation agreements, mergers and acquisitions, changes in prices and time of bidding, sharing of technologies.

Along with the formation of national holdings: "Spanish exchanges", "Deutsche Bourse", transnational exchanges were formed. The first such exchange was the EURONEXT NV (pan-European exchange), in which the trading, clearing and settlement systems of stock, urgent and commodity markets of the three exchanges (Paris, Amsterdam and Brussels) were integrated. Euronext became the first exchange whose members were fully integrated, and the markets were transformed into a single system.

In December 2006, NYSE completed a $25 billion deal to merge with Euronext, creating the first global exchange NYSE Euronext, in which it owns 91.4% of the shares. The market value of Euronext for 10 years increased from $25.81 billion to $4.2 trillion.

In November 2013, the US regulators approved the Intercontinental Exchange (ICE) acquisition of NYSE Euronext, which made ICE not only the world's largest stock exchange holding company, but also the operator of the largest stock market in the world. Intercontinental Exchange (ICE) – a network of exchanges and clearing houses for financial and commodity markets in the US, Canada and Europe, the world's largest operator of the derivatives market, where futures contracts for all types of underlying assets are traded.

NASDAQ (the second-largest US stock exchange), twice attempted to acquire the London Stock Exchange (LSE), but after receiving a refusal, eventually became its shareholder through the purchase of shares. Currently, NASDAQ owns more than 28% of LSE shares. In 2007, a $3.7 billion deal was completed to acquire OMX: the European stock exchange, located in Stockholm, Sweden. This combination created a global exchange NASDAQ OMX Group with 4000 listing companies from 39 countries with a total market capitalization of $5.5 trillion. A similar trend also exists in the Asian stock market.

In addition to mergers and acquisitions, exchanges also use another form of cooperation – strategic alliances. Thus, the NYSE Group entered into an agreement with the Tokyo Stock Exchange. The main areas of cooperation are the development of technologies and electronic trading systems, the simultaneous placement of securities and the creation of information products. In March 2014, NYSE EURONEXT signed an agreement with the Middle East exchanges in Beirut and Tunisia, as well as the Muscat Securities

Market of Oman. Also signed a partnership agreement with the owners of the automatic system Quandl, which provides access to a million financial instruments around the world, and the non-market trading platform BATS Chi-X Europe. It links Euronext, London Stock Exchange, Frankfurt Borse AG and OMX [4].

As the article was being prepared, on April 10, 2018, KASE and the Moscow Exchange signed an agreement on the intention of strategic cooperation, which is aimed at promoting the development of a single Eurasian Economic Area (EAE) and the establishment of a unified financial market of the countries – members of the EAE. The main objective of the aforementioned agreement is to improve regulatory markets, the clearing activities and activities of the central counterparty, as well as the convergence of the main financial markets of Russia and Kazakhstan, taking into account international standards [13].

Financial technologies make the trading of financial assets faster, more economical and accessible from anywhere in the world, both for large and small retail investors, which destroys the dominance of national exchanges. Technological innovations have become a fundamental driving force for competition for exchanges, not only with each other, but also with new players in the exchange market that provide alternative technologies for exchange trading, as well as for products. For example, private equity funds and hedge funds provide access to growing pools of private capital as potential alternatives for listing.

Automated trading systems such as POSIT, Liquidnet and E-crossnet are also competitors because they represent quasi-exchange, where shares are purchased and sold through smaller private networks of brokers, dealers and other market participants, and do not require listing costs [3].

The competition between different methods of carrying out settlement transactions between global custodians and central depositories, as well as between local and foreign central depositories, is intensifying. The two international central depositories Euroclear (Morgan Stanley) and Clearstream (Citibank) provide settlement on real-time exchange transactions in securities in the form of global certificates from 30-40 markets [5, p. 252].

We believe that strengthening the consolidation of the stock markets will attract new investors, provide them with a wider range of financial products and services with lower costs, which should improve the efficiency of the financial market as a whole. At the same time, the negative effect of the globalization of stock markets is systemic risk, which is reflected in the rapid transfer of shocks to local markets, which has a detrimental effect on developing markets with a low level of financial depth by increasing their volatility.

2. Characteristics of global IPO markets. To study the quantitative and qualitative characteristics of the instrument of a public offering of shares on the stock market, we examined the statistical data of the global IPO market provided in the EY reports. We managed to identify many trends that evidenced global changes in the landscape of the world's major financial centres over the past ten years. Chart 1 provides the information on the number of IPO’s placed and the amount of capital raised. Over the past decade, the total volume of primary listings was about 11,000 units, attracted investments - more than $1,738.5 trillion. In 2017, 1624 IPOs were held, which is 48% higher than in 2016 and 19% higher than in 2010. These indicators of quantity are a record in the decade after the crisis of 2008-2009. The total amount of investments attracted by companies in the financial market in 2017 was $188.8 billion. However, it did not reach the level of 2010 ($284.6 billion).

At the same time, it should be noted that these diagrams demonstrate the cyclical nature of the IPO market, which functions under the influence of political and economic factors. It is worth noting that the volatility of the annual number of IPOs is lower than the volatility of the volume of attracted resources in the same period, which has an impact on the amount of capital raised.

This trend can be interpreted on the one hand by the high interest of companies in entering the market, which stimulates the demand for this instrument of the financial market. However, the high sensitivity of investors to risks - in the form of increasing or decreasing market confidence, reflected in the Volatility Index (VIX). The index evaluates investor assumptions about the volatility or scope of the stock market movement, leads to an increase or decrease in the average size of the capital raised in the IPO process. When VIX is above 20%-25% of the range, it becomes much more difficult to complete the IPO [6, p. 18].

The dynamics of the average amount of attracted capital per listing IPO is presented in chart 2. This indicator characterising the cumulative effect of public offering allows us to conclude that 2014 was the most successful, as the average amount of capital raised was $212 million, at the same time the indicator of 2017 – equalled 116,3 $million which is the lowest in the last ten years.

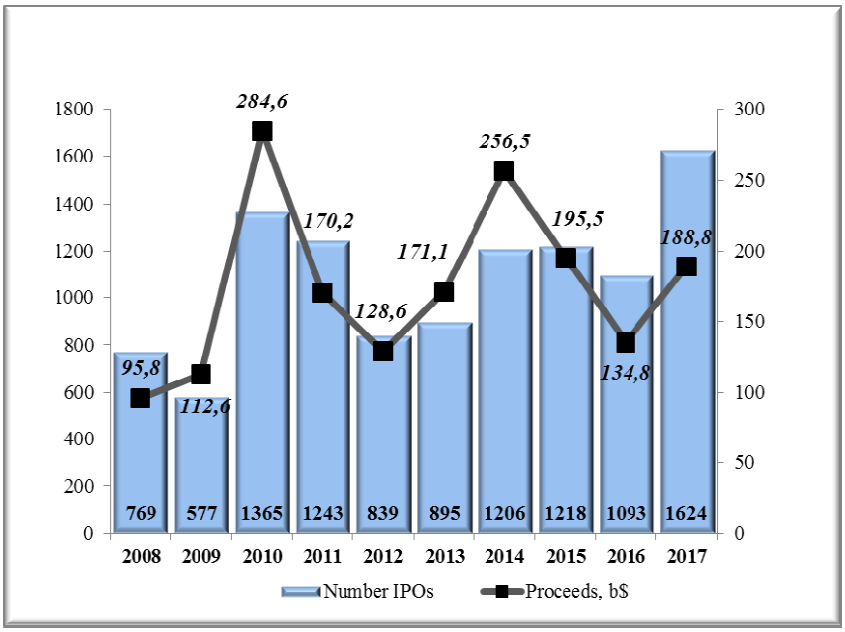

Chart 1 – The number of initial public offerings and attracted capital.
Source: compiled by the author on the basis of Global IPO reports, E&Y.

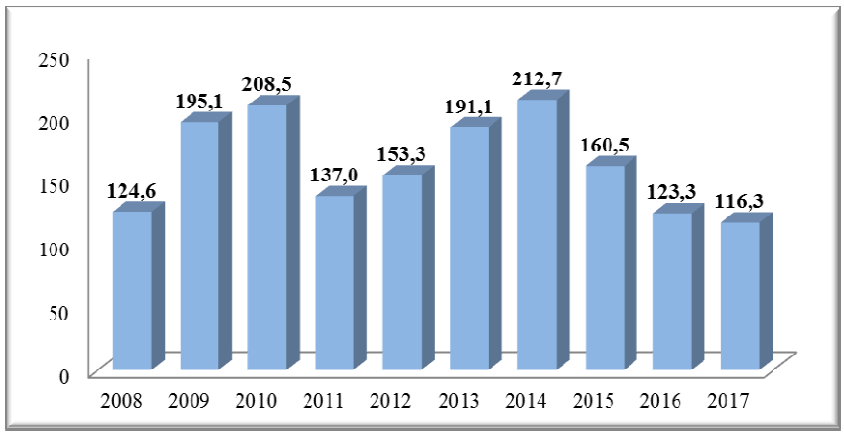

Chart 2 – The average amount of capital raised by IPO.
Source: compiled by the author on the basis of Global IPO reports, E&Y.

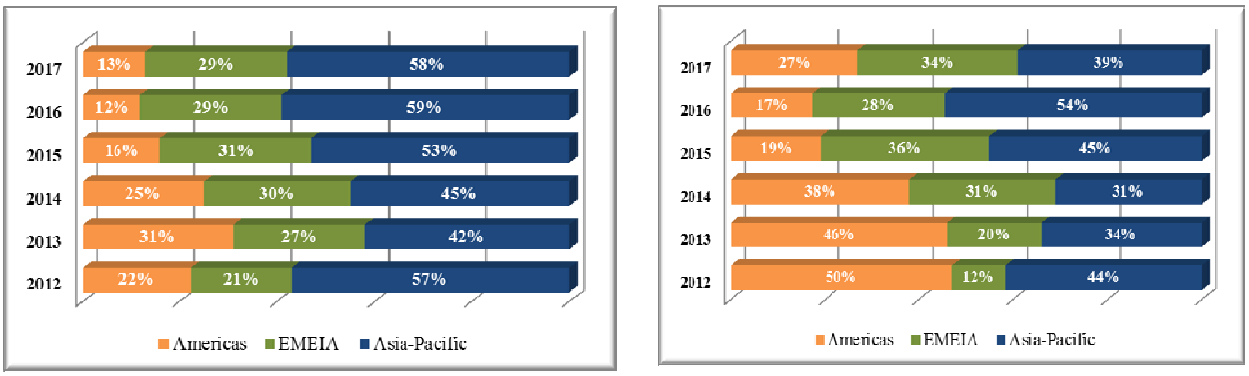

Chart 3 – Dynamics of distribution of IPO market shares and volumes of attracted capital
Source: compiled by the author on the basis of Global IPO reports, E&Y.

The success of 2014 is due to one of the largest IPOs in recent years: Alibaba Group Holding, Ltd, which raised capital of more than $25 billion in September 2014, NYSE. The largest placement in 2010 was the Agricultural Bank of China Ltd, the commercial agricultural bank of China, which raised $22.1 billion on the Hong Kong and Shanghai exchanges, while Snap, the market leader of the IPO in 2017, made a total investment of $3.9 billion only, NYSE.

Chart 3 shows the dynamics of changes in the structure of the global IPO market in the regional aspect by the number of IPOs and the volume of capital. In particular, according to the methodology E&Y, stock exchanges are grouped into three market segments: Americas (North and South America), EMEIA (Europe, Middle East, India and Africa), Asia-Pacific (Asia-Pacific region).

Analysis of the data allows us to conclude the leading role of the Asia-Pacific region regarding the number of public offerings of shares and the volume of financing, which is 58% and 39% of the market share, respectively. However, regarding the number of deals, this region is the undisputed leader, by the volume of capital raised in 2017, the shares of the regions formed in the amount of 27%, 34% and 39% market share. It characterises the high level of global diversification of investors between "old" and "new" markets.

In the dynamics of the period from 2012 to 2017, there is a significant decline in the share of the US market in the total number of IPOs: from 22% to 13% in favour of the Asia-Pacific region, at the current share of EMEIA. Regarding capital raised, for the last six years, EMEIA's share has grown from 12% to 34%, or almost three times. Drivers of growth were the stock markets of India and the UAE at the current stable rate in the European market.

Analysis of the data of the top-10 world stock exchanges leading regarding IPOs number following the results of 2017 is presented in the chart 4. Over 35% of the initial public listings take place on the stock exchanges of China, and this trend, which began in 2006, is becoming more global. The number of IPOs in growing markets is more than three times higher than the number of IPOs in the advanced markets of the US, UK and Japan.

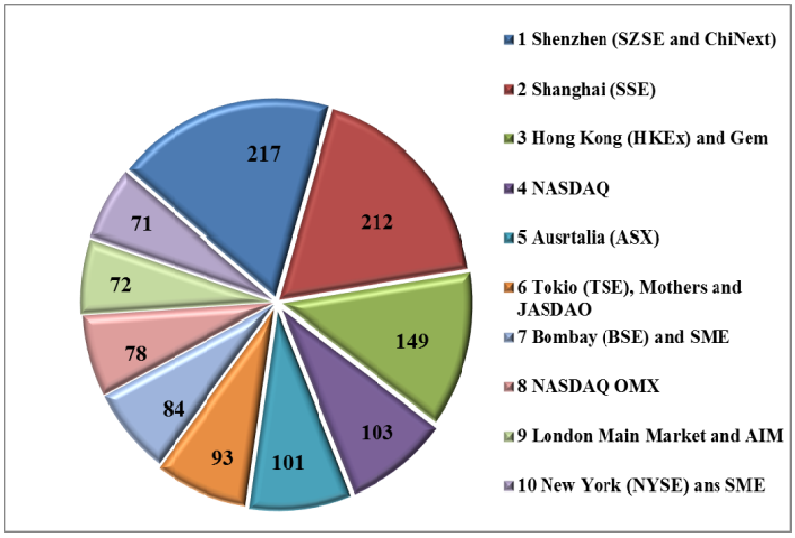

Chart 4 – Rating of stock exchanges by the number of IPOs held.

Source: compiled by the author on the basis of Global IPO reports, E&Y.

As for the amount of capital raised on the IPO, this trend is more restrained. The graph 5 illustrates that in 2017, the leader in raising capital in the IPO process is the New York Stock Exchange with a volume of $30 billion. The London Stock Exchange ranks 4th with a total capital of $14.8 billion, the Shanghai, Hong Kong and Shenzen stock exchanges ranked 2nd, 3rd and 5th respectively, with total investment volume of $48.9 billion.

However, we are observing an intensification of competition between stock exchanges and developed countries, regarding the volume of raised capital as well. For example, if in 2016 the volume of capital raised on stock exchanges of developed countries (US, UK, Japan) was $52.8 billion, while on the stock

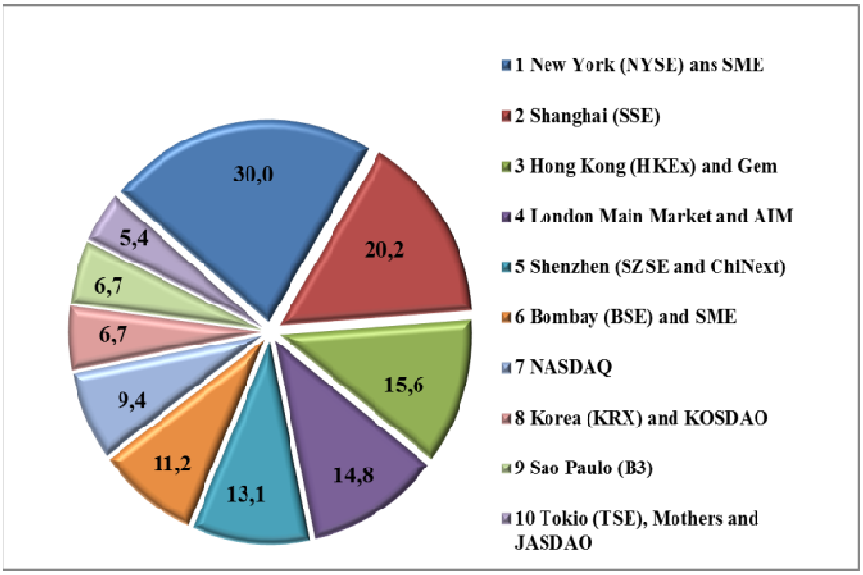

Chart 5 – Rating of stock exchanges by size.
Source: compiled by the author on the basis of Global IPO reports, E&Y.

exchange of developing countries (China, Korea, India, Brazil) – $53.2 billion. Then in 2017 leadership of developing markets appears even more confident with: $59.6 billion against $73.5 billion, respectively. At the same time, stock exchanges of the developing markets are showing outperforming growth rates in comparison with developed markets.

The markets of China and India demonstrate the highest growth rates of the market capitalisation of the global stock market. The graphs 6 and 7 show the dynamics of the number and size of the capitalisation of the initial public offering of shares in 2008, 2010, 2016 and 2017.

China's stock markets, with fairly average indicators in 2008, since 2010 have demonstrated explosive growth and are unquestionably leading regarding the number of transactions, more than 1.7 times higher than those of stock exchanges in the US, UK and Japan. Despite a more extended and more rigorous procedure for assessing the prospects for IPO candidates by the new China regulator, the Committee for the Issue Examination, 530 applications for an IPO in 2018 were submitted to the Securities Regulatory Commission [5, p. 2].

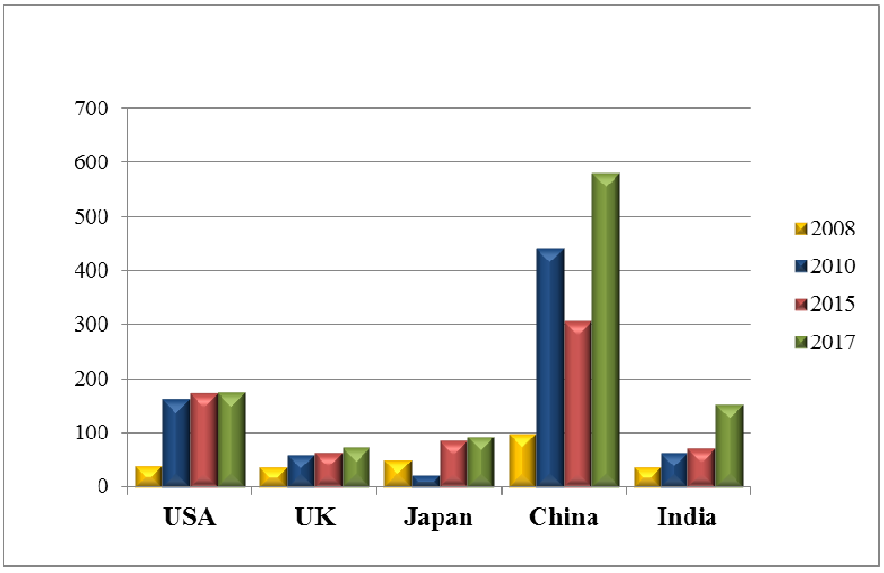

Chart 6 – Dynamics of the number of IPOs in the regional aspect.
Source: compiled by the author on the basis of Global IPO reports, E&Y.

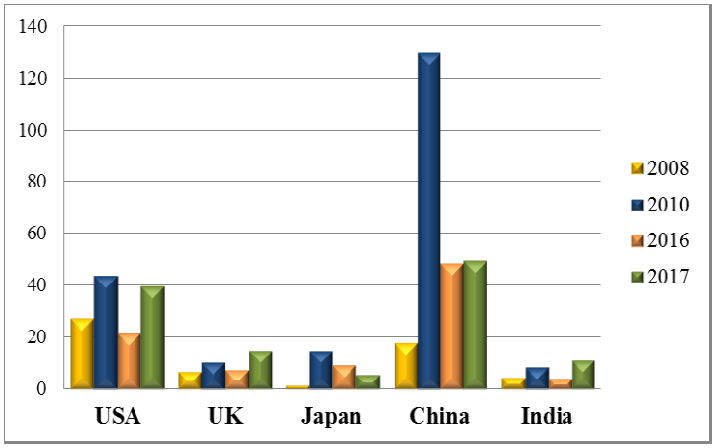

Chart 7 – Dynamics of the size of the capital involved at IPO, regional aspect.
Source: compiled by the author on the basis of Global IPO reports, E&Y.

The indicator of the volume of raised capital in 2010 was a record for the stock market in China. Deferred and cancelled by many companies IPO during the crisis of global stock markets, also, to discredit to the stock exchanges of developed countries and updated listing rules by the Chinese regulator, contributed to the achievement of a result of 129.8 $billion.

On the Bombay and National stock exchanges in India, a 74 percent increase in the number of transactions was recorded in 2017 compared to 2016, and 153 IPOs brought the issuers of $11.6 billion. In 2017, the highest transaction rates and revenues were noted in the market, reflecting the country's economic strength and the growing appetite of investors.

Stock markets of developed countries provide dynamism and depth, the necessary amount of institutional liquidity since they have access to large pools of local and international capital. The United States and Britain have huge financial resources under the control of institutional investors: $35.6 trillion and 6.5 trillion respectively, while for the Asian region this figure is only $1.6 trillion.

However, the US stock exchanges, have lost the position of a leader, they still keep the companies' steady demand for capital mobilisation. The most important characteristic when choosing a stock exchange is liquidity, the size of the investor base, the level of coverage by analysts, legal requirements for public listing and infrastructure [7, p. 7].

The Chart 8 presents data for 2016 on the size of the capitalisation of stock exchanges and the number of public companies that provide this capitalisation.

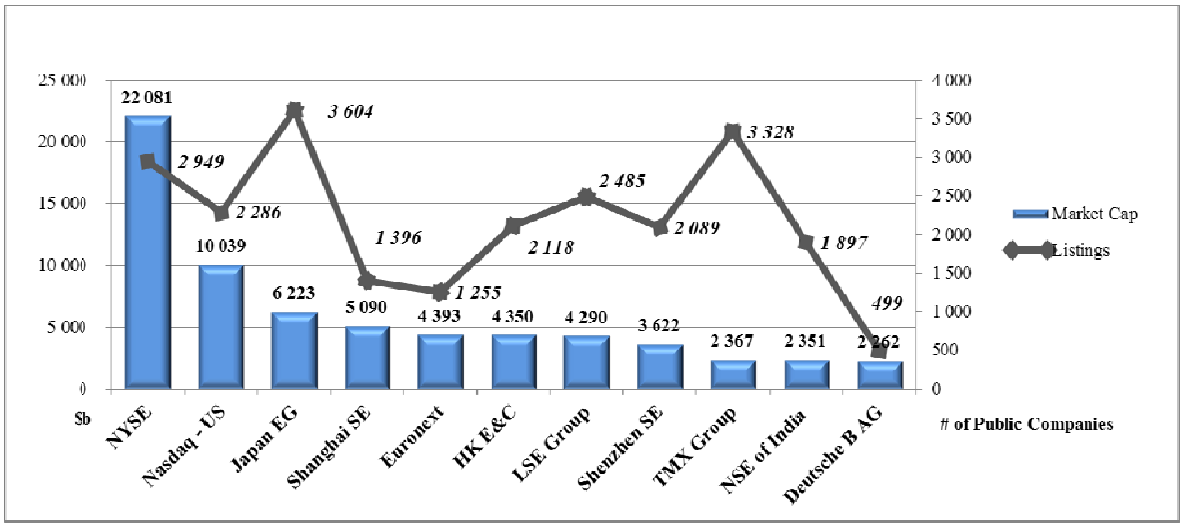

Chart 8 – Market capitalization of stock exchanges and listing of public companies at the end of 2017.
Source: compiled by the author on the basis of WFE [12].

Capitalization of the US stock markets is more than $26 billion, and taking into account the UK and Japan stock markets, $36.7 billion, which is 3.8 times lower than the total capitalisation of China's three stock exchanges ($9.6 billion). The main obstacle for issuers in choosing the trading venues of developing countries is an undeveloped legal and regulatory base, combined with a lack of political stability, opaque market initiatives or government intervention in the regulation of the stock market.

Another important factor of choice in favour of mature stock markets human resources, who have accumulated experience and knowledge for a long period, which provides a high level of consulting and achieving a higher effectiveness of the IPO.

However, despite actual and competitive regulatory models and infrastructure, the markets of developed countries have lost their dominant positions. For London, it would be expected that losing the market will happen due to the reduction in the listing of foreign companies, the vulnerability of the economy associated with the increased uncertainty of the Brexit consequences, tightening of the regulatory regime. For US stock exchanges, the impact of factors is less significant due to the size of the US economy and the relaxation expectation of regulatory requirements for the financial sector in 2018.

3. Kazakhstan companies in the global and local IPO market. The IPO tool is not new for Kazakh companies. Moreover, market leaders have accumulated certain experience in attracting capital, listing, as well as compliance with corporate standards and international financial reporting standards in the status of a public company.

Analysis of available statistical sources [13, 14] allowed gathering information on the use of the IPO tool by Kazakh companies for the period from 2002 to 2017 inclusive. In total the available data during this period cover 32 IPOs, conducted by resident companies of Kazakhstan, as well as companies operating in Kazakhstan.

In general, the issue of shares was held in three countries (Great Britain, Kazakhstan and Russia), four stock exchanges (the London Stock Exchange (LSE): the main (MAIN) and the alternative market (AIM), the Kazakhstan Stock Exchange (KASE) and the Moscow Stock Exchange (MOEX) and using two instruments: through initial public offering of shares and placement of global depositary receipts (table 1).

Table 1 – Structure of IPO of Kazakhstan companies on stock exchanges and size of debt capital in the period from 2004 to 2017

	LSE MAIN	LSE AIM	KASE	MOEX	Sum-total
Capital, $millions	7560,4	1418,0	335,0	10,5	9323,9
Structure	81.1%	15.2%	3.6%	0.1%	100%
Number of IPOs	12	12	7	1	32
Source: On the basis of information provided by [13, 14].					

A total of 29 companies have issued shares and global depositary receipts, the total amount of attracted capital is $9.3 billion. In the structure of the placement sites, both in terms of the number of IPOs and the amount of debt capital, the London Stock Exchange is undoubtedly leading, more than 96% of the capital of Kazakhstan companies.

The capital was attracted by two instruments: through initial public offering of shares - 61% and placement of global depositary receipts - 39%. The largest primary public offerings presented in table 2. They were held between 2005 and 2007, comprising two resource companies and three financial sector companies: Kazkommertsbank, Alliance Bank and Halyk Bank of Kazakhstan.

Table 2 – Top-5 the largest IPOs of Kazakhstan companies

Company	Volume of capital, million dollars	Stock exchange	Instrument	Year
ENRC	2792	LSE MAIN	IPO	2007
Kazakhmys	1156	LSE MAIN	IPO	2005
Kazkommertsbank	761	LSE MAIN	IPO	2006
Alliance Bank	704	LSE AIM	IPO	2007
Halyk Bank	680	LSE MAIN	GDR	2006
Source: author's development based on data [13, 14].				

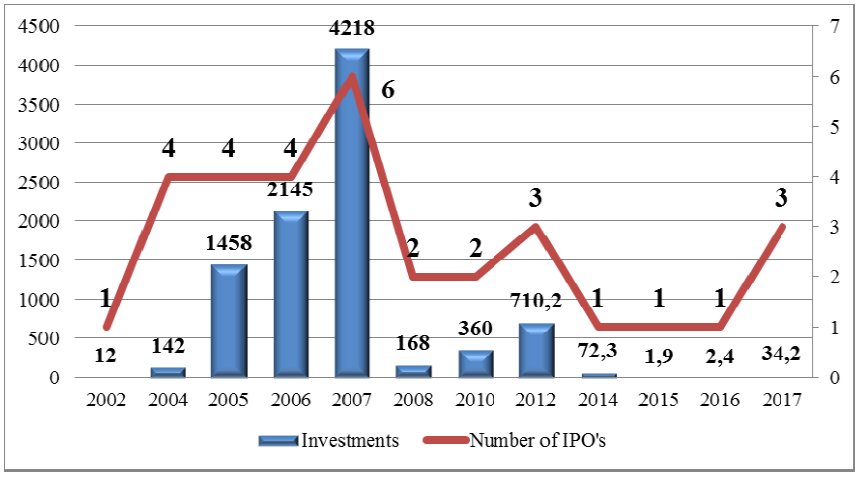

Chart 9 – Number of deals and amount of capital raised, $mln.

Source: author's development based on data [13, 14].

Chart 9 provides a sample of the number of IPOs and the amount of debt capital shall be presented in annual segments.

As follows from the diagram, 2007 was a year of peak activity both in terms of the amount of debt capital - $4,218 million, and in terms of the number of IPOs - 6 placements. After 2012, despite the availability of annual public offerings, the amount of attracted capital is not reflected in the schedule due to the insignificance of the amounts. This situation is explained by the absence of public placements on foreign stock exchanges and the transfer of the activity of issuers to the national stock market.

Starting from 2012, the Kazakhstan Stock Exchange accepted 7 IPOs, the total amount of debt capital was $335 million, which is more than 26 times lower compared to the London Stock Exchange due to low capitalization and liquidity of the national stock exchange.

We believe it possible to conclude that this trend is a consequence of deterioration of Kazakhstan's macroeconomic indicators and a reduction in the country rating against the backdrop of the global economic recession, which is a negative prerequisite for companies to enter the IPO, as it entails a significant underestimation of the value of shares by potential investors.

In addition, stimulating the development of the national stock market by the Government of the Republic of Kazakhstan for a balanced provision of the economy with financial resources in conditions of deteriorating the stability of the banking sector may also be the cause of this situation. The tool for the implementation of these incentives was the "National IPO" program, which allowed to attract funds from local investors, to activate the activities of the national stock exchange and to privatize two national companies: KazTransOil ($185.2 million) and KEGOC ($72.3 million) in 2012 and 2014. The third in terms of attracted capital was the placement in 2012 of the shares of the national mobile operator KCELL ($49.5 million). These placements became the largest in the history of the Kazakhstan stock exchange.

The event in the stock market was the placement of shares in the Bank of Astana in 2017, which attracted $20.1 million to the national market and $10.5 million through SPO on the Moscow Stock Exchange.

4. Tools to improve the liquidity of the Kazakhstan stock market. The growth of trading volume on the Kazakhstan Stock Exchange in 2017 compared to 2016 amounted to more than 60%, increasing from 94.6 to 151.5 billion. tenge, which amounted to more than 300% of GDP, the index reached the index of 2162 (+ 59%), capitalization - 17.1 billion tenge (+ 20%). The exchange trades 127 shares of 110 issuers and 262 corporate bonds from 66 issuers.

This dynamics allowed the national stock exchange to become one of the fastest growing stock exchanges in the world. As a result, in the annual review of the FTSE Russell Advisory Committee (Financial Times Stock Exchange group), in September 2017, it was announced that the Republic of Kazakhstan was assigned the status of the Frontier market within the framework of the FTSE country classification [13]. However, chart 10 allows us to conclude that the main driver of the growth of the national stock exchange is the money market.

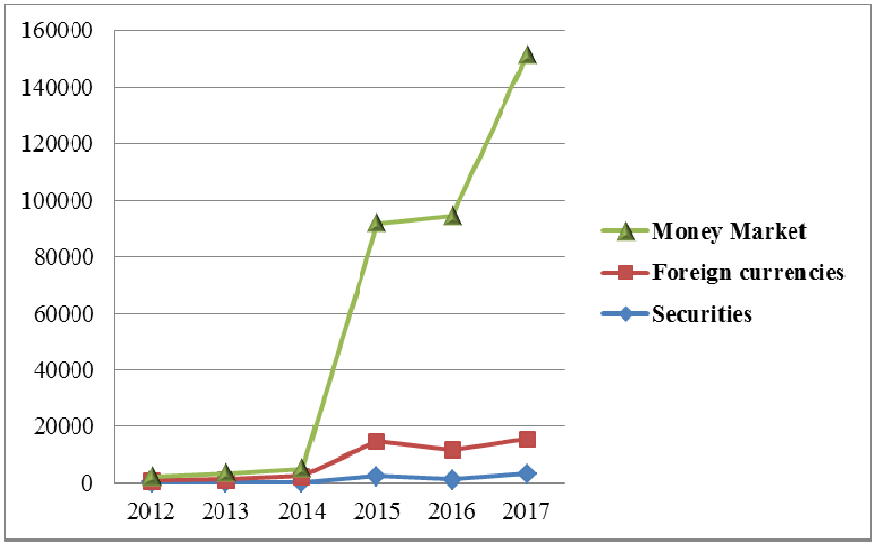

Chart 10 – Dynamics of trading of KASE in 2012-2017, billion tenge.
Source: compiled by the author on the basis of KASE data.

For example, the money market accounted for more than 89.6% and currencies – 8.1% of the volume of trades in KASE in 2017 respectfully (chart 11). The share of trading in the instruments of the stock market (shares, corporate bonds, securities of investment funds, government securities and securities of international financial organizations) for this period is only 3.5 billion tenge or 2.3% of the volume of trading, which is equivalent to only 7% GDP of Kazakhstan (48,850 trillion tenge according to the preliminary estimate for 2017).

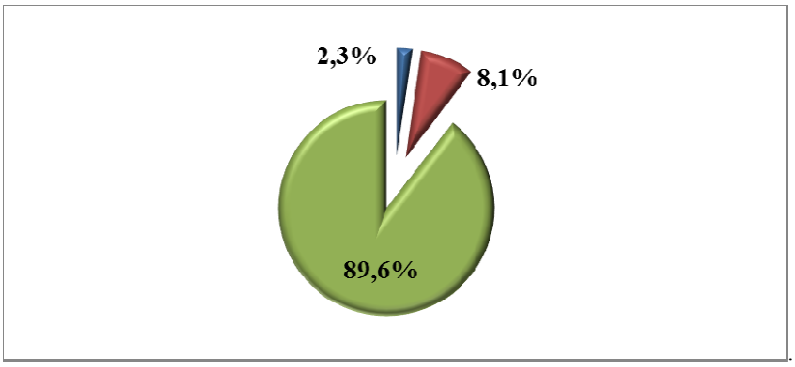

Chart 11 – Trades structure of KASE by types of instruments in 2017, billion tenge.
Source: author's development based on data [13].

Thus, at the moment the Kazakhstan stock market is not sufficiently liquid and its size does not match the size of the economy.

In the structure of trading on the stock market (chart 12), the largest share is held by government securities, which simultaneously show the highest growth dynamics. The second place in terms of trading volume is corporate bonds. The share market, after active dynamics in 2015, it reduced activity 4 times in 2016-2017. Nowadays the market share is at a consistently low level.

At the same time, we believe it necessary to note that during the period from 2012 to 2017 the volume of trading in securities increased from KZT180.4 billion to KZT 3,450.4 billion, or almost 19 times, which is the result of targeted efforts by the Government of the Republic of Kazakhstan to expansion of access to the capital of economic entities, as well as ensuring sustainable and balanced development of the economy. The result of this work in the period up to 2025 should be the creation of a developed capital market, which is one of the most important activities of the International Financial Center Astana (AIFC).

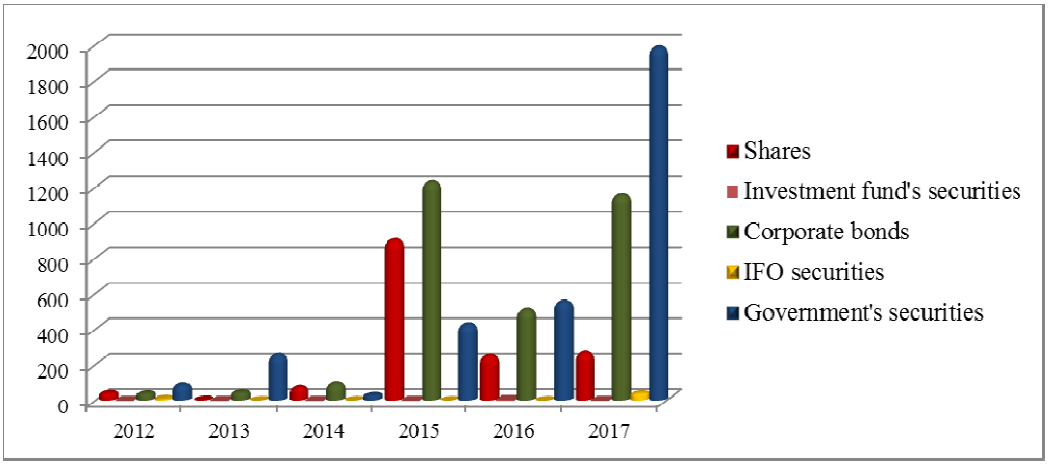

Chart 12 – Dynamics of the securities market on the Kazakhstan stock market, billion tenge.
Source: author's development based on data [13].

International Financial Center Astana officially began its work on January 1, 2018. In this project, the Government of the Republic of Kazakhstan takes advantage of its geopolitical position, the latest trends in the transfer of the dynamics of the development of stock markets to the Asia-Pacific region, actively introducing the best world practices, for the full development of the stock market. Thus, in the next 10 years it is expected not only to solve the local tasks of diversifying the risks of the sovereign financial system, but also its system integration into the global world financial architecture.

The AIFC development strategy is a consistent movement into the global financial market based on the best international experience: Local Expertise Center => Regional Clearinghouse => Regional Financial Center => Global Financial Center [15].

Experts claimed that these measures will attract more than 350 billion dollars of additional liquidity to the capital market of Kazakhstan in the period until 2025. We view this initiative as a unique opportunity for the countries of the Eurasian Economic Union to increase the capitalization and liquidity of the national stock markets, and to provide access to national economic entities for both regional and global capital markets through IPO and GDR tools in the context of the task of integrating the stock markets of the EAGE countries to 2025 year.

According to the joint action program of the Government and the AIFC, capital market development is planned on the basis of the infrastructure of the Astana Stock Exchange (AIX) in the period 2015-2025 due to:

– strategic partnership with the Shanghai Stock Exchange (SSE) and technology transfer NASDAQ;

– issue of state treasury bonds, infrastructure bonds; corporate bonds by public and private companies;

– expansion of the number and types of instruments, including the tool of ETF (exchange trade funds);

– listing of large joint ventures in the oil and gas sector and the mining and metallurgical complex; opening of an additional market segment for subsoil users;

– conducting an IPO of not less than 25% of the outstanding shares of the most attractive companies in the investment plan of shares of Kazakhtelecom, Kazatomprom and AirAstana in 2018, for the period to the year 2020 of companies: KazMunayGaz, Samruk-Energo, Kazpost and KazakhstanTemirZholy.

The strategic objective of this initiative is to form the core of Kazakhstan's new financial infrastructure for integration into global financial markets and flows, build a full-fledged diversified financial system, and further create a financial hub for the Central Asian region.

Conclusion. The financial market belongs to the most dynamically developing objects of modern economic research. The world community is witnessing a change in the role of financial markets in the global economic system. Analysis of the current tendencies of the IPO market, testifies to the change in the landscape of the financial market that occurred in the post-crisis period through the formation of new leaders - large growth points in emerging-market exchanges [16].

This architecture is characterized by a high level of competition between the IPO markets of developed and developing countries. Stock exchanges of developed countries retain their leadership in terms of market capitalization, access to large pools of international investors and professional compe-

tencies. The stock exchanges of developing countries demonstrate high growth rates in terms of the number of primary public placements, taking advantage of the size of economies, exceeding the average world growth rates and increasing the number of wealthy people with investment assets [17]. Exceeding the growth and growth in the rates of the IPO market indicators of developing countries over developed markets make it possible to draw a conclusion about the growing process of convergence of capital markets of developing and developed countries.

Competition between stock exchanges stimulates the formation of transnational exchange holdings, strategic alliances, demutualization processes. Technological innovations have become the fundamental driving force for competition for exchanges, not only with each other, but also with new players on the exchange market, which ensures the provision of financial services at high speed from anywhere in the world at low cost to a wider range of investors. Thus, the globalization of financial markets increases their effectiveness and investor involvement, while increasing volatility and co-dependence on country-level political and economic shocks.

Primary public offering of shares is a global equity instrument of the stock market, which is used as the most effective way of attracting capital to solve strategic tasks of growth and development. This tool is applicable both in international and national financial markets. However, market selection and many other IPO parameters are a unique solution for each company, depending on the stage of its development, industry, goals and objectives. Kazakhstan's companies have experience in attracting capital, both on the external and national stock markets.

Discussion. Kazakhstan stock market is undergoing a transformation of its institutional structure. Against the backdrop of the activity of professional participants of the financial market, the Kazakhstan Stock Exchange, being a key institution of professional mediation, demonstrates the growth of performance indicators and the successful achievement of strategic objectives. However, analysis of the volume and structure of trading allows us to conclude that the volume of the stock market does not correspond to the size of the economy. We believe that the establishment of the International Financial Center Astana, based not only on the strategic vision, but also on the best world standards and practices, will give a new impetus to the development of the national stock market of Kazakhstan and effectively use the instrument of initial public offering of shares to solve the problems of the country's economic development.

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IPO НАРЫҒЫН ДАМЫТУДАҒЫ КЕЙБІР МӘСЕЛЕЛЕРІ МЕН БОЛАШАҒЫ

Аннотация. Әлемдік экономиканың жаһандануы әлемдік қордың инфрақұрылымының ландшафтының өзгеруіне, экономиканың қаржы капиталының басымдығына, капитал нарықтарындағы бәсекелестікті және интеграциялық үдерістерді ынталандыруға әкеледі. Соңғы онжылдықта дамушы нарықтарда жаңа қаржы орталықтарының қарқынды дамуы көрсетіледі, бұл қаржы ресурстарының қозғалысын инновациялық өсу нүктелеріне ынталандырады. Дамып келе жатқан және дамушы елдердің қор биржалары арасындағы бәсекелестік күресі, қаржы құралдарын трансформациялау, листинг рәсімдерін жеңілдету эмитенттер мен инвесторлар үшін қор биржаларының барынша кең таңдауын қамтамасыз етеді.

Зерттеудің мақсаты қор биржаларын дамытудың негізгі ағымдық үрдістерін және бастапқы акциялардың сапалық сипаттамаларын, сондай-ақ Қазақстан Республикасы қор нарығының ағымдағы жағдайын талдау болып табылады. Бұдан басқа, біз бұл қаржы құралын тұрақты экономикалық даму үшін қаржыландыру көздерін тарту бойынша қазақстандық компаниялардың тәжірибесін талдадық.

Зерттеудің нәтижесі әлемдік қор биржаларын шоғырландырудағы ағымдық үрдістерді сәйкестендіру және жіктеу, акцияны акцияларды бастапқы орналастырудың халықаралық практикасы, оның түсінуі ұлттық қор нарығын мақсатты дамыту үшін осы тәжірибені пайдалану мүмкіндігі. Азия-Тынық мұхиты аймағының орталығында орналасқан Қазақстан Республикасы үшін әлемдік озық тәжірибені пайдалану - оны әлемдік қаржы архитектурасына енгізу арқылы елдің қор нарығының қарқынды дамуын қамтамасыз етудің бірегей мүмкіндігі.

Түйін сөздер: IPO, қор биржалары, бәсекелестік, қаржы орталығы, қаржы нарықтарында, KASE, AIFC, Қазақстан.

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ТЕНДЕНЦИИ, ПРОБЛЕМЫ И ПЕРСПЕКТИВЫ РАЗВИТИЯ РЫНКА IPO

Аннотация. Глобализация мировой экономики приводит к изменению ландшафта фондовой инфраструктуры мира, приоритетности финансового капитала над экономикой, стимулированию конкуренции и интеграционных процессов на рынках капиталов. Последнее десятилетие демонстрирует интенсивное развитие новых финансовых центров на развивающихся рынках, которые мотивируют перемещение финансовых ресурсов в точки инновационного роста. Конкурентная борьба между фондовыми биржами развитых и развивающихся стран, трансформация финансовых инструментов, упрощение процедур листинга предоставляют все более широкий выбор фондовых бирж для эмитентов и инвесторов.

Целью данного исследования является изучение основных текущих тенденций развития фондовых бирж и качественных характеристик первичного публичного предложения, а также анализ текущего состояния фондового рынка Республики Казахстан. Более того, мы проанализировали опыт использования этого финансового инструмента казахстанскими компаниями для привлечения источников финансирования для устойчивого экономического развития.

Результатом исследования стали выявление и классификация современных тенденций консолидации мировых фондовых бирж, международной практики первичного публичного размещения акций, понимание которых является возможностью использовать данный опыт для целевого развития национального фондового рынка. Для Республики Казахстан, находящейся в центре Азиатско-Тихоокеанского региона, использование лучших мировых практик является уникальной возможностью обеспечить динамичное развитие фондового рынка страны, вписав его в глобальную финансовую архитектуру.

Ключевые слова: IPO, фондовые биржи, конкуренция, финансовые рынки, KASE, МФЦА, Казахстан.

Выражение признательности. Мы признательны двум коллегам-ученым за конструктивный и критичный взгляд на результаты исследования. Возражения принимаются в обычном порядке.

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STUDY OF FUNCTIONAL STATE OF THE STUDENTS

Abstract. The aim of the work is to study and identify the features of the immune hormone status, functional and psychoemotional state of students and to search for possible ways of correcting the caused disorders. The article analyzes the tasks of the state in the sphere of education and physical education of students and students.

The solution of this problem is associated with the formation of a culture of health in all subjects of the educational process. Health is considered as a goal and condition of quality education – the basis of self-actualization, achievement of life success and as a criterion for the activity of an educational institution.

The result of the work was the identification of environmental and production factors that have a damaging effect on the body. Measures have been developed to eliminate adverse factors and their impact on students and ways to enhance the health of student youth.

Stress is a leading factor in the pathogenesis of most somato-visceral disorders, leading to the appearance of pathology of the endocrine system. In case of violations of the endocrine system, metabolism is disturbed and leads to a number of diseases, such as anemia, diabetes, etc. Anemia ranks first in the structure of morbidity in Kazakhstan. With anemia, there are violations of the antioxidant status, and oxidative stress develops, leading to the destruction of erythrocyte membranes, which causes a violation of the main function of erythrocytes - the delivery of oxygen to the tissues of the body.

Keywords: immune-hormonal status, functional and psycho-emotional state of students, the formation of a culture of health, stress, anemia.

Actuality. In the course of the research obtained new scientific information that will allow you to develop, test and implement the University's comprehensive assessment and monitoring of student's health. To increase the overall resistance of the organism conducted research to assess the level of health of students.

It is established that the students of the 1st course prone to maladjustment and socially affected by negative factors of social life, which affects the structural-functional state of erythrocyte membranes. The low stability of erythrocyte membranes and increase the membrane permeability of erythrocytes, increase of hemolysis and a low catalase activity in comparison with students of the 4th course.

The problem of health protection of student's youth is one of the most pressing challenges facing society and the state, because students are one of the representative groups of young people of the country. Students are the most dynamic social group in the period of formation of social and physiological maturity, which quickly adapts to the social and natural environment, and yet are at high risk of violations in health [1].

Specific conditions learning activities, everyday life and lifestyles students distinguish them from other categories of the population and makes this group vulnerable socially, affected by negative factors (high information load, emotional stress in the process of educational activity, lack of exercise, feeding disorders, etc.). These factors contribute to the development of disadaptation, exacerbation of latent pathological processes that adversely affected the health of students. In order to determine the individual mechanisms of adaptation to educational process in the University requires regular comprehensive study of psychological, psycho-physiological health and functional status of students [2].

The problem of prevention of major socially significant diseases, formation of healthy lifestyle among the population is among priority tasks of society and state. The importance is given to health programmes related to the improvement of the external conditions of human life. We are talking about the totality of the factors forming the environment and development of the individual and society: natural, social, climatic, emotional, etc. Without solving the given issues is essential to the effective formation of healthy lifestyle of young generation [3].

Human health by 50% or more defined by the lifestyle that the man chooses in accordance with his individual psycho-physiological features, with their beliefs, habits. Health and behavioral habits that impact on it, are formed mainly in childhood and adolescence. In a situation when it is known that many factors affecting health that are managed by the individual, the role of the formation of students skills and habits of healthy lifestyle (HLS). Therefore, the success in ensuring the health, safety of life for all can only be achieved by creating a system of national, interagency prevention activities among the younger generation, primarily through a system of effective hygienic training and education of youth [4, 5].

One of the main tasks of the state in education is comprehensive health and physical education and development of students. The solution of this problem is due to the formation of culture of health of all subjects of the educational process. The health is treated as a target and a condition of quality teaching is the basis of self-actualization, to achieve success in life and as a criterion of activity of educational institution [6].

Analysis of the literature indicates the presence of a significant amount of research devoted mainly to the study of the health status of students and determination of its social factors, learning environment, medical care. Virtually no large-scale prospective studies on the organization and the creation of new structures in educational institutions of different levels on the formation and preservation of the health of students; not described social programs aimed at the preservation and formation of health of students at all levels of government, are not taken into account their effectiveness and the prospect [7, 8].

In the last decade, environmental and production factors and stress, often have a damaging effect on the body. Stress is a leading factor in the pathogenesis of the majority of SOMATO-visceral disorders, leading to the appearance of the pathology of the endocrine system. In disorders of the endocrine system, the metabolism and leads to a number of diseases, such as anemia, diabetes, etc.Anemia occupies the first place in structure of morbidity in Kazakhstan. With anemia, disturbances of antioxidant status and oxidative stress has developed and lead to the destruction of erythrocyte membranes, which breaks the main function of erythrocytes is to deliver oxygen to the tissues of the body. In this regard, it is relevant to study the peculiarities of immune and hormonal status, functional and emotional state of students and search possible ways of correction caused by violations [9,10].

The solution of these tasks is consistent with the priorities of the state program of development of health of Kazakhstan "Salamatty Kazakhstan" for 2011-2015, where one of the main tasks set preservation and strengthening of health of the younger generation.

Materials and methods studies. The object of research was the students of first and fourth year. The studies were conducted at the beginning and end of the semester. The state of psycho-emotional status of students. Conducted study of structural-functional state of erythrocyte membranes to increase the overall resistance of the organism of students.

Research methods. Within the framework of the project, certified computer programs of the psychological toolkit Imaton and tests for the adequacy of the behavior and mental state of the examinee were used to reveal the level of psycho-emotional state of students.

To reveal the level of psycho-emotional state, the widely known test of Lusher was used. This technique uses the phenomenon of color preferences for the diagnosis of neuropsychic states and the identification of intrapersonal conflicts. The principle of the Lusher test is based on the fact that the choice of color occurs on an unconscious level, and therefore it is good to display the true state of a person.

A study and assessment of the levels of general, personal and situational anxiety was carried out according to the Spielberger test. This technique allows you to differentially measure anxiety and as a personal property, and as a condition.

To determine the level of the psychophysiological state, express diagnostics of the functional state of the central nervous system (CNS) of a person and the prediction of its operability were used on the basis of chronoreflexometry indices – the dynamic characteristics of the time of a simple visual-motor reaction (PZMR).

The technique is implemented in the form of a computer program and requires no more than 5 minutes for conducting and can be performed repeatedly, since it does not cause the effect of training.

Osmotic resistance of erythrocytes was determined by the degree of hemolysis in solutions of various NaCl concentrations (0.35 to 0.9 g/100ml) under the regime of incubation of 20 min at 370C. The level of hemolysis of cells was calculated in percentage relative to 100% hemolysis caused by the 0.1 g/100ml solution of Na_2CO_3.

The permeability of erythrocyte membranes (PEM) for anions was determined by the method (Kolmakov, V. N., Radchenko V. G.) the value of the permeability of erythrocyte membranes (PEM) in the diagnosis of chronic liver diseases.

The catalase activity of erythrocyte membranes was determined by the method (Korolyuk M. A., Ivanova L. I., Mayorova I. G., Tokarev V. E.).

In the process of implementation of the Project adhered to the principles of humanity set out in European community directives (86-609-EEC) and the Helsinki Declaration, in accordance with the "Rules of the work on the people." Adherence to the principles of research ethics provided by the scientific head of the Project on the basis of statements prohibiting the fabrication of scientific data, falsification, plagiarism, false joint authorship.

Research results and discussion. We studied the psycho-emotional and functional state (biochemistry of the blood) of 40 students of both sexes (average age 18.5 years) of the 1st and 4th courses of the natural-technical faculty, specializing in natural disciplines of the Zhetysu State University. I. Zhansugurova.

Analysis of the statistical characteristics of the time series variational series allowed to calculate the criteria that assess the different aspects of the functional state of the central nervous system of students on average.

The results of the study showed that the average group indices of a simple visual-motor reaction of the subjects showed a level characterizing "slightly reduced" performance.

The students were also divided into 2 groups depending on the course of study. 1 group – 4 year students (20 people). In the 2nd group (20 people), the students of the initial course were allocated.

With an individual analysis of the results, a comparison of the obtained data made it possible to distinguish 3 types of state, each of which corresponds to its level of operability.

100% of the students of group 1 (4th year students) had a normal level of working capacity (normal level of working capacity), in this state the norm is characterized by the equilibrium of the nervous processes of the central nervous system and corresponds to a good state of health, mood. The efficiency in this state is optimal (figure 1).

When differentiating anxiety (highlighting the level of personal and situational anxiety) revealed the following features of the structure of anxiety of students. In general, for students of the 4th course (graduate course), a lower level of situational anxiety was characteristic (high level – in 20%, moderate – in 35%, low – in 45%). Also, on average, 25% of the students surveyed had a high level of personal anxiety, 35% of students had an average with a tendency to a high level, 40% of the students showed results corresponding to a low level of anxiety.

The tendency to a high level of personal anxiety can be explained by the constant neuropsychic overstrain of students. Probably, a high level of personal anxiety in 20% of students was probably associated with the upcoming state certification exams.

It is known that anxiety is both a personality trait and a condition. To assess the level of anxiety of 1st year students, a comparative analysis was carried out and the average group index of the level of situational and personal anxiety was calculated. When analyzing the results of the level of anxiety, the total score for each of the subscales was in the range of 35 to 75 points.

The diagnostics performed by us when studying the level of general anxiety of students showed the following results. On the average, 62% of the first year students have a high level in the group, 23% of the students have an average level of general anxiety, 15% of the students showed results corresponding to a low level of anxiety. Practice shows that high-anxiety students, who aspired to achieve a high result (high need for achievement), activities were usually violated, and they showed worse results due to additional and debilitating stress in the learning process.

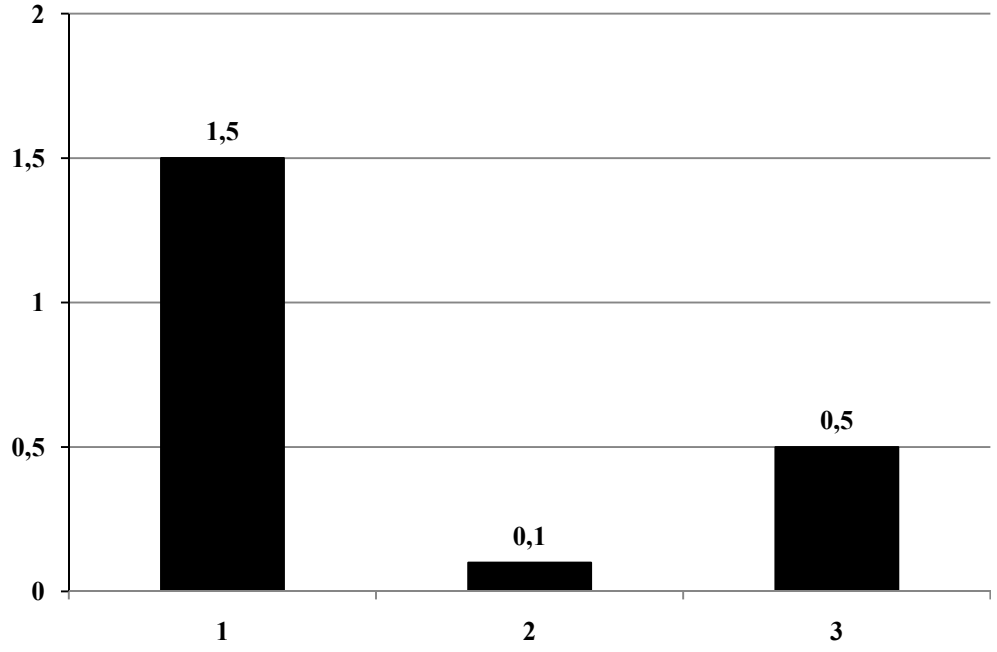

Figure 1 – The level of efficiency of students 1 and 4 courses:
1 – normal level of health; 2 – reduced level of efficiency; 3 – slightly reduced level of efficiency

Next, we evaluated the indices of students' neuropsychic activity. Changes in the indicators of the actual psychophysiological state of the students were recorded with the help of the Luscher test. To assess the current psychophysiological state of the athletes, the total deviation (CO) and the vegetative coefficient (VC) were analyzed. On average, the group had insignificant differences in the severity of the neuropsychic stress among students. According to the results of the study, it was noted that the index of the total deviation from the autologous norm (CO), reflecting the level of unproductive neuropsychic tension in group 1 (4 courses) corresponded to the average level.

It is characteristic of the surveyed group to cope with their duties within the average established requirements. In the usual situation, they can move from the training load to rest and back, from one activity to another without significant difficulties. If necessary, they can overcome fatigue by strong-willed effort, but after that, in his state of health, a long "train" of reduced efficiency is visible.

In group 2 (1 course of students), the level of tension corresponded to an insignificant level of unproductive neuropsychic tension. The survey was dominated by the installation for active activity. Energy resources are sufficient for more or less regular outbursts of overactivity and strain that are inaccessible to most other people. In conditions of motivated (interesting) activity, they do not experience difficulties with prompt and long-term memorization and reproduction of information. To the thrill, in general, do not seek. From stressful situations come with dignity.

Investigated osmotic resistance of biological membranes students of group 1 (4th year). Hemolysis of erythrocytes is enhanced by decreasing the osmolarity of the incubation medium, reaching a maximum value of 0.35 g/100 ml NaCl – 78,6%. Indicators of osmotic resistance in the group of students of 1 course revealed a slight decrease in osmotic resistance of erythrocytes to hemolysis. So, in the incubation medium 0.35 and 0.45 g/100 ml NaCl the magnitude of the output of hemoglobin increased by 3.8 % and 7.2 %, respectively, compared to the performance of students of 4th course. A significant reduction in the osmotic resistance was observed in 0.4 g/100 ml NaCl, where hemolysis was increased by 14.3% in the group of students of 1 course relative to the students of 4th course.

Next, we investigated the permeability of erythrocyte membranes of the students of the 4th course. It is revealed that membrane permeability is enhanced by placing the cells in solutions of urea and saline with the ratio of 60/40 and 65/35, reaching its maximum value: 75,8% and 86,4 %, respectively.

The permeability of erythrocyte membranes students of the 1st course has been significantly improved in almost all the concentrations of the incubation media (figure 2).

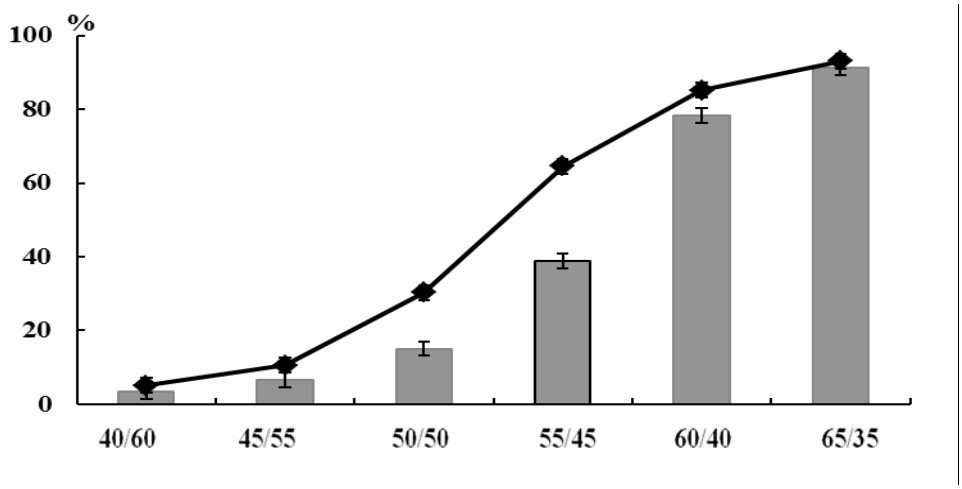

Figure 2 – Changes in the permeability of erythrocyte membranes students:
y-axis – magnitude of hemolysis, %; x-axis – the ratio of urea/saline, %

Incubation of cells in media with the ratio of urea and NaCl 45/55 and 50/50, the release of hemoglobin from erythrocytes increased by 3.4 % and 15.2 %, reaching the maximum increase in solution concentration of urea and 55 % (ratio of urea and NaCl 55/45) 25.6% relative to the values of the hemolysis of the students of 4th course. Further increase of urea (ratio urea and NaCl 60/40 and 65/35) leads to some increase in PAM, but the hemolysis of erythrocytes is 6.9% and 2 % lower than that in the group of students of 4th course.

Catalase activity was estimated by the number of destroyed hydrogen peroxide in the solution and expressed in percent.

The activity of the enzyme catalase in erythrocyte membranes of students of 1 course is lowered by 8.6 % in comparison with students of the 4th course (figure 3).

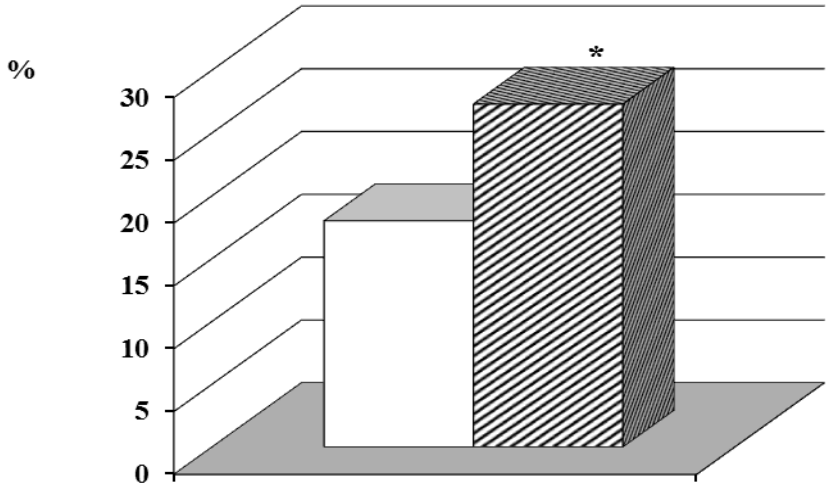

Figure 3 – The catalase activity of students of 1,4-courses:
y-axis – amount of catalase activity, %; x-axis – groups of students* $p<0.05$

Thus, the students of 1 course there is a low stability of erythrocyte membranes and increase the membrane permeability of erythrocytes, increase of hemolysis and a low catalase activity in comparison with students of the 4th course.

On the basis of conducted research we can draw the following conclusions: students of the 1st course prone to maladjustment and socially affected by negative factors of social life, which affects the structural-

functional state of erythrocyte membranes. The low stability of erythrocyte membranes and increase the membrane permeability of erythrocytes, increase of hemolysis and a low catalase activity in comparison with students of the 4th course.

The decrease in the level of resistance of the organism should be considered as a factor contributing to the development of hypokinesias States. The students in the context of modern technologies, it is necessary to carry out activities non-pharmacological nature, contributing to the restoration and normalization of the adaptive capacity of the organism.

The obtained results can be used in the field of psychophysiology, valeology teachers Colleges and Universities, school psychologists and medical workers of educational institutions.

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СТУДЕНТТЕРДІҢ ФУНКЦИОНАЛДЫҚ ЖАҒДАЙЫН ЗЕРТТЕУ

Аннотация. Жұмыстың мақсаты – студенттердің иммундық гормондық статусын, функционалды және психоэмоциялық жағдайының ерекшеліктерін зерттеу, анықтау және туындаған бұзылуларды түзетудің ықтимал жолдарын іздестіру. Мақалада студенттердің дене тәрбиесі мен білім беру саласындағы мемлекеттің міндеттері талданады.

Бұл мәселені шешу білім беру процесінің барлық субъектілерінде денсаулық мәдениетін қалыптастырумен байланысты. Денсаулық сақтау сапалы білімнің мақсаты мен шарты болып табылады – өзін-өзі жетілдірудің негізі, өмірлік табысқа қол жеткізу және білім беру мекемесінің қызметіне критерий ретінде.

Жұмыстың нәтижесі денеге зиянды әсер ететін экологиялық және өндірістік факторларды анықтау болады. Жағымсыз факторларды және олардың оқушыларға әсері мен студенттік жастардың денсаулығын жақсарту жолдарын жою бойынша шаралар әзірленді.

Стресс – эндокриндік жүйенің патологиясының пайда болуына әкелетін көптеген сомато-висцеральды бұзылулардың патогенезінде жетекші фактор. Эндокриндік жүйені бұзған кезде метаболизм бұзылып, анемия, қант диабеті сияқты көптеген ауруларға алып келеді. Қазақстандағы аурудың құрылымында анемия бірінші орын алады. Анемиямен антиоксидант жағдайының бұзылуы байқалады, эритроциттердің негізгі функциясын бұзу – органның ұлпаларына оттегін жеткізу – эритроциттердің қабынуын жоюға әкелетін тотығу стрессі дамиды.

Түйін сөздер: иммундық-гормондық мәртебесі, студенттердің функционалдық және психо-эмоционалдық жағдайы, денсаулық мәдениетін қалыптастыру, стресстер, анемия.

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ИССЛЕДОВАНИЕ ФУНКЦИОНАЛЬНОГО СОСТОЯНИЯ СТУДЕНТОВ

Аннотация. Цель работы – изучение и выявление особенностей иммунно-гормонального статуса, функционального и психоэмоционального состояния студентов и поиск возможных путей коррекции вызванных нарушений. В статье проанализированы задачи государства в сфере образования и физическом воспитании учащихся и студентов.

Решение этой задачи связано с формированием культуры здоровья у всех субъектов образовательного процесса. Здоровье при этом рассматривается как цель и условие качественного обучения – основа самоактуализации, достижения жизненного успеха и как критерий деятельности образовательного учреждения.

Результатом работы стало определение экологических и производственных факторов оказывающих повреждающее действие на организм. Разработаны мероприятия по устранению неблагоприятных факторов и их влияние на учащихся и пути укрепления здоровья студенческой молодежи.

Стресс является ведущим фактором патогенеза большинства сомато-висцеральных расстройств, приводящих к появлению патологии эндокринной системы. При нарушениях эндокринной системы нарушается обмен веществ и приводит к ряду заболеваний, таких как анемия, диабет и др. Анемия занимает первое место в структуре заболеваемости в Казахстане. При анемии возникают нарушения антиоксидантного статуса, и развивается окислительный стресс, приводящий к деструкции мембран эритроцитов, что вызывает нарушение основной функции эритроцитов – доставки кислорода к тканям организма.

Ключевые слова: иммунно-гормональный статус, функциональное и психоэмоциональное состояние студентов, формирование культуры здоровья, стресс, анемия.

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KAZAKH COUNSELING IDEAS ON TURKIC-SPEAKING PHILOSOPHICAL VIEWS

Abstract. The article reviews Kazakh counseling ideas on turkic-speaking philosophical views. The bases of the research work are scientists' research works and information up a given issue. The article is about different conceptions discussing institutions and political processes comparatively and retrospectively and also systemic-structural, historic-philosophical and institutional analysis methods. Currently, the consultation is necessary in the formation of phenomena during the process of any confusion. Not knowing main historical stages of consultation development lead to many problems in researching its content, nature and types. Therefore, we consider showing the emergence and the use of the consultation, especially the political consulting. Thus, our goal is to identify consulting opinions and ideas expressed in the works of the Turkic world thinkers. The issue of political consulting still needs in-depth research. In fact, it is difficult to disclosure political opinions in the early periods of the Turkic-speaking philosophical views. We believe that calling for cooperation and socialization; glorifying morality and humanity leading to education and tolerance; criticizing pride and arrogance; opinions about this short life undoubtedly will be a model for society and ideas are part of the counseling.

Key words: consultation, solidarity, sufism, the tribe, turkic philosophy.

Introduction. General political counseling is deeply needed to study as newly formed interesting science and a type of business. It does not only study the technologies of preparing specialists who consults the person eager to reach high state rank but forms its own methods of giving advice. Otherwise we are to know the significance of political consultants' responsibility in front of the society. It is known that nowadays the political consultants have power in the society. Today the necessity of such specialists is noticed at presidential administration, cabinets of ministry and political parties of many countries. Their main work is to analyze the current events, to systematize the possible measures of its development, to prepare offers directed to assist them. It is clear the politicians act by political counseling at the age of information.

It is not a secret that the significance of giving advice is being increased. Consulting service is very useful in the sphere of taxation and legal service, audit including economic problems, account and audit, all the fields of management and informative technologies. And the place of political consulting is defined by political sciences.

At the same time, it will be able to determine the values of the ideas on medieval Muslim scholars' society in relation to the needs of the time in their works through the transfer of value who developed Kazakhs' Turkic-speaking philosophical view. Now let us analyze the following works: Al-Farabi's "Residents of the virtuous city" and "Aphorisms of the Statesmen"; Iusuf Balasaguni's "Kutadgu bilig" (Blessed knowledge); Hoja Ahmed Yasawi's "Diuani Hikmet (The book of wisdom)"; Mahmud Kashgari's "Dictionary of Turkic languages"; Ahmed Yugineki's "The gift of the truth".

Materials and methods. One of the authors of the article M.O. Nassimov investigated the problem research object in detail. His research works were published in the journals "Life science Journal" [1], "Young Scientist" [2], "Sociosphera" [3] and in some international scientific and practical conferences [4].

There were made investigations determining the role of political advertisements [5] and formation of state and city images [6], in the main types of political consulting and also defining its historical source [7]. Besides, scientific articles determining the domination of cinematography [8] and theatre [9], music in consulting were published [10]. We consider the present works valuable because of investigating political situation in the social life is very significant.

Results and discussion. We believe the significance of investigating political consulting is that the structure of the new research subject is not enough considered in the political sciences and the subject and content of cognition "political consulting" have not been fully defined yet. Otherwise, this notion is noticed to be paid attention only while elections and consultants' works do not meet the requirements. And also the given cognition is connected with such fields of sciences as Policy studies, Social studies, Economics and Psychology. We are to recognize this cognition is not enough considered as a separate chapter in applied policy studies of country's political sciences.

The source of the political consulting is deeply rooted. In ancient time the political advisers were shamans, priests, astronomers, philosophers, speakers.

Al-Farabi considered that "people can be truly happy only in the virtuous city" in his work "Residents of the virtuous city". He classified community concentrated towns in order to identify good cities. People can reach happiness in the city which deals activities that aim to demonstrate the mutual aid community. Al-Farabi says that cooperation is unique on the way to happiness [11].

His treatise "Aphorisms of the Statesmen" is about how to manage cities and their prosperity, to help with the improvement of living standards of the population and about the proverbs of the early thinkers, including many basic principles which direct to the way of happiness.

The virtuous city consisted of five different people: the most respected people, orators, weighers, warriors and rich people. In the category of the most respected people were wise men, sober-minded people and influential people in important affairs. After them, the priests and orators (speakers) in particular, religious preachers, artists, poets, musicians, secretaries and etc. were in this group (page 137). Weighers meant accountants, geometricians, doctors, astrologers and others, as well. Warriors meant soldiers, guards, and similar this group. Rich people were who search for wealth in the city: farmers, breeders, traders and others, as well [12].

It is evident that many factors contribute to the development of the political system. Among them, the most important is socializing individuals who put a high level of integration and stability in the regulation of political education and values of people in the society. In political sciences the concept of socialization is studied mostly in two aspects. First of all, the theory of political socialization illustrates and supplies an explanation of socializing individuals in the political environment. Secondly, political socialization is a scientifically developed concept in the political theory. Many political scientists support the first aspect and explain that the term political socialization of political views, ideas and the process of standards will be continued from generation to generation.

J. Balasagun raised moral and ethical questions in his epic (poem) "Kutadgu bilig" (Blessed knowledge). This epic is an artwork about governing a state, moral principles, social and political values of different rules and regulations, including standards of a custom. This work is on the level of an encyclopedia.

The basic ideas of an epic are based on four principles: 1) fair law for governing a state; 2) being rich and happy; 3) the social role of intelligence; 4) the problem of temperance. The basis of the work is like a dialogue between characters following such guidelines as justice (Küntoldı), happiness (Aytoldi), intelligence (Oytoldı), welfare (Zheteleushi). Idea of a political and philosophical treatise promoting morality and humanity is similar to Al-Farabi's "The views of the residents of the virtuous city". This work was highly appreciated by Chinese, Indian, Arabic and Persian wise men in due time.

In his work J. Balasagun tells about time violation and suffering from friends. He narrates with sorrow that people have no humanity; there is no difference between fraternal and friendly relations with an alien, lack of moral, trust and good qualities among people. At the same time, he feels an acute pain and sorrow for youth, talks about old age; consulting himself he wants to influence public members. His words are given in the following poem lines:

"I said direct, bitter words, difficult to be delivered, and thought that straight people will understand the word. It must not be hard for the reader I did not want to be seen by saying straight word" [13] it really shows that he was not indifferent to the state of the country.

In general a poet defines maturity of a human being. The display of a maturity is written in the lines of a poem and we think it follows such qualities: 1. the human dignity is on education and intelligence. It is the first time of a human maturity. Researching a science is one of the Muslim obligations; 2. The benefits and harms of the tongue are the same; 3. Kindness is the most necessary merit for the mankind; 4. Despite the wealth, it does not stand still; 5. Follow the justice, be honest; 6. Avoid greed and selfishness; 7. If the head of dogs is a lion, a dog screeches like a lion, and if the head of the lions is a dog, it lives the dog's life; 8. Not wellborn cannot be a vizier. Like a noble, such a vizier; 9. Be a man of great ambition; 10. Think about the benefits of the country than yourself. Be kind [14].

An outstanding representative of Sufi poetry in Kazakhstan and in Central Asia, famous poet of his era, "Turkestan Idol" K.A. Yasawi tried to persuade good deeds as justice, mercy, kindness, punctiliousness, truth and purity in his "Book of Wisdom". He pays attention to four key issues in his work: the Sharia (Islamic law and custom collection); tarihat (the idea of Sufism, its purpose, a way to Sufism); Truth (being with and close to the God); magrifat (learn how to study religion). According to him, there cannot be tarihat without Sharia, magrifat without tarihat, truth without magrifat. All of them are the stairs to the next one [15].

We can call this work as an effort and a precise program that will lead people to morale and humanism. He measures the dignity of every person and his human life with the cleanliness of his inner world. The lack of a moral of a good person is up to his morality. There is the most powerful force that leads everyone to good deeds and not to forget the commandments of God; shows the difference between white and black, right and false in this false world. We call it morality. An important aspect of human morality is being merciful and forgiving and being worried about others [16].

The poem consisting of 69 hikmets (wisdom) leads to high intelligence, deep affection, big morale and pure love. It is clear that these hikmets are the spiritual wisdom to the people of the XXI century. It seems that Yasawi wanted to describe his life-style and to show the value of that era in this work. At the same time, he calls to love and be loved. He tells that Allah makes lovers lust and people have to love only righteousness (The God). We can notice his views on the value of his time in the following verses:

Know that this life passes all people
Don't rely on livestock, it leaves you one day
Parents, brothers and sisters, think where they've gone,
Four legged horse overtakes you one day
Do not worry about the property, speak only about righteousness,
Don't steal others' stock, there is a Sirat Bridge.
The people and any of the relatives can't be your friend
Be generous; life will pass quickly, take care [17].

In general, hikmets are poems that identify people their God, Allah, the Creator. Yasawi warns people against five things in the way to the maturity by this hikmet: *not recognizing the way of Allah; pride and arrogance; dishonesty; laziness; selling yourself for the sake of wealth*.

M. Kashgari's work, "Dictionary of Turkic languages" written in the XI century, is one of the most important sources for the history of civilization in Central Asia. This work was written in an era of major military and political developments of Turkish tribes in the Muslim world. Thus, this work showed not only the diversity and richness of the language and culture of Turkic tribes, but also as propaganda, the work was not in vain. Writing about the Abbasid Caliph al-Muqtadiga primarily, in the opening speech, shows that, he was the leader of the great spiritual power.

M. Kashgari, in the process of writing the work "Dictionary of Turkic languages", considered it to be divided into five basic materials covering a variety of its complex nature and of the same period of spiritual and social life of the Turks: the word-stock of a certain tribe value (its vocabulary); information on Turkic tribes settlements; grouping Turkic languages; information about the Turkic historical phonetics and grammar; information about Turks historical geography, ethnography and poetry [15, p. 233].

In general, 29 tribes are mentioned in this work, tribes formed Kazakh people are Kipchak, Oguz, Shygyl, and etc. 6600 Turkic words were explained in Arabic. 242 couplets (distich) and 262 proverbs and sayings were included. 675 words and 60 proverbs and sayings are still used in the Kazakh language without any changes [14, p. 103].

At the beginning of the XX century Turkic-speaking people living away from each other in the political, geographical and religious aspects and a copy of the manuscript of this work as a result of the Turkish linguistic research shows the effectiveness of the current real cost of study of Turkic languages. Well-known orientalists' works are of great importance in analyzing this given work.

Yugineki's social and political views are reflected in his work "The gift of the truth". The poet says in his words: "The words of an educated man are an instruction, propaganda and model". He recounts that happiness is known through education, educated person is valued in civil society, and there is no cost of ignoramus without education. Thus, we receive evidence that through the promotion of the knowledge society goes forward. We realize that it is only in the hands of the educated person to impact people.

His opinions are like advices to the statesmen of that time: "If you access the government, don't be proud of", "If you are a leader, be generous, and respect old and also young people". Today, the question of leadership is thoroughly investigated in all sciences. For example, psychology researches the personality of the leader. Sociology provides a basis of social management system. Leadership in social psychology is as a process of social and psychological factors interaction.

Conclusions. Political science considers the political leadership as the phenomenon of the political power and studies its nature, the effect of the mechanisms and its influence to the society. At the same time, effective management methods and practice proposals are identified.

In general, at the present time Kazakh Turkic-speaking philosophers' works are advisory. Thinkers of their time, through the heritage to the generation need society recognition, tried to instill in the context of universal values.

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ҚАЗАҚТЫҢ ТҮРКІ ТІЛДЕС ФИЛОСОФИЯЛЫҚ КӨЗҚАРАСТАРЫНДАҒЫ КЕҢЕС БЕРУ ИДЕЯЛАРЫ

Аннотация. Мақалада қазақтың түркі тілдес философиялық көзқарастарындағы кеңес беру идеялары қарастырылады. Зерттеу жұмысының негізі – ғалымдардың ғылыми-зерттеу жұмыстары және осы мәселе бойынша ақпарат болып табылады. Мақалада түрлі тұжырымдамалар мен саяси процестер салыстырмалы және ретроспективті, жүйелік-құрылымдық, тарихи-философиялық және институционалды зерттеу әдістерімен талданады. Қазіргі заманда кеңес беру кез келген құбылыстар төңірегіндегі түсініспеушіліктер барысындағы өзіндік ұстаным қалыптастыруға қажет. Кеңес берудің мазмұнын, сипатын және түрлерін зерттеуде оның дамуындағы негізгі тарихи кезеңдерін білмеу көптеген қиыншылықтарға апарады. Сондықтан да біз кеңес берудің, оның ішінде саяси кеңес берудің пайда болуы және оның қолданылуын ашып көрсеткеніміз дұрыс деп есептейміз. Сол себепті түркі әлемі ойшылдарының шығармаларында айтылған ой-пікірлер негізіндегі кеңес беру идеяларын анықтау біздің мақсатымыз болып отыр. Саясаттағы кеңес беру мәселесі әлі де терең зерттеулерді қажет ететіндігі анық. Өйткені, ерте кезеңдердегі түркі тілдес философиялық көзқарастарындағы тұжырымдардың саяси мәнін ашу қиынға соғады. Біздің ойымызша, ынтымақтастық пен әлеуметтенуге шақыру; білімділік пен төзімділікке әкелетін моральдылық пен адамгершілік; тәкаппарлық пен менмендікті сынау; қысқа өмір туралы пікірлер шын мәнісінде қоғам үшін үлгі, ал идеялар кеңес берудің бөлігі болып табылады.

Түйін сөздер: кеңес беру, ынтымақтастық, сопылық, тайпа, түркі тілдес философиясы.

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ИДЕИ КОНСУЛЬТИРОВАНИЯ В ТЮРКОЯЗЫЧНЫХ КАЗАХСКИХ ФИЛОСОФСКИХ ВЗГЛЯДАХ

Аннотация. В статье рассматриваются идеи консультирования в казахских тюркоязычных философских взглядах. Основой исследовательской работы являются научные исследования ученых и информации по данной проблеме. В статье различные концепции и политические процессы обсуждаются сравнительными и ретроспективными, системно-структурными, историко-философскими и институциональными методами анализа. В настоящее время консультирование нужен для формирования собственной позиции в непонимания разных явлении. Незнание основных исторических этапов развития консультаций приводит к множеству проблем в исследовании его содержании, природы и типов. Поэтому мы рассматриваем вопрос о возникновении и использовании консультаций, включая политического консалтинга. Таким образом, наша цель – выявить идеи консультирования выраженные в трудах тюркоязычных казахских мыслителей. Проблема консультирования в политике по-прежнему требует углубленного изучения. Потому что трудно раскрыть политические взгляды в раннего периода тюркоязычных казахских мыслителей. По нашему мнению, призыв к сотрудничеству и социализации; слава нравственности и человечности ведущие к образованности и терпимости; гордости и высокомерия; мнения о короткой жизни, несомненно, станут образцом для общества, а идеи – частью консультирования.

Ключевые слова: консультация, сотрудничество, суфизм, племя, тюркоязычная философия.

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ANALYSIS OF THE INTERDEPENDENCE OF ENTREPRENEURSHIP DEVELOPMENT AND THE GROWTH OF POPULATION EMPLOYMENT WITHIN THE REALIZATION OF STATE PROGRAMS

Abstract. According to the experience of developed countries, the development of entrepreneurship generates a self-sustaining process of development and expansion of the real sector of the economy and services to ensure growth of the population employment, promotes the growth of its business activity and solution of social problems of the population. In this regard, during the analysis, the impact of the number of registered small and medium enterprises within realization of "Employment roadmap – 2020" state program on the unemployment rate in the Republic of Kazakhstan for 2001–2016 was investigated. In order to solve this problem, in the article it is developed method of analysis using mathematical-statistical methods (correlation-regression method) that allows to assess the impact of state employment programs on the labor market and the unemployment structure in the Republic of Kazakhstan in context of country and regional aspects. For this purpose, the analysis of forecasting of employment and unemployment rates in the Republic of Kazakhstan with the use of mathematical tools was also carried out.

Key words: labor market, employment rate of the population, socio-economic development, economically active population, state employment programs, business activity, unemployment rate, employment roadmap, vector of the development, unemployment structure.

Purpose of this article is to analyze the interdependence of entrepreneurship development and the growth of population employment within the realization of state programs (on the example of "Employment roadmap – 2020" state program). Methodology: synthesis, content-analyze, accommodation, linear pair regression analysis (Pearson correlation coefficient), method of forecasting. Originality/value: for the purpose of achieving socio-economic development of the Republic of Kazakhstan, one of the most important directions, as N.A. Nazarbayev defined "Social and economic modernization is the main vector of development of Kazakhstan" in 2012, is the employment of the population of the republic. At the same time, an important aspect is the assessment of the impact of state employment programs on population employment in the Republic of Kazakhstan, in particular the State Program "Employment Roadmap – 2020", which is a vector in the development of the labour market in the country's regions. Findings: according to the analysis, the influence of the development of entrepreneurship on the reduction of unemployment in the country is confirmed. Thus, the important role of the state industry program "Employment roadmap – 2020" in addressing employment problems is emphasized, contributing to the creation of new jobs at the country's enterprises, in particular, promoting the development of entrepreneurship as a driving force in the economy of the country's regions.

The main goal of creating "Employment roadmap – 2020" state program, for example, is to form and expand new jobs, to increase employment in the regions of the Republic of Kazakhstan and thereby to reduce unemployment rate in the country, and to involve citizens in entrepreneurship. The growth in the number of jobs as a result of the Program implementation reflects the opportunities of enterprises in the regions of the Republic of Kazakhstan to address problems in employment [1].

Meanwhile, it should be noted that, according to the experience of developed countries, the development of entrepreneurship generates a self-sustaining process of development and expansion of the real sector of the economy and services to ensure growth of the population employment, promotes the growth of its business activity and solution of social problems of the population. In this regard, during the analysis, the impact of the number of registered small and medium enterprises on the unemployment rate in the Republic of Kazakhstan for 2001-2016 was investigated [2]. The number of small and medium enterprises and the unemployed population in the Republic of Kazakhstan for 2001-2016 is presented in table 1.

Table 1 – The number of small and medium enterprises and the unemployed population in the Republic of Kazakhstan for 2001-2016*

Years	Number of small and medium enterprises, units (X)	Number of unemployed population, thous. people (Y)
2001	154 334	780,3
2002	171 661	690,7
2003	188 030	672,1
2004	206 371	658,8
2005	224 854	640,7
2006	245 776	625,4
2007	266 284	597,2
2008	281 372	557,8
2009	295 656	554,5
2010	284 639	496,5
2011	299 022	473,0
2012	315 594	474,8
2013	336 548	470,7
2014	351 358	451,9
2015	357 801	454,2
2016	381 414	445,5
*Compiled by the author according to the source [3].		

Calculation of the covariance coefficient. Covariance coefficient characterizes the degree of linear dependence of two random variables [4, p. 115], represented by the formula (1):

$$\operatorname{cov}(X,Y)=\frac{1}{n}\sum_{k=1}^{n}(x_k-M_x)\cdot(y_k-M_y), \tag{1}$$

where M_x – evaluation of the mathematical expectation of a random variable X; M_y – evaluation of the mathematical expectation of a random variable Y.

The value of the mathematical expectations of the random variables X and Y was calculated by the formulas (2), (3):

$$M_x=\frac{1}{n}\sum_{k=1}^{n}x_k=272544,625 \tag{2}$$

$$M_y=\frac{1}{n}\sum_{k=1}^{n}y_k=565,25625 \tag{3}$$

The calculation of the centered values for calculating the covariance coefficient is presented in table 2 [5].

The final calculation of the covariance coefficient.

$$\operatorname{cov}(X,Y)=-6479893,122656.$$

Table 2 – Calculation of centered values for calculating the covariance coefficient*

k	x_k	y_k	(x_k-M_x)	(y_k-M_y)	$(x_k-M_x)\cdot(y_k-M_y)$
1	154334	780,3	-118210,62500	215,04375	-25420456,08984
2	171661	690,7	-100883,62500	125,44375	-12655220,23359
3	188030	672,1	-84514,62500	106,84375	-9029859,46484
4	206371	658,8	-66173,62500	93,54375	-6190129,03359
5	224854	640,7	-47690,62500	75,44375	-3597959,58984
6	245776	625,4	-26768,62500	60,14375	-1609965,48984
7	266284	597,2	-6260,62500	31,94375	-199987,83984
8	281372	557,8	8827,37500	-7,45625	-65819,11484
9	295656	554,5	23111,37500	-10,75625	-248591,72734
10	284639	496,5	12094,37500	-68,75625	-831563,87109
11	299022	473,0	26477,37500	-92,25625	-2442703,32734
12	315594	474,8	43049,37500	-90,45625	-3894085,02734
13	336548	470,7	64003,37500	-94,55625	-6051919,12734
14	351358	451,9	78813,37500	-113,35625	-8933988,63984
15	357801	454,2	85256,37500	-111,05625	-9468253,29609
16	381414	445,5	108869,37500	-119,75625	-13037788,08984

*Calculated by the author according to source [3].

Then, it is necessary to calculate the *correlation coefficient (Pearson coefficient)* – the indicator of mutual probability influence of two random variables [6]. The correlation coefficient can be calculated by the following formula (4):

$$\mathrm{R}_{\mathrm{x,y}} = \frac{\operatorname{cov}(X,Y)}{\sigma_x \sigma_y}, \tag{4}$$

where cov(X,Y) – covariance of random values X and Y; σ – standard deviation of covariance.

Estimates of the variances of the random variables X and Y, respectively, are determined by the formulas (5), (6):

$$\sigma_x^2 = \frac{1}{n}\sum_{k=1}^{n}(x_k - M_x)^2, \tag{5}$$

where σ_x^2 – variance of a random variable X.

$$\sigma_{\mathrm{y}}^2 = \frac{1}{n}\sum_{k=1}^{n}(y_k - M_y)^2, \tag{6}$$

where σ_{y}^2 – variance of a random variable Y.

Evaluations of the mathematical expectation of the random variables X and Y [7, p. 154-155], respectively, are determined by the formulas (2), (3) or by the formulas (7-10):

$$\mathrm{R}_{\mathrm{x,y}} = \frac{M_{x,y} - M_x \cdot M_y}{S_x S_y}; \tag{7}$$

$$M_{x,y} = \frac{1}{n}\sum_{k=1}^{n} x_k \cdot y_k; \tag{8}$$

$$S_x^2 = \frac{1}{n}\sum_{k=1}^{n} x_k^2 - M_x^2; \tag{9}$$

$$S_y^2 = \frac{1}{n}\sum_{k=1}^{n} y_k^2 - M_y^2 . \quad (10)$$

In practice, the formula (3.9) is often used to calculate the correlation coefficient, since this formula requires less computation. However, if the covariance cov(*X, Y*) was previously calculated, then it is more convenient to use the formula (3.6), since in addition to the covariance value, the results of intermediate calculations can be also used [8].

In order to calculate the correlation coefficient by the formula (3.6), it is necessary to use the results presented in table 3.7, by adding two new columns $(x_k - M_x)^2$, $(y_k - M_y)^2$ to this table, in which (based on preliminary calculations) the values of the squares of centered random variables. The calculated data for estimating the variances of random variables *X* and *Y* are presented in table 3.

Table 3 – Estimated data for evaluation of variances of the random variables *X* and *Y**

k	x_k	y_k	(x_k-M_x)	$(x_k-M_x)^2$	(y_k-M_y)	$(y_k-M_y)^2$
1	154334	780,3	-118210,625	13973751862,89062	215,04375	46243,81441
2	171661	690,7	-100883,625	10177505793,1406	125,44375	15736,13441
3	188030	672,1	-84514,625	7142721838,89062	106,84375	11415,58691
4	206371	658,8	-66173,625	4378948645,64062	93,54375	8750,43316
5	224854	640,7	-47690,625	2274395712,89062	75,44375	5691,75941
6	245776	625,4	-26768,625	716559284,39062	60,14375	3617,27066
7	266284	597,2	-6260,625	39195425,39062	31,94375	1020,40316
8	281372	557,8	8827,375	77922549,39062	-7,45625	55,59566
9	295656	554,5	23111,375	534135654,39062	-10,75625	115,69691
10	284639	496,5	12094,375	146273906,64062	-68,75625	4727,42191
11	299022	473,0	26477,375	701051386,89062	-92,25625	8511,21566
12	315594	474,8	43049,375	1853248687,89062	-90,45625	8182,33316
13	336548	470,7	64003,375	4096432011,39062	-94,55625	8940,88441
14	351358	451,9	78813,375	6211548078,89062	-113,35625	12849,63941
15	357801	454,2	85256,375	7268649478,14062	-111,05625	12333,49066
16	381414	445,5	108869,375	11852540812,89062	-119,75625	14341,55941

*Calculated by the author according to source [3].

Hence,

$$\sigma_x^2 = 71444881129{,}75000 / 16 = 4465305070{,}609375;$$

$$\sigma_y^2 = 162533{,}239375 / 16 = 10158{,}327461;$$

$$\sigma_x^2\sigma_y^2 = 4465305070{,}609375 \cdot 10158{,}327461 = 45360031120234{,}679688;$$

$$\sigma_x\sigma_y = 6734985{,}606535.$$

The author calculated the correlation coefficient (Pearson coefficient) by formula (4).

$$R_{x,y} = -6479893{,}122656 / 6734985{,}606535 = -0{,}962124.$$

The resulting value ($R_{x,y}$), or more precisely Pearson correlation coefficient, indicates that *X* factor has a significant impact on *Y*.

Now it takes to check *the significance of the correlation coefficient* (test the dependence hypothesis). Since the evaluation of the correlation coefficient is calculated based on the final sample, and therefore may deviate from its general value, it is necessary to check the significance of the correlation coefficient [9, P. 15-16]. The test is performed using the t-criterion, formula (11):

$$t = \frac{R_{x,y} \cdot \sqrt{n-2}}{\sqrt{1-R_{x,y}^2}}. \quad (11)$$

A random value *t* follows the *t*-distribution of Student and, according to the *t*-distribution table, it is necessary to find the critical value of the criterion ($t_{кр.\alpha}$) for a given significance level α [10].

If *t* value calculated by formula (3.13) is less than $t_{кр.\alpha}$ by module, then there will be no dependence between the random variables *X* and *Y*. Otherwise, the experimental data do not contradict the hypothesis of dependence between random variables [11].

$$t = \frac{-0{,}96212 \cdot \sqrt{16-2}}{\sqrt{1-(-0{,}96212)^2}} = -13{,}20540.$$

By the table of t-distribution, the author defined the critical value of $t_{кр.\alpha}$ parameter. In this case, the number of degrees of freedom is 16 (n-2 = 16-2) and α = 0.1, which corresponds to the critical value of $t_{кр.\alpha}$ criterion = 1,761 (table 4).

The absolute value of *t*-criterion is compared with $t_{cr\,\alpha}$. The absolute value of the *t*-criterion is not less than the critical value: t = 13,20540, $t_{cr.\alpha}$ = 1,761. Consequently, the experimental data, with a probability of 0,9 (1 - α), will not contradict the hypothesis of dependence of random variables *X* and *Y*.

Calculation of the coefficients of the linear regression equation.

The linear regression equation is the equation of a straight line approximating (approximately describing) the relationship between the random variables *X* and *Y*. If we assume that *X* is free and *Y* is dependent on *X*, then the regression equation will be written as follows, formulas (12-14):

$$Y = a + b \cdot X; \quad (12)$$

$$b = R_{x,y} \frac{\sigma_y}{\sigma_x} = R_{x,y} \frac{S_y}{S_x}; \quad (13)$$

$$a = M_y - b \cdot M_x. \quad (14)$$

The coefficient *b* calculated by formula (3.15) is called the linear regression coefficient. In some sources, *a* is called a constant regression coefficient and *b*, respectively, is called the variable.

Errors in prediction of *Y* by the given value of *X* are calculated as follows: the absolute error by formula (15), the relative error by formula (16):

$$\sigma_{y/x} = \sigma_y \sqrt{1-R_{x,y}^2} = S_y \sqrt{1-R_{x,y}^2}; \quad (15)$$

$$\delta_{y/x} = \frac{\sigma_{y/x}}{M_y} \cdot 100\%. \quad (16)$$

$\sigma_{y/x}$ value (formula (15) is also called the residual mean square deviation, which characterizes the loss of *Y* from the regression line described by equation (12) for a fixed (given) value of *X*.

Calculation of the ratio $\frac{\sigma_y^2}{\sigma_x^2}$:

$$\sigma_y^2 / \sigma_x^2 = 10158.32746 / 4465305070.60938 = 0{,}00000.$$

Calculation of the ratio $\frac{\sigma_y}{\sigma_x}$.

As a result of extraction of the square root from the last number, the following value is obtained:

$$\sigma_y / \sigma_x = 0{,}00151.$$

Calculation of *b* coefficient by formula (13):

$$b = -0{,}96212 \cdot 0{,}00151 = -0{,}00145.$$

Table 4 – *t*-distribution for defining of the critical value of $t_{кр.\alpha}$ criterion*

Number of the degrees of freedom (n–2)	α = 0.1	α = 0.05	α = 0.02	α = 0.01	α = 0.002	α = 0.001
1	6,314	12,706	31,821	63,657	318,31	636,62
2	2,920	4,303	6,965	9,925	22,327	31,598
3	2,353	3,182	4,541	5,841	10,214	12,924
4	2,132	2,776	3,747	4,604	7,173	8,610
5	2,015	2,571	3,365	4,032	5,893	6,869
6	1,943	2,447	3,143	3,707	5,208	5,959
7	1,895	2,365	2,998	3,499	4,785	5,408
8	1,860	2,306	2,896	3,355	4,501	5,041
9	1,833	2,262	2,821	3,250	4,297	4,781
10	1,812	2,228	2,764	3,169	4,144	4,587
11	1,796	2,201	2,718	3,106	4,025	4,437
12	1,782	2,179	2,681	3,055	3,930	4,318
13	1,771	2,160	2,650	3,012	3,852	4,221
14	**1,761**	2,145	2,624	2,977	3,787	4,140
15	1,753	2,131	2,602	2,947	3,733	4,073
16	1,746	2,120	2,583	2,921	3,686	4,015
17	1,740	2,110	2,567	2,898	3,646	3,965
18	1,734	2,101	2,552	2,878	3,610	3,922
19	1,729	2,093	2,539	2,861	3,579	3,883
20	1,725	2,086	2,528	2,845	3,552	3,850
21	1,721	2,080	2,518	2,831	3,527	3,819
22	1,717	2,074	2,508	2,819	3,505	3,792
23	1,714	2,069	2,500	2,807	3,485	3,767
24	1,711	2,064	2,492	2,797	3,467	3,745
25	1,708	2,060	2,485	2,787	3,450	3,725
26	1,706	2,056	2,479	2,779	3,435	3,707
27	1,703	2,052	2,473	2,771	3,421	3,690
28	1,701	2,048	2,467	2,763	3,408	3,674
29	1,699	2,045	2,462	2,756	3,396	3,659
30	1,697	2,042	2,457	2,750	3,385	3,646
40	1,684	2,021	2,423	2,704	3,307	3,551
60	1,671	2,000	2,390	2,660	3,232	3,460
120	1,658	1,980	2,358	2,617	3,160	3,373
∞	1,645	1,960	2,326	2,576	3,090	3,291

* Calculated by the author.

Calculation of *a* coefficient by formula (14):

$$a = 565{,}25625 - (-0{,}00145 \cdot 272544{,}625) = 960{,}76339.$$

Estimation of the error of the regression equation.

As a result of extracting σ_y^2 from the square root, the following value is obtained:

$$\sigma_y = \sqrt{10158{,}32746} = 100{,}78853 .$$

Based on the results of squaring $R_{x,y}$, the following value is obtained:

$$R^2_{x,y} = -0{,}96212^2 = 0{,}92568.$$

Most often, by giving an interpretation of the determination coefficient, it is expressed as a percentage, i.e. *changes in X lead to a change in Y in 92,57% of cases*. In other words, the accuracy of selecting

the regression equation is high. The remaining 7,43% change in Y is explained by to the factors not taken into account in the model (as well as by specification errors).

Calculation of the absolute error (residual mean square deviation) by the formula (15):

$$\sigma_{y/x} = 100,78853 \cdot \sqrt{1 - 0,92568} = 27,47609 .$$

Calculation of the absolute error by the formula (16):

$$\delta_{y/x} = \frac{27,47609}{565,25625} \cdot 100\% = 4,86082\% .$$

Errors of equation: $\sigma_{y/x} = 27,47609$, $\delta_{y/x} = 4,86082\%$.

As a result, the linear regression equation has the following form, formula (17):

$$Y = 960,76339 - 0,00145X. \quad (17)$$

The regression coefficient b = -0.00145 shows the average change in the resulting indicator (in the units of Y) with an increase or decrease in the value of X coefficient per the unit of its measurement. In this example, with 1 unit increase Y decreases by -0,00145 on average.

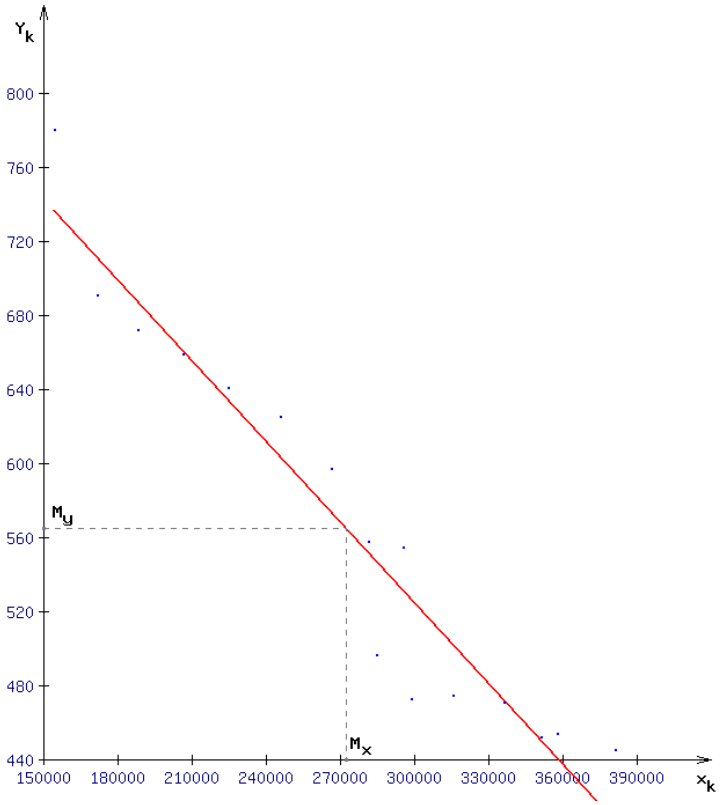
The coefficient a = 960,762 formally shows the predicted level of Y, but only if $x=0$ is close to the sampled values.

The approximation error ($\bar{A}$) in the range of 5-7% indicates a good selection of the regression equation for the original data.

$$\overline{A} = \frac{0,642}{16} \cdot 100\% = 4,01\% .$$

On average, the calculated values deviate from the actual values by 4,01%. Since the error is less than 7%, this equation can be used as a regression.

For the visual representation, a scattering diagram (correlation field) and the regression line diagram are built (figure).



Scattering diagram (correlation field).

Note – Compiled by the author.

The author finds the minimum and maximum X sample elements. These are the 1st and the 16th elements, respectively, X_{min} = 154334 and X_{max} = 381414. The author finds the minimum and maximum Y sample elements. This is the 16th and the 1st elements, respectively, Y_{min} = 445,5 and Y_{max} = 780,3.

The starting point is chosen on the abscissa axis slightly to the left of X_1 = 154334, and a scale is selected to place X_{16} = 381414 point and other points on the axis. The starting point is chosen on the ordinate axis slightly to the left of Y_{16} = 445,5, and a scale is selected to place Y_1 = 780,3 and the remaining points on the axis.

The author places the values of X_k on the abscissa axis, and Y_k values - on the ordinate axis.

The author applies the points (X_1, Y_1), (X_2, Y_2), ..., (X_{16}, Y_{16}) to the coordinate plane. Then the author draws a regression line and obtain the scattering diagram (correlation field) shown in the figure.

For this purpose, the author finds two different points with coordinates (X_{r1}, Y_{r1}) and (X_{r2}, Y_{r2}) satisfying the equation (17), applies them to the coordinate plane and draws a straight line through them. The author takes the value X_{min} = 154334 as the first point abscissa. The author substitutes the value of X_{min} in equation (17) and obtains the first point ordinate. Thus, the author has a point with coordinates (154334; 736,79934). Similarly, the author obtains the coordinates of the second point by setting X_{max} = 381414 as the abscissa. The second point will be: (381414; 407,26886). The regression line is shown in red in the figure.

Thus, the dependence of the number of the unemployed population in the regions of the country (Y) on the development of entrepreneurship (X) in the Republic of Kazakhstan for 2001-2016 has been studied [12]. Paired linear regression (Pearson correlation coefficient) was selected at the specification stage. Its parameters are estimated by the least squares method [13]. The statistical significance of the equation is verified by means of the determination coefficient and the Fisher criterion [14].

It was found that in the investigated situation, 92,57% of the total variability of Y is explained by the change in X. It is also established that the parameters of the model are statistically significant. An economic interpretation of the model parameters is possible - an increase in the number of small and medium enterprises (X) by 1 unit leads to an average decrease of the unemployed population (Y) by 0,00145 measurement units (persons). Thus, with an increase in the number of small and medium enterprises (X), the number of unemployed people in the country will decline.

The resulting estimates of the regression equation also allow us to use it for the forecast. With the number of small and medium enterprises (X), equal to 299799 units, the number of unemployed population (Y) will be in the range from 460,44 to 590,97 people, and with a probability of 95% will not go beyond these limits [15].

In the conclusion, according to the analysis, we would like to note, that the influence of the development of entrepreneurship on the reduction of unemployment in the country is confirmed. Thus, the important role of the state industry program “Employment roadmap – 2020” in addressing employment problems is emphasized, contributing to the creation of new jobs at the country's enterprises, in particular, promoting the development of entrepreneurship as a driving force in the economy of the country’s regions.

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МЕМЛЕКЕТТІК БАҒДАРЛАМАЛАРДЫ ЖҮЗЕГЕ АСЫРУ ШЕҢБЕРІНДЕ ХАЛЫҚТЫҢ ЖҰМЫСПЕН ҚАМТЫЛУЫНЫҢ ӨСУІ МЕН КӘСІПКЕРЛІКТІҢ ДАМУЫНЫҢ ӨЗАРА БАЙЛАНЫСЫНЫҢ ТАЛДАУЫ

Аннотация. Қазақстан Республикасының әлеуметтік-экономикалық дамуына қол жеткізу мақсатында маңызды бағыттардың бірі – Н. Ә. Назарбаев 2012 жылы «Әлеуметтік-экономикалық жаңғырту – Қазақстан дамуының басты бағытында» атап өткендей, республика халқының жұмыспен қамтылуы болып табылады. Осы бағытта маңызды аспектілердің бірі – Қазақстан Республикасы халқының жұмыспен қамтылуына жұмыспен қамтудың мемлекеттік бағдарламасының, әсіресе «Жұмыспен қамтудың жол картасы – 2020» мемлекеттік бағдарламасының ықпалын бағалау, ол ел аймақтарындағы еңбек нарығының дамуында басты бағыт болып табылады. Дамыған елдердің тәжірибесіне сәйкес, кәсіпкерліктің дамуы халықтың жұмыспен қамтылуының өсуін қамтамасыз ету үшін экономика мен қызмет көрсету саласының нақты секторының дамуы мен кеңеюінің үрдістерін тудырады, сонымен қатар оның іскери белсенділігінің өсуі мен халықтың әлеуметтік мәселелерінің шешілуіне ықпал етеді. Осыған байланысты, талдау жүргізу барысында, Қазақстан Республикасындағы 2001-2016 жылдардағы жұмыссыздық деңгейін анықтауда «Жұмыспен қамтудың жол картасы – 2020» мемлекеттік бағдарламасын іске асыру шеңберінде шағын және орта бизнес кәсіпорындарының тіркелген санының ықпалы зерттелді. Елдегі және аймақтық аспектілердегі мемлекеттік бағдарламаларды іске асыру шеңберінде осы мәселені шешу үшін мақалада математикалық-статистикалық әдістерді (корреляциялық-регрессивтік әдіс) қолданумен талдау әдісі жасалынған, ол елдегі және аймақтық аспектідегі мемлекеттік бағдарламаларды жүзеге асыру шеңберінде кәсіпкерліктің дамуы мен халықтың жұмыспен қамтылуының өсуінің өзара байланысының талдауын жүргізуге мүмкіндік береді.

Түйін сөздер: еңбек нарығы, халықтың жұмыспен қамтылу деңгейі, әлеуметтік-экономикалық даму, экономикалық белсенді халық, жұмыспен қамтудың мемлекеттік бағдарламалары, бизнес қызметін дамуының басты бағыты, құрылымы, жұмыссыздық деңгейі, жұмыспен қамту жол картасы жұмыссыздық.

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АНАЛИЗ ВЗАИМОСВЯЗИ РАЗВИТИЯ ПРЕДПРИНИМАТЕЛЬСТВА И РОСТА ЗАНЯТОСТИ НАСЕЛЕНИЯ В РАМКАХ РЕАЛИЗАЦИИ ГОСУДАРСТВЕННЫХ ПРОГРАММ

Аннотация. Согласно опыта развитых стран, развитие предпринимательства порождает самоподдерживающий процесс развития и расширения реального сектора экономики и сферы услуг для обеспечения роста занятости населения, способствует росту его деловой активности и решению социальных проблем населения. В связи с этим, при проведении анализа, было исследовано влияние количества зарегистрированных предприятий малого и среднего бизнеса в рамках реализации государственной программы «Дорожная карта занятости – 2020» на уровень безработицы в Республике Казахстан за 2001–2016 годы. Для решения данной проблемы в статье разработан метод анализа с применением математико-статистических методов (корреляционно-регрессионного метод), позволяющий провести анализ взаимосвязи развития предпринимательства и роста занятости населения в рамках реализации государственных программ в страновом и региональном аспектах. С этой целью также проведен анализ прогнозирования занятости и безработицы по РК с применением математического инструментария.

Ключевые слова: рынок труда, уровень занятости населения, социально-экономическое развитие, экономически активное население, государственные программы занятости, бизнес деятельность, уровень безработицы, дорожная карта занятости, вектор развития, структура безработицы.

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THE TAX POTENTIALAND ITS EVALUATION IN INNOVATIVE DEVELOPMENT OF THE REPUBLIC OF KAZAKHSTAN

Abstract. Tax revenues are the basis of the formation revenue of governmental budget. That is the reason why there is a particular interest in the issues of evaluation these revenues, their limits and possibilitiesof using. The amount of tax revenues is inseparably linked with the tax potential. One of the main governmental objectives is to definethe tax potentialessence and management. In the current context, specification of theoretical framework and formulation of practical recommendations for methodological improvement are significant for tax potential evaluation at the regional and national scope.Development of theoretical and practical basis in order to improve the tax potential assessment methods is the purpose of research. In addition, the tax potential assessment of the regions is necessary to ensure sustainable developmentof the Republic of Kazakhstan.The main methods for determining the fiscal and tax potential in the regions of the Republic of Kazakhstan are considered in this article. The integral determination coefficient of the fiscal and tax potential has been identified, its required values have been determined, based on the method of rating evaluation, ranking of regions by the level of taxation has been implemented.

Key words: region, assessment, tax revenues, tax burden, tax potential.

The policy of any governement isaimed to createa stable economy of sustainable development. The increase of tax revenues shares in governmental budget and their further redistribution for implementation of important social programs and entrepreneural support is the basis of this development, which leads to a multiple economical effect and an enhancement of social welfare.

Mainly“governance” means the process of decision –making and the process by which decisions are implemented. Governance is possible to apply in several contexts such as international, national and local governance. Since governance is the decision- making process, analysis of governance, focuses on involved in agents and the formal and informal structures that have been set in place to arrive at and implement the decision.

Detailed explanation has been given by some of authors, focusing on agents that are involved in decision – making process and principles significantly influencing on effectiveness of participants. Agents (participant) are governments, different institutions and organizations that represent national and local community levels. For In particular, the forms of local governance are analyzed in many EU (European Union) Member States. The involvement of residents themselves in decision –making and, what is more important, in the implementation process is analyzed as well. However, the principles, which significantly influence on functioning of agents, areassociatedwith role of interaction and balanced decision –making among the participants.

Governance as a process related with the whole range of national institutions. This range of institutions is a determining factor indevelopments, managing of changes and creating precondition for successfully itsimplement in the entire territory of the country. Local authorities perform mostly two types of functions. On the one hand, it representsthe state administrative apparatus component in particular territory. On the other hand, it representsparticular administrative and territorial unit, the objective of which is addressing ofsocio-economic interests and needs of residents living and working in that territory.

The rural municipalities are important governance agent of rural territories. The strategic goal of activating local authorities is important.Since any community is not only a social system governed by national institutions and local authorities, but also forming the management process.For this reason, the viability of rural areas is largely controlled by the local population and the development of its economic activities is one of the most pressing problems [1].

The government needs to identify sources of rising governmental budget, sufficient to cover its costs, and to undertake necessary control over the completeness and timeliness of these tax revenues. Governmental and regional tax potential determines accurate steady functioning of the state tax system. Identification of tax flow reserves in different budget levels is the point of tax potential evaluation.

Taxes and other mandatory payments to the governmental budget represents the main part of state budget. Tax potential indicator provides an opportunity to assess budget and finance capacity of the state, as well as its separate administrative- territorial units. In this case, the tax potential is a financial indicator of the country's economy.

The sum of all potential tax revenues determines tax potential of the Republic of Kazakhstan and each administrative-territorial units. The practice of developed countries uses potential sum of tax flow as the basis for interbudgetary relations. The indicator representing the amount of possible tax revenues of regions has a certain definition in the world practice – tax potential.

One of the main goals of tax reform in the country is to increase the tax revenues in all levels of governmental budget. Increase of tax potential leads to the income growth at national levels. The growth of budget revenues is a precondition for realization of governmentalexpendable functions. Therefore, tax revenue of governmental budget increases the resources for reproduction of property, income, economic potential forthe future periods.

In this context, the indicator “tax potential”, its methodological improvement and further development of methods for forecasting tax revenues, as well as the definition of the new forms fortax potentialassessmentis necessaryto be introducedin the budget relations.

The government realizes the policy of revenue redistribution in order to provide funding to economic sectors, projects and programs having either economic or social significance and require financial resources for implementation. In other words, the main goal of tax policy is finance accumulation in the state budget necessary to solvesocial, economic, scientific and technical development issues of regions, industries or certain categories of legal entities and individuals.

Having considered international trends in the field of tax policy, it is possible to note IMF (International Monetary Fund) recommendations for the Republic of Lithuania. In the latest report for Lithuania, the IMF noted that the ratio of Lithuanian taxes to GDP (Gross domestic product) is one of the lowest in Europe and equals only half of the European average.In the last report for Lithuania, the IMF noted that the ratio of Lithuanian taxes to GDP is one of the lowest in Europe and equal to only half of the European index.The IMF considers that Lithuania should increase the amount of tax revenues through improved tax administration and the elimination of special tax schemes. More specifically, weak tax administration contributes 53.6 percent of the tax revenue shortfall, tax policy 35.3 percent, and the structure of the economy 11.1 percent. Looking at individual taxes, the PIT (Personal income tax) has the biggest contribution (5.5. percent of GDP) to the tax revenue shortfall relative to the EU. About 45 percent of the PIT shortfall relative to the EU is the result of tax policy and 40.9 percent the result of tax administration. The second largest contribution to the tax revenue shortfall relative to the EU comes from social security contributions (1.3 percent of GDP). The shortfall is driven primarily by the structure of the economy (i.e., low labor share of income), and to a smaller extent by tax administration. Most of the negative contribution of the structure of the economy and tax administration, however, is offset by strong tax policy. The CIT (Corporate income tax) and taxes on land, buildings, and other structures each have a contribution of about 1.0 percent of GDP to the tax revenue shortfall.

While in the case of the CIT, the shortfall relative to the EU is driven in its entirety by tax policy, in the case of taxes on land, buildings, and other structures the shortfall originates almost entirely from the structure of the economy (wealth), with tax rates playing only a minor role.

According to the regulator, the main reason is the insufficient productive activity of the tax system and the shadow economy. The report indicates that increase tax rates and imposing of certain taxes will raise the tax revenue by 40 percent [2].

Table 1 – Contributions to Lithuania's tax underperformance relative to the EU, 2015(Percent of GDP)

	Tax revenues	Tax policy	Economic structure	Tax administration
Total tax revenues shortfall	10.7	3.8	1.2	5.7
PIT	5.5	2.5	0.8	2.3
CIT	1.0	1.0	-0.2	0.2
VAT(valueaddedtax)	-0.7	-2.5	-0.4	2.1
Excise taxes	-0.8	0.5	-1.4	0.1
Taxes on land, buildings and other structures	0.9	0.2	0.7	0.0
Social security contributions	1.3	-1.2	1.7	0.7
Other taxes	3.5	3.2	0.0	0.3
Sources: IMF report 2017.				

TheLithuaniantaxadministrationsystemisprogressiveandconvenientforthetaxpayers. All tax returns are filed electronically, paper tax returns are submitted only in exceptional cases. If taxpayers have any questions about the submission of tax returns or taxation matters, they can call the Tax Information Centre and get advice directly from the specialists of the Tax Authority acting as a single point of contact. The Lithuanian Tax Authority has introduced an IT-based tax administration system ("i.MAS"). Companies are required to submit shipment document data in XML format to i.VAZ system on local transport of goods before each shipment. In addition, all persons registered for VAT in Lithuania are required to submit invoice data in XML format to i.SAF system on a monthly basis. With effect from 2017, companies are required to prepare a SAF-T (Standard Audit File for Tax) in XML format and provide it to the Tax Authority, Customs, or other public authority upon request. Depending on the turnover of the company, the obligation to submit SAF-T data could arise later (2018–2020). New data reporting requirements should contribute to a more effective and modern tax administration in Lithuania that aims at decreasing the scale of shadow economy and tax, gaps [3].

The availability of information on the value of tax potential allows regulating properinter budgetary relations for the social and economic policy implementation. The correct application of the tax potentialindicator and evaluation methodologywill stimulate the independence of administrative-territorial unit administrationin making decisions. Transfer the number of functions and the rights from central authorities to regions (administrative-territorial unit) allow expandingauthorization.

Having analyzed the developed countries practice, the tax potential is thecapacity of the regional economy to collect the maximum tax part of the region's gross revenue to the budget levels, determined by the needs of state policy, society and the possibilities of tax administration [4].

In the scientific literature, the "tax potential" category is often understood as the ability of the tax base within a certain territory to generate revenue in the form of tax revenues. In carrying out this research, it was revealed that there is no unified concept of the category of tax potential.

Thus, in the researches of Carola Pessino and Ricardo Fenochietto [5], it was noted that the tax capacity represents the maximum tax revenue that a country can collect with considering of its economic, social, institutional and demographic characteristics. Ben Langford and Tim Ohlenburg [6] defines the tax potential as the maximum amount of tax revenue a country could reasonably raise at a given point in time, conditional on its prevailing characteristics. George Chun-Yan Kuo [7] defines the tax potential as the ability of payers to pay taxes or the government's ability to generate revenues. The same approach is considered by Lü Bingyang and Guo Qingwang [8]. The authors assume that the tax potential is the total amount of taxes collected by the state, which consists of two parts: the tax potential of taxpayers.

A scientifically accepted approach, which determines the dominant role of the state tax potential in covering government expenditures.

Sir Josiah Stamp [9] defined the taxable capacity as the maximum amount that the community is capable of covering government expenditure without having economic shocks.A similar definition is also given by the Advisory Committee on Intergovernmental Relations of the United States [10]. Obviously, revenue part of governmental budget should cover the expenses or more than in order to provide stability fund.

It should be noted,in scientific research, the tax potential and tax burden (tax/GDP ratio) are sometimes used as synonyms (Stefan Brem) [11].This statement is not entirely accurate. There is differentiates between definition of «taxablecapacity»and«taxcapacity»in some publications.For instance,in research of Tuan Minh Le, Blanca Moreno-Dodson [12] the term "taxable capacity" represents the forecast value of the tax burden indicator (tax / GDP ratio),estimated from the regression analysis taking into account the characteristics of the country, and the category of tax potential is considered to be an integral part of the financial (income) potential.

Among the scientists of CIS (Commonwealth of Independent States) countries, DEs. Khanafeev F.F. considers the tax potential as the opportunity and capacity of the economic system that are expected to afford the formation of sources by taxes and tax payments, and the rational use of resources for effective system [13].

The term «tax potential» initially makes some contradiction. Either tax potential is a combination of the scope of possible tax bases, or the totality of the amounts of possible tax bases revenues.

This contradiction arises when comparing different approaches to the concept of tax potential in different countries. According to first theory, in some countries the concept of the tax potential represents the cost of taxation objects combinationactually existing in certain territory. In this case, the list of objects related to the given combinationis determined by the tax legislation. Using this procedure for determination of the taxable items list, it is applicable:

- account of all currently available taxable items in the given territory;
- account of the available taxation objects number and others not justified to subjected to taxation;
- incompleteaccount of the existing taxable objects in the given territory.

According to other approach, the tax potential is define as the maximum possible amount of tax revenues in certain territory for a certain period under the current tax legislation and the average level of the tax administration. The Republic of Kazakhstan pursues the same interpretation [14].

Analyzing both theories, the definition of the tax potential concept, there is a general approach that actually eliminates this contradiction. Since the objective basis is due to provide the maximum extent amount of tax revenues administrative-territorial unit by the calculation of the value of all taxable objects. Consequently, both theories based on a single economic process. The difference being that should apply for the tax potential. That is the tax base from which the amount of tax revenue is calculated or the amount of tax revenue that is calculated from the tax base.

In carrying out of the scientific research, wide range of scientific publications, relating to the fiscal and tax potential measure methods was investigated. In this context, accordance to inventive technique by A. A. Aivazov and M. S. Ishina, analytical blocks are applied. It includesassessment of the structure and dynamics of budgetary coefficients, analysis of budgetary coefficients and decision-making on the effectiveness of budgetary potential management [15].

The methodology estimates, including the budget autonomy ratio, the budget efficiency ratio, the budget deficit level, the budget provision ratio, and the budget coverage ratio illustrate the reliable description revealed during the undertaking research. In order to represent more comprehensive and complex analysis, the following list of coefficients supplemented:

- the financial dependence ratio (FD):
-

$$FD = \frac{\text{Transfers of the National Fund of the Republic of Kazakhstan to the local budgets}}{\text{Total revenue of the local budgets}} \quad (1)$$

- the level of tax collection (TC):

$$TC = \frac{\text{Debts on taxes and duties to the local budgets}}{\text{Total amount of taxrevenues to the local budgets}} \quad (2)$$

Indicators of the regional budgets and tax potential are calculated in this research, and ranked the regions according to the level of fiscal and tax potential. The calculated values of these ratios are represented in the Annex 1 (see the Annex 1 to this paper).

Annex 1 – Dynamics of the tax potential assessment's indicators of the Republic of Kazakhstan in the context of the regions for 2016–2017

Region	Year	The budget autonomy ratio (A)	The budget deficit level (BD)	The budget coverage ratio (BC)	The budget provision ratio (BP)	The budget efficiency ratio (BE)	The financial dependence ratio (FD)
1	2	3	4	5	6	7	8
Akmola	2016	0,31	0,03	1,01	0,26	0,26	0,69
	2017	0,49	0,03	1,01	0,30	0,30	0,51
	Deviations	0,18	0,00	-0,01	0,04	0,04	-0,18
Aktobe	2016	0,53	0,05	0,99	0,22	0,21	0,47
	2017	0,49	0,09	0,94	0,26	0,24	0,51
	Deviations	-0,04	0,04	-0,05	0,04	0,03	0,04
Almaty	2016	0,36	0,04	1,01	0,20	0,20	0,64
	2017	0,43	0,00	1,04	0,20	0,20	0,57
	Deviations	0,07	-0,04	0,04	0,00	0,01	-0,07
Atyrau	2016	0,81	-0,12	1,13	0,38	0,43	0,19
	2017	0,90	0,10	0,90	0,49	0,44	0,10
	Deviations	0,08	0,22	-0,23	0,11	0,01	-0,08
East Kazakhstan	2016	0,32	0,02	1,00	0,21	0,21	0,68
	2017	0,32	0,01	1,02	0,23	0,23	0,68
	Deviations	0,00	-0,01	0,02	0,02	0,02	0,00
Zhambyl	2016	0,19	0,06	0,98	0,20	0,20	0,81
	2017	0,21	0,02	1,00	0,22	0,22	0,79
	Deviations	0,03	-0,04	0,02	0,01	0,02	-0,03
West Kazakhstan	2016	0,43	-0,04	1,07	0,25	0,26	0,57
	2017	0,49	0,07	0,95	0,27	0,26	0,51
	Deviations	0,05	0,11	-0,12	0,02	-0,01	-0,05
Karagandy	2016	0,52	0,01	1,01	0,17	0,17	0,48
	2017	0,47	0,03	1,00	0,21	0,21	0,53
	Deviations	-0,05	0,02	-0,01	0,04	0,04	0,05
Kyzylorda	2016	0,19	0,07	1,00	0,28	0,28	0,81
	2017	0,22	0,03	1,01	0,27	0,27	0,78
	Deviations	0,03	-0,04	0,01	-0,01	-0,01	-0,03
Kostanay	2016	0,31	0,03	1,02	0,21	0,21	0,69
	2017	0,31	0,04	1,00	0,24	0,24	0,69
	Deviations	0,00	0,01	-0,02	0,04	0,03	0,00
Mangystau	2016	0,72	0,01	1,03	0,26	0,27	0,28
	2017	0,78	0,04	1,03	0,25	0,26	0,22
	Deviations	0,06	0,03	0,00	-0,01	-0,01	-0,06
Pavlodar	2016	0,56	0,00	1,03	0,21	0,21	0,44
	2017	0,54	0,01	1,00	0,26	0,26	0,46
	Deviations	-0,03	0,01	-0,03	0,06	0,05	0,03
North Kazakhstan	2016	0,23	0,04	1,00	0,30	0,30	0,77
	2017	0,22	0,02	1,00	0,32	0,32	0,78
	Deviations	0,00	-0,02	0,00	0,03	0,03	0,00
South Kazakhstan	2016	0,19	0,04	0,99	0,19	0,19	0,81
	2017	0,21	0,01	1,00	0,21	0,21	0,79
	Deviations	0,02	-0,03	0,01	0,01	0,01	-0,02
Almaty	2016	0,71	0,02	1,05	0,27	0,29	0,29
	2017	0,82	0,01	1,07	0,29	0,31	0,18
	Deviations	0,11	-0,01	0,01	0,01	0,02	-0,11
Astana	2016	0,53	0,07	1,09	0,38	0,42	0,47
	2017	0,52	0,06	1,13	0,43	0,48	0,48
	Deviations	-0,01	-0,01	0,04	0,05	0,07	0,01
Threshold values		≥0,5	≤ 0,1	≥1	–	–	≤ 0,5

In results, most of investigate regions do not have sufficient level of their own funds. This is confirmed by the values of the autonomy ratio and the financial dependence ratio in acceptable limits with keeping the deficit of the regional budgets. The analysis identified the sufficient number of own revenue sources of the regions budget to cover short-term debt and liabilities. There is the calculated autonomy ratio represents: Atyrau region (autonomy ratio - 0.9), Mangystau region (autonomy ratio - 0.78), Pavlodar region (0.54), Almaty (autonomy ratio - 0.82) and Astana (autonomy ratio 0.52) in 2017.

The analysis of the budget sustainability was carried out to establish the quality of the fiscal, tax potential structure and to justify the criterion of budget sustainability. It is defined as a share of own revenues in the total revenue structure of the budget. According to generally accepted criteria, the structure of the revenue side of budget is not in a stable financial condition. Since the value of the autonomy ratio in many regions is not above 0.5, but the level of deficit is less than 0.1 in almost all regions except Atyrau region (0.1) and East Kazakhstan region (0.11). Following to research phase, it is carried out the analysis of tax revenues to the regional budget based on the tax burden coefficient and added level of tax collection.

In accordance with the mentioned conclusions, the results provided the foundation to tax potential integrated assessment for each regions of the Republic of Kazakhstan. The indicator framework is the budget-tax potential (BTP), determined by the following formula:

$$BTP_i = A_i + BD_i + BC_i + FD_i + TC_i + TBC_i, \quad (3)$$

where A_i – the autonomy ratio; BD_i – the level of budget deficit; BC_i – the budget coverage ratio; FD_i – the financial dependence ratio; TC_i – the level of tax collection; TBC_i – the tax burden coefficient.

According to the threshold values of these coefficients, the stability of the fiscal potential is determined (= 2.6).

The indicator value BTP allows ranking the regions, which carried out and presented in the table 2.

The highest index of BTP ranking are reached by Almaty, Atyrau and Mangystau regions in 2017. The lowest results are represented by South Kazakhstan, Zhambyl and North Kazakhstan regions in the same period.

Table 2 – Values of indicators of tax potential rating estimation of Republic of Kazakhstan in the period of 2016–2017

Region	Actual tax revenues, mln.tenge		Taxpotential, mln.tenge		Tax potential (as an integral coefficient)		Rank	
	2016	2017	2016	2017	2016	2017	2016	2017
Almaty	1 617 098	1 769 472	1 617 098	1 769 472	2,48	2,73	3	1
Atyrau	815 163	1 046 587	815 163	1 046 587	2,92	2,63	1	2
Mangystau	326 835	335 576	326 835	335 576	2,50	2,60	2	3
Akmola	112 630	134 000	145 304	134 000	1,63	2,23	11	4
Astana	1 063 554	989 991	1 063 554	989 991	2,13	2,15	5	5
Aktobe	275 789	355 851	283 794	355 851	2,04	2,13	7	6
Pavlodar	237 387	239 482	237 387	239 482	2,20	2,11	4	7
Almatyregion	264 563	318 569	318 453	335 823	1,74	1,99	9	8
Karagandy	259 436	340 385	264 638	370 052	2,06	1,93	6	9
WestKazakhstan	254 272	256 154	265 800	286 759	2,01	1,88	8	10
EastKazakhstan	273 930	312 588	350 242	395 661	1,64	1,66	10	11
Kostanay	136 443	160 094	177 311	210 960	1,62	1,59	12	12
Kyzylorda	89 630	104 687	139 959	152 149	1,34	1,44	15	13
SouthKazakhstan	302 921	318 024	465 466	462 473	1,37	1,44	14	14
Zhambyl	71 239	81 415	112 890	118 677	1,33	1,44	16	15
NorthKazakhstan	69 046	79 007	101 825	115 599	1,42	1,44	13	16

Compiled by the authors on basis of the official statistical data from the State Revenue Committee of the Ministry of Finance of the Republic of Kazakhstan.

Based on analytical results, it is possible to draw the following conclusions about the factors influencing the tax potential of the Republic of Kazakhstan:

- the greatest impact on the value of budget-tax potential indicator of the Republic of Kazakhstan was provided by the dependence coefficient, which was caused by a significant increase in the share of borrowed funds in the governmental budget;

- the general influence exerted by the factors under consideration at the BTP of Republic of Kazakhstan is positive, that is, with each substitution of the factors of the reporting period, the value of the BTP indicator is approaching the required value, which indicates an increase in the stability of the fiscal and tax potential of the Republic of Kazakhstan.

In conclusion, accuracy and competence of tax potential account determines the steady functioning of governmental and administrative-territorial units' tax potential. The essence of the tax potential evaluation of the republic is determination of the growth reserves of tax revenues on different levels budget. The main methods of tax potential evaluation are considered,basing on various factors. In assessing of the tax potential, it is necessary to take into account the results of analysis of the actual taxes receipt for the past periods, the assessment of the forecastyear execution in the calendar year, as well as forecast data of changes in macroeconomic indicators. First, in order to assess the tax potential of the Republic of Kazakhstan, the dynamics and structure of the state budget main indicators for the last 2 years, the main trends and directionswere identified.The method of rating evaluation was applied for the tax potential evaluation of the Republic of Kazakhstan. This method is uncomplicated and objective,and enablesmake rapid adjustmentsto the forecast in accordance with changing economic conditions. The results of the BTP analysis concludes that the regional budget hasa small share of tax revenues. This indicates the insignificance of own revenues in the structure of total budget revenues. Taxes should account for the largest share in the consolidated budget revenues. As a result,there are gratuitous flows in the form of transfers from the National Fund of the Republic of Kazakhstan.In our opinion, this process have a negative factor in the regional budget management. Administrative-territorial unitshouldcover expenses with large share of its own revenues in the local budget.Therefore, republican funds provided funding for expenses.

The results of the research shows that budget potential realization in the Republic of Kazakhstan are not completely implemented. This indicatesinsufficiency of effectiveness of the budget process. Existing methods and ways to increase the revenue side of the budgetshould be improved, using the latest innovative systems. The government need to implement innovations for realizationstrategic aims and plans, which lead to increase in the national welfare.

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ҚАЗАҚСТАН РЕСПУБЛИКАСЫНЫҢ САЛЫҚТЫҚ ӘЛЕУЕТІ ЖӘНЕ ОНЫҢ ИННОВАЦИЯЛЫҚ ДАМУЫН БАҒАЛАУ

Аннотация. Салықтық түсімдер бюджеттің табыс бөлігін қалыптастыру үшін негіз болып табылады. Осы түсімдерді олардың лимиттерін және қолдану мүмкіндіктерін бағалау сұрактарының ерекше қызығушылық тудыратыны да осыдан. Салықтық түсімдердің сомасы салықтық әлеуетпен тығыз байланысты, салықтық әлеуеттің мәнін анықтау және оны басқару мәселесі маңызды мемлекеттік міндет болып табылады. Осыған байланысты салық ғылыми мен тәжірибесінің басты міндеті қәзіргі жағдайдағы салық әлеуетін аймақтық және ұлттық деңгейлерде бағалау үшін қажет әдіснамалық құралдарды жетілдіру бойынша теориялық негіздерді нақтылау және тәжірибелік нұскаулықтарды әзірлеу болып табылады. Зерттеу мақсаты салықтық әлеуетті бағалаудың жетілдірілген әдістері негізінде республиканың салықтық әлеуетін қалыптастыру үшін теориялық және тәжірибелік ережелерді әзірлеу болып табылады. Сонымен қатар тұрақты дамуды қамтамасыз ету үшін, Қазақстан Республикасының аймақтарының да салықтық әлеуетін бағалау керек. Бұл мақалада салықтық әлеуетін негізгі әдістері қарастырылады. Бюджеттік және салықтық әлеуетті интегралдық анықтаудың коэффициенті, оған қажет мәндер анықталды, ал аймақтарды салықтық әлеуеттері бойынша болу рейтингтік бағалау әдісі негізінде жүзеге асырылды.

Түйін сөздер: аймақ, бағалау, салықтық ауыртпашылық, салықтық әлеует.

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НАЛОГОВЫЙ ПОТЕНЦИАЛ РЕСПУБЛИКИ КАЗАХСТАН И ЕГО ОЦЕНКА В ИННОВАЦИОННОМ РАЗВИТИИ

Аннотация. Налоговые поступления являются основой для формирования доходной части бюджета. Вот почему вопросы оценки данных поступлений, их лимитов и возможностей использования вызывают особый интерес. Сумма налоговых доходов неразрывно связана с налоговым потенциалом, проблема определения сущности и управления которым является важной государственной задачей.В этой связи важными задачами налоговой науки и практики являются уточнение теоретических основ и разработка практических рекомендаций по совершенствованию методологических инструментов для оценки налогового потенциала на региональном и национальном уровнях в современных условиях. Целью исследования является разработка теоретических и практических положений для усовершенствования методов оценки налогового потенциала. Также необходимо оценить налоговый потенциал регионов Республики Казахстан для обеспечения устой-чивого развития. В статье рассматриваются основные методы определения налогового потенциала. Определен коэффициент для интегрального определения бюджетного и налогового потенциала, определены его требуемые значения, а ранжирование регионов по уровню налогового потенциала было реализовано на основе метода рейтинговой оценки.

Ключевые слова: регион, оценка, налоговые поступления, налоговое бремя, налоговый потенциал.

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PROBLEMS OF LEGAL REGULATION OF TRANSACTIONS ON MERGERS AND ACQUISITIONS IN THE BANKING SECTOR OF THE REPUBLIC OF KAZAKHSTAN

Abstract. The article is devoted to the research of certain problems of legal regulation of mergers and acquisitions in the banking sector of the Republic of Kazakhstan on the basis of theoretical views on the concepts, features and motives of bank mergers and acquisitions and analysis of existing legislation. In particular, the authors draw attention to the problem of the discrepancy between the provision of the Civil Code of the Republic of Kazakhstan concerning the forms of reorganization to the Constitution of the Republic of Kazakhstan, as well as the lack of a unified approach in regulating relations in the field of reorganization of banks by the existing legislation. The urgency of the study of these issues is beyond doubt, since these aspects are analyzed from the position expressed by the President of the Republic of Kazakhstan on the "resetting" of the financial sector of the country in the Addresses to the Nation in 2017 and 2018, the provisions of the Strategic Development Plan of Kazakhstan until 2025 and the Program for Improvement of the Financial of the Banking Sector of the Republic of Kazakhstan carried out by the National Bank of Kazakhstan.

Based on the study of the mentioned problems, the authors propose recommendations for improving the current legislation in this field. The article also touches upon the issues of regulating the economic responsibility of bank owners, since regulation of these issues directly affects the financial position of banks and the achievement of management objectives of banks, including the success of mergers and acquisitions deals.

Key words: bank, banking sector, stability of the banking sector of the Republic of Kazakhstan, banking merger and acquisition deals, M&A deals in banking sector, bank reorganization, bank insolvency, advantages of banking transactions on merger and acquisition, economic responsibility of bank shareholders, banking legislation of the Republic of Kazakhstan.

Introduction. The concepts and advantages of mergers and acquisitions of banks are increasingly being discussed in Kazakhstan's business and scientific circles, the media and, of course, in state authorities and government. Concerning the attractiveness of using this mechanism for the purposes of achieving the stability of the banking sector, several scientific doctrines have been developed, which have been studying in details in economic science [1, 2]. According to international practice conducting mergers and acquisitions deals can be also considered as one of the instruments for resolving bank insolvency [3], since mergers and acquisitions all have one underlying motive: to protect or improve the strength and/or profitability of the dominant company, in other words, to maximize shareholder wealth [4]. In terms of banks such kind of deals lead a number of positive consequences in the form of improving the bank's financial stability through increase of profitability and market value of the bank, increase of the market share through expansion of the geographical boarders of providing banking services including extension of the branch network, diversification of banking products, increase in customer base, as well as more efficient management. Potential risks relate to the problems of integration and banks' reputation [5]. From this perspective, researchers are currently actively studying this subject on the examples of transactions on bank M&A especially evaluating the magnitudes of these costs and benefits [6].

It should be also noted that banking M&A deals are made not only at national level but they have been becoming as one of the international mechanisms of increasing profitability of shareholders. That is

why these issues are of increasing importance given the upward trend in both number and value of financial sector mergers, and increasing financial sector concentration levels in countries throughout the world [7].

Starting in the early 1990s, the consolidation within the international banking industry has steadily increased, leading to the present state of highly concentrated markets with just a few dominating players [8] and this tool is considered as a modern method of global credit risk management within every country and internationally [9].

President of the country in his addresses to the nation of Kazakhstan for 2017 [10] and 2018 [11], Strategic Plan of the Republic's Development until the year 2025 [12] stresses the need to provide stability of the bank sector, one of the effective measures among which is to improve the current legislation by exclusion of gaps and contradictions, and introducing additions and amendments to some legislative acts providing the norms aimed at improving the bank insolvency settlement regime particularly. That is why this research aimed at finding out the problems in legal framework regulating the issues of M&A deals conducting is actual and in demand. In addition, these issues are poorly studied and insufficiently developed due to the relatively short period of independence of the state itself and the development of its financial system.

It should be noted that the economic mechanisms of mergers and acquisitions have been reflected through the legal regulation of relations in the sphere of reorganization of banks in the forms of merger and acquisition in the legislation of the Republic of Kazakhstan, the peculiarities of which will be considered from the point of view of critical analysis in this paper.

The legal basis for the regulation of the reorganization processes has a significant role in achieving the above objectives, however, the legislation in this area is imperfect and requires its revision and improvement. At the same time, the legal regulation of the reorganization of banks has its own significant features due to the exclusivity of the legal status of banks [13], since it requires analysis and consideration of not only the civil legislation that directly regulates these issues, but also the banking legislation of the Republic of Kazakhstan, which establishes a number of requirements, non-observance of which entails the inability to commit such reorganization of such financial organizations, as well as the requirements of the legislation of the Republic of Kazakhstan in the field of competition protection.

We would like also to take attention to the one of research of the various takeover legislations of 41 Western and developing economies. The authors of this research expect that merger laws have an important impact on merger activity. They distinguish between merger laws that positively and negatively affect the frequency of acquisitions in a given country. Merger laws stimulating mergers may have beneficial effects when the industry concentration is not at its optimal level. They can then create efficiency gains from integration. However, stricter laws can have negative implications as well by preventing some profitable acquisitions from succeeding. The authors conclude that national laws do not have a significant effect on domestic or cross-border merger flows, after controlling for time effects and market conditions [14]. To our mind, it can be explained by the nature of the law to be just a form of regulation of economic relations. At the same time the quality of legislation can contribute achieving the benefits of bank transactions on mergers and acquisitions, supporting stability of financial system and development business initiatives due to the regulating and protective nature of the law, since it stipulates the main framework or the order of execution of transactions.

Thus, this paper is devoted to some problems in legal regulation in the field of bank reorganisation in the light of conducted policy of the Republic of Kazakhstan. These issues have not been well studied, since the financial system of the country is in the process of development, the country is a developing state with about 30 years of independence. Current state of bank sector of economy demonstrates the problems including bank insolvency, which have to be eliminated with proper legal regulation either.

Methods of research. For the purposes of identifying problem aspects in the legal regulation of the reorganization of banks in the form of mergers and acquisitions and the elaboration of sound recommendations and proposals for its development and improvement, an analysis of the program documents for the development of the Republic of Kazakhstan, the current legislation of the Republic of Kazakhstan was carried out, as well as domestic and foreign literature devoting these issues was reviewed and analyzed.

As mentioned above, the President of the Republic of Kazakhstan defined the task of "resetting" the country's financial sector in his address to the nation of Kazakhstan "Third Modernization of Kazakhstan:

Global Competitiveness" dated January 31, 2012. The National Bank of Kazakhstan, as the body responsible for regulating, controlling and supervising the financial market and financial organizations, and helping to ensure the stability of the financial system, was instructed to work out a set of measures to improve the banking sector, which involves clearing the balance sheets of banks from "bad loans" and, if necessary, ensuring their capitalization by shareholders. To achieve this objective, the National Bank should have a greater scope of powers in order to perform operational control over the state of banks and to take necessary actions against banks without waiting for a formal breach on their part on the ground of a risk-based approach [15].

The task of "resetting" the financial sector was repeated in the Address of the President to the nation of Kazakhstan in 2018, where the Head of the state indicates the need to complete the cleaning of the bank portfolio from "bad" loans, drawing attention to the fact that the owners of banks should bear economic responsibility recognizing the losses [16].

It should be noted that on 30 June 2017, the NBK launched a Program for Improvement of the Financial Stability of the Banking Sector of the Republic of Kazakhstan [17] aimed to improve the financial sustainability of ailing banks. The program seeks to maintain stability and confidence in the banking system and ensure that NPLs are adequately provisioned and do not pose a threat to the overall financial system [18]. According to the data of this Program as of July 1, 2017, the loan portfolio (main debt) of the banking sector amounted to KZT 15,533.3 billion. Overdue loans accounted for 28.3% (KZT 4,392.3 billion) of the loan portfolio, with overdue loans exceeding 90 days (NPL) accounting for 10.7% (KZT1,663.0 billion). In accordance with the Program, the National Bank should identify problem banks on the basis of effective supervision and implement an effective regime for resolving insolvent banks. In order to restore and/or settle non-viable banks within the framework envisaged by the Program, it is proposed particularly to apply bank reorganizations through mergers and acquisitions .

What are merger and acquisition? Merger is the corporate combination of two or more independent business corporations into a single enterprise, usually the absorption of one or more firms by dominant one. A merger may be accomplished by one firm purchasing the other firms assets with cash or its securities or by purchasing the other shares or stock by issuing its stock to the other firms' shareholders in exchange for the shares of the acquired firm. Acquisition occurs when one entity takes ownership of another entity's stock equity interest or assets. It's the purchase of one business or company by another company or business entity [19]. From the position of jurisprudence, the merger of legal entities is the establishment of a new legal entity with the transfer of all rights and obligations of two or more legal entities to it and the termination their activities. The acquisition of a legal entity is the termination of one or more legal entities with the transfer of all its or their rights and obligations to another legal entity [20]. This difference in the forms of reorganization entails a difference in the implementation of the reorganization process. A legal entity is considered as reorganized, except for cases of reorganization in the form of acquisition, from the moment of registration of newly emerged legal entities. Thus, when reorganizing a legal entity by acquisition with another legal entity, the first of them is considered to be reorganized from the moment of entering the information on the termination of the activities of the acquired legal entity into the National Register of Business Identification Numbers (Clause 4, Article 45 of the Civil Code of the Republic of Kazakhstan). During reorganization, all rights and obligations of the reorganized legal entity or a part thereof are transferred to other subjects of law, i.e. there is a universal succession [21].

The main legal act, which provides the basic framework for the establishment, functioning, reorganization and liquidation of legal entities as subjects of civil legal relations, is the Civil Code of the Republic of Kazakhstan [22]. According to clause 1 Article 45 of this Code, the reorganization of a legal entity (merger, acquisition, division, separation, transformation) is carried out by decision of the owner of his property or the body authorized by the owner, founders (participants), as well as the body authorized by the constituent documents of the legal entity, or by decision of the judiciary in cases provided for by legislative acts of the Republic of Kazakhstan. Legislation of the Republic of Kazakhstan may provide for other forms of reorganization. At the same time, the Civil Code also provides for the provision that the reorganization of joint-stock companies is carried out taking into account the specifics established by the legislative act of the Republic of Kazakhstan on joint-stock companies. Taking into account that banks can be established in the organizational and legal form of the joint-stock company (cl.1 Art.15 of the Law of the Republic of Kazakhstan "On Banks and Banking Activity in the Republic of Kazakhstan" [23]), the

provisions of the Law of the Republic of Kazakhstan "On Joint-Stock Companies" [24] on these issues are to be considered and analyzed. Turning to this Law, we find the provision that the company's reorganization (merger, acquisition, division, separation, transformation) is carried out in accordance with the Civil Code of the Republic of Kazakhstan, taking into account the specifics established by the legislative acts of the Republic of Kazakhstan (cl.1 Art.81). The reference norm to the legislative acts of the Republic of Kazakhstan above leads to the Law of the Republic of Kazakhstan "On Banks and Banking Activity in the Republic of Kazakhstan", in cl. 1 Article 60 of which there is a provision that voluntary reorganization (merger, acquisition, division, separation, transformation, converting) of banks (bank holdings) can be carried out by decision of the general meeting of shareholders (participants) with the permission of the authorized body. The procedure for issuing permission for a voluntary reorganization of a bank (bank holding) or refusal to issue this permit is determined by a regulatory legal act of the authorized body.

By analyzing and literally interpreting the norms of the above-mentioned legislative acts, it can be concluded that the Civil Code of the Republic of Kazakhstan and the Law of the Republic of Kazakhstan "On Joint Stock Companies" do not provide for such form of reorganization as converting envisaged by the Law of the Republic of Kazakhstan "On Banks and Banking Activity". And if the Civil Code of the Republic of Kazakhstan contains a blanket rule that other forms of reorganization may be envisaged by the legislation, then the Law of the Republic of Kazakhstan "On Joint Stock Companies" indicates that only the specifics of reorganization in the forms listed in it are established by legislative acts of the Republic of Kazakhstan.

The analysis of these norms reveals several problems: the first problem is that the forms of reorganization (according to the Civil Code of the Republic of Kazakhstan) and the specifics (the Law of the Republic of Kazakhstan "On Joint Stock Companies") can be established in the first case in legislation, and in the second case in legislative acts. This is illogical, since the forms of reorganization is the basic concept specifics of which can be envisaged in legislation and not vice versa, and this demonstrates the contradiction of legislative acts. Taking into account that the codes occupy a higher level in the hierarchy of normative legal acts [25], it would be fair to say that namely the legislation of the Republic of Kazakhstan regulates relations in the field of reorganization of legal entities, and the contradiction of acts is eliminated by applying the rule on the hierarchy of norms of regulatory legal acts. At the same time, the reorganization of legal entities involves the solution of a number of issues of succession, within the framework of which the rights and obligations of the reorganized legal entities are transferred.

In legal literature, the concept of reorganization is viewed as a way to terminate existing legal entities with the simultaneous emergence of new legal entities and the transfer of rights and obligations of the former to the second in the order of universal succession [26]. We can agree with this definition with a certain adjustment regarding the specifics of reorganization in the form of acquisition stipulating by the legislation of the Republic of Kazakhstan. As it was mentioned above, under cl.4 Art.45 of the Civil Code of the Republic of Kazakhstan a legal entity is considered as reorganized from the moment of registration of newly emerged legal entities excepted reorganization in the form of acquisition. When reorganizing a legal entity by acquisition with another legal entity, the first of them is considered to be reorganized from the moment of entering the information on the termination of the activities of the acquired legal entity into the National Register of Business Identification Numbers. Thus, as applied to the legislation of the Re-public of Kazakhstan, such form as acquisition does not entail the establishment of a new legal entity, but is carried out by transferring the rights and duties of the entity being acquired in the succession to the organization to which the acquisition is directly effected.

At the same time, according to cl.3 of Article 61 of the Constitution of the Republic of Kazakhstan, such important social relations and fundamental principles and norms, which relate to the legal personality of legal entities, civil rights and freedoms, obligations and liabilities of legal entities , as well as issues of ownership and other proprietary rights should be regulated directly by laws as normative legal acts of the Parliament of the Republic of Kazakhstan adopted under the special stipulated procedure. As is known, law (as a normative legal act) and legislation (as a set of normative legal acts) are not identical concepts. In this regard, it can be concluded that the fundamental issues of reorganization and, above all, its forms should be regulated exclusively by normative legal acts in the form of laws, and clause 1 of Article 45 of the Civil Code of the Republic of Kazakhstan has to be appropriately amended in order to eliminate the contradiction to the Constitution as the basic law of the state. It should be also noted that the above-

mentioned problem of the discrepancy between the Civil Code of the Republic of Kazakhstan and the Constitution of the Republic of Kazakhstan has not only a technical nature of the inconsistency of the current legislation, but also provides the possibility of regulating the reorganization of legal entities by subordinate legislation. This may be used as a soil for corruption.

The contents of the above-mentioned norms of the Civil Code of the Republic of Kazakhstan, the Law of the Republic of Kazakhstan "On Joint Stock Companies" and the Law of the Republic of Kazakhstan "On Banks and Banking Activities in the Republic of Kazakhstan" involve various forms of reorganization of legal entities, since the Law of the Republic of Kazakhstan "On Banks and Banking Activity in the Republic of Kazakhstan" specifies such a form of reorganization as converting of banks, which is not known to the Civil Code of the Republic of Kazakhstan and the Law of the Republic of Kazakhstan "On Joint Stock Companies". The reference norm of the Law of the Republic of Kazakhstan "On Joint Stock Companies", which contains a provision that specifics of reorganization in the forms listed in this Law are also established by legislative acts of the Republic of Kazakhstan, doesn't eliminate this discrepancy, since the single possible organizational and legal form of establishment of bank is joint stock company, which doesn't provide for such form of reorganization as converting even it relates just to banks. Thus, it seems necessary to amend the Law of the Republic of Kazakhstan "On Joint-Stock Companies" specifying also such a form of reorganization as converting, which can be applied exclusively to banks.

The Law of the Republic of Kazakhstan "On Joint-Stock Companies" provides for the concept of merger of entities (Clause 1 of Article 82) as the emergence of a new entity by transferring all property, rights and obligations to it on the basis of a merger agreement and in accordance with the deed of conveyance of two or more entities with the termination of their activities. The charter capital of an entity established by the merger of companies is equal to the sum of equity capital of the entities being reorganized minus the investments of one reorganized company into another reorganized company.

Article 83 of this Law establishes the concept of acquisition of an entity to another entity as cessation of the activities of the acquired company with the transfer of all the property, rights and obligations of the acquired company to another company in accordance with the deed of conveyance.

After the acquisition of all shares of the acquired entity, these shares are canceled, and the property, rights and obligations of the acquired company are transferred to the company to which the acquisition is made in accordance with the deed of conveyance signed by the heads of the executive body and the chief accountants of the reorganized companies and certified by the seals of the entities (if any).

The current legislation provides for the possibility of voluntary and forced reorganization. Let's consider the features of voluntary reorganization of banks.

The reorganization of banks has its own distinctive features stipulated in Articles 60, 60-1, 61 of the Law of the Republic of Kazakhstan "On Banks and Banking Activities in the Republic of Kazakhstan", since in addition to the decision of the General Meeting of Shareholders (Participants) for the reorganization requires the permission of the authorized body, i.e. the National Bank of the Republic of Kazakhstan. Thus, the decision of the General Meeting of Shareholders (Participants) of the bank (bank holding) is the basis for an application to the authorized body for obtaining permission to conduct a voluntary reorganization.

The following documents must be attached to the application for obtaining the permission of the authorized body to carry out the voluntary reorganization of the bank (bank holding):

a) decision of the supreme body of the bank (bank holding) on its voluntary reorganization;

b) documents describing the expected conditions, forms, procedure and terms of voluntary reorganization of the bank (bank holding);

c) financial forecast of the consequences of voluntary reorganization, including the bank's (bank holding's) settlement balance sheet after its voluntary reorganization and/or legal entities formed as a result of voluntary reorganization of the bank (bank holding).

In case of reorganization in the form of acquisition, an agreement on acquisition should be attached to this list of documents. The agreement on acquisition should be signed by the first heads of executive bodies of reorganized banks on the basis of a decision taken at the joint General Meeting of Shareholders of reorganized banks in accordance with the Law of the Republic of Kazakhstan "On Joint Stock Companies".

An application for permission to conduct a voluntary reorganization of a bank (bank holding) must be considered by the authorized body within two months from the date of its receipt. Upon receipt of the permit for voluntary reorganization from the National Bank, the reorganizing bank (bank holding) is obliged to inform all its depositors, customers, correspondents and borrowers about the forthcoming changes by publishing the relevant announcement in the mass media including the Internet resource of the bank within two weeks from the date of receipt of such permission.

The procedure of state registration or re-registration of legal entities establishing as a result of reorganization is carried out in accordance with the legislative act of the Republic of Kazakhstan – the Law of the Republic of Kazakhstan dated April 17, 1995 No. 2198 "On State Registration of Legal Enti-ties and Account Registration of Branches and Representative Offices" [27].

The listed terms for changing the legal status of a bank (bank holding) are common for all forms of bank reorganization, but they are not applicable to non-residents of the Republic of Kazakhstan if these companies are bank holdings or entities having the features of a bank holding when one of the following conditions is fulfilled:

– the availability of an individual credit rating not lower than the A rating of one of the rating agencies, the list of which is set by the authorized body, as well as written confirmation from the financial supervision authority of the country of origin of the bank holding, the entity having the features of a bank holding, which confirms that these entities – non-residents of the Republic of Kazakhstan are subject to consolidated supervision;

– the availability of an agreement between the authorized body and the relevant supervisory authority of the foreign state on the exchange of information, as well as the minimum required rating of one of the rating agencies. The minimum rating and the list of rating agencies are established by the normative legal act of the authorized body [28].

Article 60-1 of the Law of the Republic of Kazakhstan "On Banks and Banking Activity in the Republic of Kazakhstan" provides for features of voluntary reorganization of banks inherent just for the form of bank acquisition, however it is called "Features of Voluntary Reorganization of Banks". This demonstrates the imperfection of legal technique.

As it was mentioned above, the National Bank of the Republic of Kazakhstan may refuse to issue a permit for the voluntary reorganization of a bank (bank holding) under any of the grounds listed in Article 60-1 of the Law of the Republic of Kazakhstan "On Banks and Banking Activities of the Republic of Kazakhstan". These grounds are:

a) lack of appropriate decisions of the supreme bodies of reorganized banks (bank holdings);

b) violation as a result of the proposed reorganization of the interests of the depositors;

c) violation of prudential standards and other binding norms and limits as a result of the expected reorganization;

d) violation of the requirements of the legislation of the Republic of Kazakhstan in the field of competition protection as a result of the expected reorganization.

According to the Program for Improvement of Financial Stability of the Banking Sector of the Republic of Kazakhstan realized by the National Bank of Kazakhstan, the use of mechanisms, which include, inter alia, bank reorganization procedures are regulated by law, but there is a high probability that the volume of transferred assets will not cover the obligations of the troubled bank. In this regard, the President of the country in his Address to the Nation in 2018 emphasizes that the owners of banks should bear economic responsibility recognizing the losses. The withdrawal of funds from banks by shareholders in favor of affiliated companies and individuals must be recognized as a serious crime. Thus, financial stability in the banking sector is supposed to be achieved through increasing the responsibility of bank shareholders.

The current legislation regulates stipulates responsibility of shareholders in the form of its restriction. According to cl. 1 of Article 81 of the Civil Code of the Republic of Kazakhstan, the shareholders of the joint-stock company are not liable for its obligations and bear the risk of losses related to the activities of the company, within the value of their shares, except for cases stipulated by legislative acts. Clause 2 of Article 3 of the Law of the Republic of Kazakhstan "On Joint Stock Companies" contains the same provision, but also provides for the only exception in the legislation for the State Corporation "Government for Citizens", the subsidiary liability for the obligations of which is borne by the Government of the Republic of Kazakhstan.

Before giving any proposals for amendments to the current banking legislation of the Republic of Kazakhstan regarding the extension of the responsibility or liability limits of shareholders, it is necessary to consider the concept of economic responsibility, which is not provided by the current legislation. Nevertheless, the specialists engaged in the research of this concept express different points of view, and they state the controversial nature of this term.

The research devoted to this concept usually consider it as a component of social corporative responsibility (Carroll) [29]. At the same time, some studies of the corporate social responsibility (hereinafter referred to as "CSR") conducted within the framework of the EU Commission have gotten rid of the concept of economic responsibility in general. The EU Commission provides own definition to CSR as "the responsibility of enterprises for their impacts on society" (EU Commission 2011). This position is considered by some researchers as leading to the exclusion of the study of economic action and economic affairs as objects of responsibility or objects of research in CSR studies. John Maurice Clark, a leading institutional economist, argues that economic responsibility is essential for CSR models, since businesses are economic actors and they have to be economic responsible actors. John Maurice Clark's approach to this definition is that the foundation of the concept of economic responsibility from an economic perspective is economics of responsibility and it is a shaky foundation of economic responsibility in modern CSR's models [30]. Csaba Lentner, Krisztina Szegedi, Tibor Tatay refer to the famous study of social corporate responsibility by Archie Carroll, who introduced “the Pyramid of Corporate Social Responsibility”, the foundation of which is economic responsibility. Under their approach economic responsibility is the traditional reason for having banks, in other words to increase the owners’ welfare, ensure profitability and growth. One of the means of this is financial innovation. Since individual and corporate financial interests are constantly changing, banks create new opportunities for risk management and the effective mediation of resources. This involves developing new products, redefining the existing ones and creating new channels. Interaction with stakeholders has a crucial role in determining these new products [31]. Thus, we can argue that there is no unambiguous approach to the concept of economic responsibility in economic science. Meanwhile, regulation of economic relations finds its consolidation in legal norms and, therefore, although the legislation does not provide for the term "economic responsibility", nevertheless responsibility for violations in the sphere of economic relations is provided for in various branches of law.

Speaking about the expansion of the limits of the liability of bank shareholders on the organization's obligations, we would like to note that at the beginning of the 18th century, the shareholder's liability for the debts of the joint-stock company established by him was full, but as a consequence of the industrial revolution and the growing desire of the shareholders of production companies to obtain a limited liability, it had became a general rule by 1850, and almost in all states. Only a few states left the rule of full liability in their legislation [32]. At the same time, currently in the countries of the Anglo-Saxon system of law there is a doctrine of judicial origin known as "piercing/lifting the corporate veil", providing for the possibility of imposing liability (in certain situations) directly to the persons controlling the company for its obligations. Under the actual UK law a company is a “limited company” if the liability of its members is limited by its constitution. It may be limited by shares or limited by guarantee. (Companies Act 2006) [33]. However, there are very few legislative exclusions from this rule. For instance, the insolvency law provides for some cases when a company director or other responsible person may be forced by a court to make a contribution to the company's assets as a punishment for its wrongful acts (Insolvency Act 1986, §§ 212-214). This rule was stipulated due to the often used practices of applying the limited liability of the organization as the legal way to avoid liability and cheat creditors. The supporter of this doctrine in Russia is Anton Ivanov, the Chairman of the Supreme Arbitration Court of the Russian Federation, who believes that its implementation "into Russian arbitration proceedings will be one more step ... to the social responsibility of business". Moreover, a certain judicial practice has already appeared in this field in Russia [34]. Thus, this initiative has a real practice of application.

The Law of the Republic of Kazakhstan "On Joint-Stock Company" contains the norm concerning the right of a shareholder owning five and more percent of the voting shares of the company alone or in aggregate with other shareholders to apply to the judicial authorities on its own behalf in the cases provided for in Articles 63 and 74 of this Law with a requirement to compensate company losses by the company's officials, as well as to demand return all the profit (income) obtained by officials and (or) their affiliated

entities as a result of taking decisions on the conclusion (proposal for conclusion) of major transactions and (or) transactions in which there was an interest (sub-cl.7) art.14). This provision can be considered as a possibility provided by the current law to compensate losses and provide financial stability of a bank through the mechanism for bringing liability of officials of the joint-stock company.

Applying the fundamentals of the above-mentioned economic responsibility theories and the "piercing/lifting the corporate veil" doctrine, and taking into account the indicated directions for the development of legislation by the President in the context of establishing the economic responsibility of shareholders, it seems possible to consider the issue of introducing subsidiary liability of shareholders for the bank's obligations, similar to the liability of the Government of the Republic of Kazakhstan for the obligations of the State Corporation "Government for Citizens".

We believe that the list of responsibilities of shareholders provided by Article 15 of the Law of the Republic of Kazakhstan "On Joint Stock Companies" has to be expanded in such fields as: bank management for the interests and good of the organization, the liability established by the laws of the Republic of Kazakhstan for the damage caused by actions and (or) inaction of the shareholders, and for losses incurred by the bank, as well as ensuring proper control over the management of the bank.

Conclusions. The study of certain problems of legal regulation of bank mergers and acquisitions in the light of ensuring the financial stability of the banking sector has revealed the need to bring the current legislation of the Republic of Kazakhstan regulating relations in the sphere of bank reorganization in accordance with the Constitution of the Republic of Kazakhstan and excluding inconsistencies in legislative acts in this field.

The study found that mergers and acquisitions deals can be used in the framework of the measures aimed to ensure the stability of the banking sector of the Republic stipulated by the Program for Improvement of Financial Stability of the Banking Sector, approved by the resolution of the Board of the National Bank of the Republic of Kazakhstan dated 30.06.2017, however, using these mechanisms for resolving bank insolvency can be economically unjustified in case of exceeding the liabilities of the problem bank over the volume of assets transferred.

The article justifies that the law is a form of expression and regulation of existing economic relations (i.e. economic relations are the contents, and the law is the form of their fixing and regulation) and, therefore, achieving the desired effect from the selected measures for the financial stabilization of the banking sector directly depends on what regulation these economic measures and economic relations have received in the current legislation. In this regard, in order to ensure the financial stability of the banking sector through increasing the responsibility of bank shareholders, it is proposed to consider the issue of stipulating in the legislation of the Republic the subsidiary liability of shareholders for the obligations of the bank, as well as to expand the list of responsibilities of shareholders directed at improvement of bank management, control over the bodies managing the bank and bearing responsibility by the officials of these bodies. This will contribute to the formation of a responsible and competent approach in the management of banks and their transactions, including mergers and acquisitions, as well as ensuring the stability of their financial situation.

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ҚАЗАҚСТАН РЕСПУБЛИКАСЫНЫҢ БАНК СЕКТОРЫНДА БІРІГУ ЖӘНЕ ЖҰТЫЛУ БОЙЫНША КЕЛІСІМДЕРДІ ҚҰҚЫҚТЫҚ РЕТТЕУДІҢ КЕЙБІР МӘСЕЛЕЛЕРІ

Аннотация. Мақала қазақстан республикасындағы бірігу және жұтылу бойынша келісімдерді құқықтық реттеудің жеке мәселелерін ғылымдағы банктік бірігу және жұтылу түсініктері, ерекшеліктері және мотивтеріне қатысты теориялық дүниетаным және қолданыстағы заңнаманы талдау негізінде қарауға арналған. Жиі-

рек, авторлар қазақстан республикасының азаматтық кодексінің қазақстан республикасының конституциясын қайта ұйымдастыру нысаны бойынша ережелер арасындағы сәйкессіздік мәселесіне, сонымен қатар банктерді қайта ұйымдастыру саласында қатынастарды реттейтін құқықтық негіздің заңнамасымен реттеуде бірыңғай әдістеменің жоқтығына көңіл бөлуде. Осы мәселелерді зерттеу өзектілігі еш күмән тудырмайды, себебі аталған аспектілері қазақстан республикасының президентімен 2017 және 2018 жж. Жолдауларындағы мемлекеттік қаржылық секторын «қайта қосу» бойынша міндеттері, мемлекетте іске асырылатын қазақстан дамуының 2025 жылға дейін стратегиялық жоспарының ережелері және қазақстанның ұлттық банкімен жүзеге асырылатын республиканың банктік сектордың қаржылық тұрақтылығын арттыру бағдарламасы тұрғысынан талданады. Аталған мәселелерді зерттеу негізінде авторлармен берілген саладағы қолданыстағы заңнаманы жетілдіру ұсынымдары ұсынылады. Сонымен қатар мақалада банк меншік иелерінің экономикалық жауапкершілігін реттеу мәселелері талқыланады, себебі аталған мәселелерді әрекет ететін құқықпен реттеуден банктердің қаржылық жағдайы және бірігу және жұтылу бойынша келісімдерді жүзеге асыруды қоса алғанда оларды басқару мақсаттарына қол жеткізу тікелей байланысты болады.

Түйін сөздер: банк, банк секторы, қазақстан республикасының банк секторының тұрақтылығы, банктердің бірігу және жұтылу бойынша келісімдер, банктерді қайта ұйымдастыруы, банктердің дәрменсіздігі, банктердің бірігу және жұтылу бойынша келісімдердің артықшылықтары, банк акционерлерінің экономикалық жауапкершілігі, қазақстан республикасының банктік заңнамасы.

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НЕКОТОРЫЕ ПРОБЛЕМЫ ПРАВОВОГО РЕГУЛИРОВАНИЯ СДЕЛОК ПО СЛИЯНИЮ И ПОГЛОЩЕНИЮ В БАНКОВСКОМ СЕКТОРЕ РЕСПУБЛИКИ КАЗАХСТАН

Аннотация. Статья посвящена рассмотрению отдельных проблем правового регулирования сделок по слиянию и поглощению в банковском секторе республики казахстан на основе существующих в науке теоретических воззрений относительно понятия, особенностей и мотивов банковских слияний и поглощений и анализа действующего законодательства. В частности, авторами обращается внимание на проблему несоответствия между положением гражданского кодекса республики казахстан о формах реорганизации конституции республики казахстан, а также отсутствию единого подхода в регламентировании законодательством правовой основы, регулирующей отношения в сфере реорганизации банков. Актуальность исследования этих вопросов не вызывает сомнений, так как указанные аспекты анализируются с позиции высказанной президентом республики казахстан задачи по "перезагрузке" финансового сектора страны в посланиях 2017 и 2018 гг., положений реализуемых в государстве стратегического плана развития казахстана до 2025 года и программы повышения финансовой устойчивости банковского сектора республики осуществляемой национальным банком казахстана. На основе изучения названных проблем авторами предлагаются рекомендации совершенствования действующего законодательства в данной сфере. Также в статье затрагиваются вопросы регулирования экономической ответственности собственников банков, так как от регламентирования указанных вопросов действующим правом напрямую зависит финансовое положение банков и достижение целей управления ими, включая осуществления сделок по слиянию и поглощению.

Ключевые слова: банк, банковский сектор, устойчивость банковского сектора республики казахстан, сделки по слиянию и поглощению банков, реорганизация банка, несостоятельность банков, преимущества банковских сделок по слиянию и поглощению, экономическая ответственность акционеров банка, банковское законодательство республики казахстан.

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BILINGUIAL EDUCATION OF CHILDREN IN THE FRAMES OF CROSSCULTURAL APPROACH

Abstract. Comparative studying of a monolinguist and bilingualism contains to the traditional understanding of what is a crucial problem of human development: submission of biological processes psychosocial, i.e., ability to subordinate consciously biologically induced behavior consciously directed activity. Some researchers with evidence show that in the period of the childhood information of conscious self-control the dialectics of communication with others and with itself is central. The process of differentiation and reintegration of a live organism transforms what in the childhood was the social regulated, interpersonal operations, changing their structure, functions, and maintenance in individual and adjustable intellectual operations, bringing in them personal coloring. L. Vygotsky claimed that language is central in this transformation, carrying out both interpersonal communicative function, and the self-regulating intrapersonal. L. Vygotsky also claimed that the language which is initially acquired by the child is not some tiny version of grammar which is independent of a context; instead this particular means of communication created by initial communications between parents and the child. In a child development language is an integral part of processes of differentiation and reintegration into new situational forms; the created forms include "others," "language for others," "themselves," "language for themselves," etc. Language is a process and a product. During joint activity between parents and the child, these phenomena gain unique sense and character in the image. Individual consciousness in the basis is, thus, a product of their joint activity, the structure of functions, contents which the indirect speech act.

Keywords: language, consciousness, development, bilingualism, ontogenesis, HMF.

Bilingual education of children is a common goal for parents, educators and researchers. Parents and teachers “want to do it right” on the basis of practical necessity. Scientists also want to understand bilingualism from the standpoint of general principles of human development to complete theoretical bases. In this article the interests of three groups are being discussed based on the fruitful works by L. Vygotsky and A. Luria.

A comparative study of monolingualism and bilingualism contains a challenge for traditional understanding of what is the core task of human development. This is believed to be the subordination of biological processes to psychosocial ones which means an ability to deliberately subordinate biologically induced behavior to consciously directed activity. In philosophical literature consciously directed activity is referred to as “a will”, however in psychological literature it is defined as “a conscious self-regulation”. In our work we focus on a special definition.

A number of studies clearly show that during childhood the communication dialogue with others and with oneself is the core of conscious self-regulation [1-3]. The guide for this study is the fundamental law by Vygotsky which says all higher mental functions (speech, thinking, memory, perception, self-control and others) appear inter-psychically and in ontogeny process they are differentiated and reintegrated by

individual's conscious activity, thus becoming intra-psychic phenomenon. The process of differentiation and reintegration of a living organism transforms from socially regulated and interpersonal operations of childhood period, changing their structure, functions and content into individually regulated mental operations of an adulthood, introducing personal coloring in them. L. Vygotsky argued that language is a core element in this transformation which performs both interpersonal communicative function and self-regulating intrapersonal functions. L. Vygotsky also argued that language initially assimilated by a child is not a miniature version of grammar that is independent of its context. But rather it is a special communication tool created through the initial connections between parents and their child.

Therefore, Vygotsky's understanding of a language is based on the fact that it initially functions as an emotional, preverbal psychosocial image. In a child development a language is an integral part of differentiation and reintegration processes in new situations. Such new situations include the following forms as "others", "language for others", "myself", "a language for myself" and so on. In this way a language is both a process and a product. In the course of parents-children joint activity these phenomena acquire a special meaning and image features. Therefore individual consciousness in its essence is the product of joint activity and the structure of functions and content which are mediated by a speech act [4].

Nevertheless being unstable linguistic means are always present in sensations and actions manifesting themselves precisely in these mutual ties. Parents always adapt them to the circumstances and overall development of a child and children adapt to them in order to understand what is happening around. Language "stands out" for a child and parents fixing their attention on this means of communication. This ontogenetically primary language acts as an interpersonal gesture communication which is fully functional before the process of differentiation and reintegration changes it into a means which plays both a social role (directed at others) and a personal role (self-directed). Ultimately, speech is a psychosocial means of communication and conscious self-regulation for all.

According to L. Vygotsky "personality" and "language" appear as interrelated parts of the same cognitive structures. They are not separate features of consciousness as rationalist thinkers have proclaimed. They cannot be described by the theory of social learning which treats them as a mirror image of initial social relations. As in the case of all higher mental functions, personality and language evolve from social relations but not as previous factor. Throughout its development language and personality are determined by both social environment and individuality. Consciousness is a perceived being and not a mechanical reflection of social data as such. In addition, according to Vygotsky, even in adulthood language and personality never completely differ. The nature of these phenomena is more evident in early stages of ontogenesis when it means to act. Nevertheless, speaking and acting remain interconnected parts of psychosocial unity even in adulthood although they acquire a certain functional autonomy in the process of normal development.

Placing language into psychosocial dynamics between parents and a child, Vygotsky also avoided the popular but naive view of language as a culture transmitter which is independent of psychosocial realities. Language is a tool for practical solution of certain tasks. And this idea is most clearly traced in the bilingual process of raising children. But first let us place the issue of bilingualism in theoretical and research context returning to the works of Vygotsky and Luria.

When language is equated with grammar and grammar is equated with communication as some parents and teachers do it means that they misunderstand the process-productive nature of language. Although the development of such entities as "syntax" and "phonetics" is of theoretical importance especially for teachers of linguistics and grammar, an approach that understands language from the viewpoint of various pragmatic roles that it plays is more acceptable for our purposes. This functional approach is very popular today [5, 6] because it allows to trace both thinking formation and language communicative roles simultaneously as dynamically related processes. Traditionally, language and personality were studied as unrelated entities. According to A. Luria and other modern scholars, language, personality and interpersonal relations constitute a single unity. The main thing, according to A. Luria's point of view, is that communication tools acquisition, including gestures, vocabulary, syntax, discursive strategy and psychosocial values provides a person with an opportunity to become a speaking, thinking and self-regulating personality who is able to communicate through external speech with others and with himself. The gradual acquisition and ability to manage communicative means of social environment enables a child to consciously regulate his external and internal cognitive actions in the end. It is not grammar acquisition

but rather the mastery of functional or pragmatic roles that language plays, provides a child with an opportunity to transform himself into a self-controlled personality.

A. Luria's research suggests that child's ability development to displace biological actions by conscious self-regulation depends on mastering various functions that language does. Two main points should be noted especially. Firstly, A. Luria does not refer to mastery of linguistic functions as mature speech literacy. He means perfect mastering of basic cognitive infrastructure that occurs when using a specific instrument called a language. The process of acquiring basic cognitive infrastructure occurs as a sequence of steps from joint parent-child regulations to its self-improvement. The ability of a child to consciously use this cognitive system does not mean that he has already mastered all the language capabilities. This means that since a child can now control basic cognitive infrastructure, that is a mental structure underlying it, he is able to consciously play an active role in mastering knowledge about things properties. Mastering cognitive infrastructure allows a child to consciously understand things for himself.

Another important assumption by A. Luria is that mature forms of cognitive development are "dependent" on mastering various roles that a language plays. According to A. Luria, normal cognitive growth is dependent on parents' awareness which with the help of communication tools such as verbal, gestural, tactile, leads a child through well-defined areas of immediate development. Refusal to use psychosocial context of this kind leads to a slow acquisition of basic cognitive infrastructure. Because of communication lack between parents and children these days which leads to limited mastering of basic infrastructure, cognitive future of such children becomes predictable but in a rather gloomy light.

In order to thoroughly study self-regulation nature the studies of children with developmental delays is supplemented, especially those who acquire two languages at birth and have a well-developed communicative orientation. According to some researchers [8, 9], bilingualism leads to negative or neutral consequences in cognitive development. Other researchers suggest that bilingualistic means of speech are cognitively developing. The central issue of this study is to elicit positivity, neutrality or negativity of bilingual education influence on child's cognitive development. In order to answer this question the description of roles by A. Luria should be considered. These functions are played by language in the development of child's cognitive activity.

Four basic functions of language. Although there are hundreds of pragmatic functions of a language used by adults in various psychosocial contexts, in this work we are only interested in its cognitive-developing function. According to A. Luria (1959) there are four fundamental functions of a language and their acquisition generates cognitive infrastructure which carries out conscious self-control over all higher mental processes. In the course of their acquisition the following functions are distinguished:

1. Communicative function which allows a person to mediate reality with other people or with himself. The acquisition of this function provides an opportunity to convey their communicative intentions and to be understandable by others.

2. Reference function which allows a person to use various semiotic signs to attract his or someone else's attention to this phenomenon. The acquisition of this function gives him the opportunity to understand those objects, ideas, feelings, opinions that can be defined by words, gestures, discursive style, cultural customs, a whole series of semiotic forms and many others.

3. Generalizing function which allows a person to abstract, interpret, conceptualize and classify his experience. The acquisition of this function provides him with an opportunity to realize his past experience to interpret the current situation and generalize it in new situations.

4. Self-regulating function which allows a person to consciously control his cognitive processes. The acquisition of this function enables an individual to plan his present and future activities, make a speech for himself and others, get involved into an internal dialogue with a goal of self-regulation.

A. Luria discovered that when a child first uses a communicative function and finds out that certain intentions can be transferred to others, he starts communicating through cries and gestures, eventually using a whole set of semiotic means. But a child does not use communicative function independently from other functions. Instead, a child at this age uses a primitive, undifferentiated system that is closely related to external social experience use. This means this is related to whom he communicates, to a voice intonation, to gestures, to a child's acting place, to the context of message, to his emotional dynamics of a psychosocial image. A. Luria notes that the main language functions are acquired similarly to any other

higher mental functions. Thus they must be differentiated from primitive unity and reintegrated into a mature unity [10].

In order to facilitate this process, parents and other educators should involve a child of pre-verbal age into a world of touches, sounds and gestures which doesn't have any original separation of functions. The main concern for parents and educators should be upbringing of a mature, self-regulating system where basic functions, while remaining parts of the whole, are simultaneously clearly differentiated, developing child's conscious use of each function independently. A. Luria notes that there is continuity in transition process from immature to mature state with invariance of initial features arising at each stage of its evolution.

Characteristics of four main stages of self-regulation. The heuristic thrust of A. Luria's research is expressed in a following proposition that transition of cognitive control from external social experience (i.e. verbal instructions from adults) to internal psychological control (i.e. voluntary control through self-instruction) is a necessary condition for all higher cognitive processes.

Based on ethnographic studies, clinical observations and control experiments, A. Luria describes four stages of transition from an externally controlled system to a self-regulating system. Each new stage is associated with strengthening of conscious control over language functions. He suggests the main age parameters of normal mastery of each stage and describes their characteristics with a great accuracy in the following manner:

1. At the age of 10-24 months old the reference and communicative function is more developed than generalizing and self-regulating. Simple instructions encourage a child to take an appropriate action. An automatically preset action outweighs the effect of opposing verbal instructions. If there is a short period of time between instruction and its execution then a memory trace to verbal instructions tends to be erased.

2. At the age of 30-36 months old an active manipulation of communicative and reference functions and some use of generalizing and controlling functions are being developed. A large degree of general conscious control can inhibit motor activity although by adults' encouragement a child starts responding appropriately to an indication that is semantically more complex than mere motivation. A verbal-indicative role in this case is fulfilled not by one word but by connections and synthesis of words entering into utterance sphere.

3. At the age of 40-54 months old a child controls his communicative and reference functions and is able to generalize rather complicated semantic and logical problems with the help of a self-dialog provided that it occurs aloud. At the same time, a silent self-dialogue leads to arbitrary self-directed behavior.

4. At the age of 60-84 months old a child completely differentiates and reintegrates all four language functions enabling conscious self-regulation. A child can now be productively involved into a silent self-dialogue and is able to silently plan and anticipate future actions. His behavior is now consistent with his self-dialogue aloud and inside.

Discovery A. Luria. A. Luria's discovery suggests that communicative and reference functions acquisition, leading ultimately to meaningful speech development, occurs faster than child's self-control development over their own motor apparatus. Therefore, it is easier for a toddler to respond verbally to an instruction than to consciously perform a simple motor action. And at the same time it's important for parents and teachers because the faster communicative and reference functions development is, the faster general cognitive control is achieved. By writing down verbal instructions of an adult to a child and the children's answers, A. Luria checked his assumptions and received the following results:

1. A child on his first development stage which is at the age of approximately one, the reference function is manifested almost on a par with the communicative function. A young toddler discovers that things have names and that they can be referenced from his communication with his parents. Although a child knows object names which are lying on the floor in front of him, however, when an adult asks to give him a certain object, this child doesn't fetch the right object but the one closest or the one that grasps his attention. Although the adult's instruction causes motor action, the result is likely to be arbitrary. In another experiment of this type, a child was given a rubber ball with the indication "to squeeze it whenever light is lit" and "stop compressing when the light is off". At the first stage, a child who once started to squeeze does not pay attention to the light any further and it is quite difficult for an experimenter to make him stop even when the light is off.

At the first action stage a child can be directed by an adult but the results are likely to be unpredictable. According to A. Luria, this is because a child at this stage does not have internal controls. Self-regulation through verbal means, although observed in a latent form at this early stage, nevertheless manifests itself in a clearly defined form starting from 4th stage. Cognitive control at this stage is inter-psychic.

2. A child on his second development stage, where he uses more fully internalized communicative and reference functions, begins to distinguish between generalization and self-regulation functions and also acquires some self-regulation function. Such child, about three years old, is put in front of two light bulbs, red and green and he also holds a ball in his hands. This time a child is given an instruction "to squeeze when the red light comes out" and "do not squeeze when the green light comes out". For a child on the second stage, the result is adequate only if an adult gives instructions. If a child instructs himself quietly or silently he squeezes the ball in response to both instructions "to squeeze" and "do not squeeze". The very act of speaking leads to his motor systems activation which means that biology has yet to be subordinated to psychosocial control which is conscious self-regulation. On the one hand, it is easier for such a child to control his speech than to self-regulate his cognitive-motor system. On the other hand, the obvious reason for this, according to A. Luria, is that generalizing and self-regulating functions are not yet completely differentiated from the primitive system and reintegrated into a more mature system. Therefore, cognitive control at this stage is partly inter-psychic and partly intra-psychic.

3. A child on the third stage, at the age of about 4 years old, differentiates and reintegrates four basic functions. There is less contradiction between what will be done and what is done. External speech and behavior are now more consistent. Such child has a better control over his own cognitive processes. Nevertheless, it is important for parents and teachers especially who are inclined to silence a child who is always talking to himself, to keep in mind that a child involved into an external self-talk gives directions aloud, directing his own actions. Suppression of a child's statements leads to arbitrary actions. Constant warnings like "stop talking to yourself" can lead to a delay in mastering conscious self-regulation[7]. The ability to consciously control one's cognitive processes and actions represents a new direction of development within the system, even if self-regulation has not yet led to the development of internal speech. Compared with the second stage of development, the child, who is in the third stage, has already acquired a sufficiently conscious control.

4. A child on the fourth stage, approximately at the age of 6 years, the child responds appropriately to the instructions of others and to self-instruction. He can perform tasks of complex semantic and logical content, solving these problems through a silent dialogue. The tendency to conduct a self-dialogue aloud remains for several more years, but when it is necessary, he can solve problems silently. A. Luria describes such a child as having already mastered four language functions and creating his own personality.

The movement from the primitive undifferentiated system of cognition and communication to mature differentiated and integrated does not mean that a child is now mature in all respects or completely self-motivated. It only means that a child now has a cognitive infrastructure that allows him to consciously deal with the world of experience. Parents, educators, teachers of all kinds should still teach a child. A child in the fourth stage has a cognitive system that provides him with an opportunity to meet his teachers but they still need to carefully guide a child through his nearest development zone. And in the process of acquiring cognitive infrastructure and in subsequent education, educators should be aware of indirect nature of a child's mental growth.

However, not all researchers accept the view by L. Vygotsky and A. Luria on the issues of language and consciousness. There are both obvious support [18, 21] and an obvious negation [8]. It is important to say that we are confident in the heuristic value of the theses and the research methods by L. Vygotsky and A. Luria.

Principle of M. Grammont "one parent – one language". There are many ways of raising children's bilingual ability such as learning a second language after mastering their mother tongue's grammar structure as well as early diving or later immersion and many others. Each of these methods is rational and each of them is used by parents and teachers as well as by researchers everywhere. Excellent examples of this sometimes confusing content of the study can be found in works [10, 11]. Our attention is drawn to one type of bilingual experience when a child is brought up in the environment of two languages at the same time. There is a huge amount of researches devoted to the "one parent – one language" approach and at the same time to bilingual education of children. We consider the best works in this sphere.

It seems that a French linguist D. Ronier was the first one to describe linguistic results of this approach. In 1908, when his German-speaking wife was pregnant, they decided to educate their future child in Franco-German bilingualism. They received the following advice from their colleague M. Grammont who observed them and said "Do not teach a child anything. It is enough to talk to him in one of the languages he needs to learn as it becomes necessary. The point is that each language should be personified in different person. Thus you should always speak to him in French and his mother only in German and never change roles. Only in this case a child will start speaking in two languages without noticing it and without putting much effort" [12, 13].

This instruction was carried out by D. Ronier with precision. The results were exactly the same as predicted by M. Grammont. The child, his name was Louis, distinguished two languages by the age of two. For example, he checked words with French and German pronunciation until he could determine that "that's how Papa says and this is how Mom says". This testing period rarely lasted longer than a week. And as soon as the child distinguished one word from another he did not have any further doubts about their correct pronunciation.

In pronunciation the boy had the following achievements: at the age of 3 years 5 months, Louis accurately pronounced the phonemes of both languages. However, according to the monolinguistic French and German norms this is the lowest level of the norm. In his lexical development, as reported by D. Ronier, Louis had a great propensity for German probably because he communicated with his mother more. However, this imbalance existed for a short time. At the age of 3 years 8 months, Louis deliberately studied words and utterances in both languages simultaneously. If he knew a word or phrase in only one language, he was actively trying to find its equivalent in the other one. After this period, there was no longer an obvious confusion of two languages. Louis spoke both languages as native by the age of 3 years 10 months.

D. Ronier's observations were confirmed by numerous studies [4] and others. For example, in a classical study V. Leopold (1939-1949) observed his daughter Hildegard's development who was brought up in German and English according to Gramont's principle "one parent - one language". An amazing discovery was made which is a weakening of the connection between phonetics of a word and its meaning. This phenomenon is rarely noticed in monolinguistic children of this age. From the age of 2 years 11 months Hildegard could tell the same story in both languages. Like Louis, by the age of 3 years 7 months Hildegard easily accepted new names for objects and events already known in one language and was actively looking for an equivalent in the other language. Another interesting results were carried out by Imedadze [14] who observed his daughter Natasha's language development, who was also brought up in two language environment Russian and Georgian according to M. Grammont's principle. Natasha's achievements were similar to what happened to Louis and Hildegard. But some following differences were observed that the conscious search for equivalent words and phrases in another language that D. Ronnie and V. Leopold observed in the third quarter of the third year, N. Imadadze stated in the first quarter of the third year. These differences are explained by the difference in a research criteria choice. Both linguists Ronnie and Leopold paid attention to linguistic criterion and a psychologist N. Imedadze looked into to cognitive criterion.

Notwithstanding the problem of criteria, from observations of Louis, Hildegard and Natasha when a child is brought up according to M. Grammont's principle "one parent - one language" then following three conclusions can be drawn as follows 1) two languages are acquired in a similar manner and act as one; 2) there is no explicit confusion of these two languages at the level of ordinary usage when differentiation of primitive communicative system and reintegration into two different languages takes place and 3) from a very young age these children acquire a desire to use all possible functions of a language.

The process is identical for a "monolingual" and "bilingual" child. But, of course, the conditions of representation differ which create different self-regulating speech conventions. Ultimately, as Vygotsky argued, the use of language is an integral part of psychosocial context.

The tools structure used for internal self-dialogue remains an important research issue. However, we found that external self-dialogue in bilingual children is clearly differentiated into two different types of speaking at the third stage. This discovery suggests the dispute between D. Dornier, V. Leopold and M. Imadadze as to when the two languages are differentiated cannot be solved out solely on the basis of linguistic observation results. Recognizing the difference between Asian and Indo-European languages

combinations used in this study it should be noted that the discontinuity and continuity of phonetic and syntactic development are similar to those found by D. Rognier, V. Leopold, M. Imadadze and others. However, regardless of age and gender differences we could not find among those bilingually educated children those who would clearly differentiate linguistic means into two types of communication with other people at stage 2 that is when others would direct self- regulation. We also did not find a single child who would have done this unconsciously while being at stage 3 that is when self-dialogue is aloud aimed at self-regulation. It follows that a more complete evaluation of these dynamics occurs due to consideration of a language as a process and a result.

The processes that facilitate cognitive development acceleration are described elsewhere. In this study, we found out that bilingual values are not negative or neutral. Rather in a development process they play a significant role as cognitive accelerators.

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КӨП ТІЛДІК ТӘРБИЕ БАРЫСЫНДАҒЫ КРОСС-МӘДЕНИЕТТІЛІК ЗЕРТТЕУЛЕР

Аннотация. Монолингвизмді және билингвизмді салыстырмалы зерттеу адам дамуының өзекті мәселесі екендігін түсіндіруді қажет етеді: биологиялық процестерді психоәлеуметтік бағдарға бағындыру, яғни саналы түрде бағдарланған қызметтің биологиялық тұрғыдан туындаған әрекетін саналы түрде бағындыру мүмкіндігі. Көптеген зерттеулер нәтижесі балалық кезеңнің саналы түрде өзін-өзі қалыптастырудың ең басты

компоненті бұл өзара қарым-қатынас пен және өз-өзімен диалог құрудан басталады деп анықтаған болатын. Дифференциациялық және реинтеграциялық тірі организмдердің өзгеруі бұл балалық кезеңнің әлеуметтік-өзгермелі тұлғааралық қатынастар, яғни оның құрамын,функциясы мен индивидуалды өзгермелі ақыл-ой деңгейінің құрамына өзіндік ерекшелік беру. Л. С. Выготскийдің пайымдауынша, тіл – бұл өзгерістердің орталық негізі ретінде коммуникативті қарым-қатынас функциясы мен қатар өзін-өзі басқаратын ішкі «мені» болып есептеледі. Сонымен қатар Л. Выготскийдің ойынша тілді баланың алғаш меңгеруі бұл ең алдымен, ана мен бала арасындағы қарым-қатынас ретінде танылады дей келе, ал бұл алғаш грамматикалық құрылымның игеруіне еш қатынасы жоқ деп түсіндіреді. Баланы дамыту кезінде тіл жаңа жағдайлық нысандарға дифференциациялау және реинтеграция процесінің ажырамас бөлігі болып табылады: формасы бар нысандар «басқалар», «басқалар үшін тіл», «өзің», «өзін-өзі үшін тіл» және т.б. болып табылады. Тіл – бұл процесс және өнім. Ата-аналар мен бала арасындағы бірлескен қызмет барысында бұл құбылыстар бейнелеудің ерекше мағынасы мен сипатын алады. Жеке мағынасы, өз мәні бойынша бірлескен қызметтің нәтижесі, сөйлеу актісі арқылы жүзеге асырылатын функциялардың құрылымы мазмұны болып табылады.

Түйін сөздер: тіл, сана, даму, қос тілділік, онтогенез,жоғары ақыл-ой функциялары.

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КРОСС-КУЛЬТУРНОЕ ИССЛЕДОВАНИЕ ПРОБЛЕМЫ ПОЛИЯЗЫЧНОГО ВОСПИТАНИЯ

Аннотация. Сравнительное изучение монолингвизма и билингвизма содержит вызов традиционному пониманию того, что является стержневой проблемой человеческого развития: подчинение биологических процессов психосоциальным, т.е. способность сознательно подчинять биологически побуждаемое поведение сознательно направляемой деятельностью. Ряд исследований с очевидностью показывает, что в период детства в становлении сознательной саморегуляции центральной является диалектика общения с другими и с самим собой. Процесс дифференциации и реинтеграции живого организма трансформирует то, что в детстве было социально-регулированными, межличностными операциями, изменяя их структуру, функции и содержание в индивидуально-регулируемые умственные операции, внося в них личностную окраску. Л. Выготский утверждал, что язык является центральным в этой трансформации, выполняя как межличностную коммуникативную функцию, так и саморегулирующую внутриличностную. Л. Выготский также утверждал, что язык, первоначально усваиваемый ребенком, не является некоторой миниатюрной версией грамматики, которая независима от контекста; скорее это специальное средство общения, созданное путем первоначальных связей между родителями и ребенком. В развитии ребенка язык является неотъемлемой частью процессов дифференциации и реинтеграции в новые ситуационные формы; сформированные формы включают "других", "язык для других", "себя", "язык для себя" и т.д. Язык является, таким образом, процессом и продуктом. В ходе совместной деятельности между родителями и ребенком данные феномены приобретают особый смысл и характер в образе. Индивидуальное сознание в своей основе является, таким образом, продуктом их совместной деятельности, структуры функций, содержания, которые опосредствованы речевым актом.

Ключевые слова: язык, сознание, развитие, билингвизм, онтогенез, ВПФ.

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INTELLECTUAL POTENTIAL OF SELF-EMPLOYMENT AS THE SIGN OF THE LABOR MARKET

Abstract. The most important aspect of innovative development is the human resource, since it is the implementation of innovative capacity that depends on the degree of staff readiness to implement innovation activities. Formation of the intellectual nation is the foundation of the labor market and the basis of the strategic objectives of Kazakhstan's development, and the main vectors are the qualitative education and support of the younger generation. According to reviews of foreign experts in the field of education, as well as indicators of the Olympiads, competitions, testing, etc., Kazakhstani youth has a high intellectual potential, which must be involved in the innovative segment of the labor market. In Kazakhstan, self-employment in urban areas is mainly represented by trade, hospitality and catering, but is much more characteristic of the rural population, but a well-trained specialist needs to help uncover talent and provide opportunities, following the example of foreign countries, in order to create conditions for skillful use of acquired knowledge and ensure the formation of competitive employees.

Keywords: intellectual potential, innovation, development, intellectual capital, economy.

Introduction. Social modernization requires a clear picture today of possible challenges and risks. And this should be understood not only by civil servants of all ranks, but also by the entire society, the entire people, for whom social modernization is carried out.

New production, new education and science systems, the development of the middle class, expansion of social guarantees will cause big changes in the minds of Kazakhstanis. And this will require timely adjustment of the entire system of social relations [1].

As foreign experience shows, the modernization process is accompanied by an increase in the activity of citizens, the disclosure of their creative potential. Therefore, the desire of people to defend their rights and freedoms more actively, the degree of self-organization of society will increase. The President stressed that the success of the modernization process largely depends on what principles it will be implemented and defined the basic principles.

1. The principle of evolution.

All changes in the social sphere should correspond to the level of development and opportunities of the Kazakh economy.

2. The principle of shared responsibility.

The state, private structures and society as a whole should share responsibility for the course and results of social modernization.

3. Principle of partnership participation.

All work should be based on close interaction of the state, business and citizens.

4. The principle of incentives.

The state creates conditions for Kazakhstanis to independently improve their quality of life.

5. The principle of professionalism.

All decisions must be thoroughly calculated, taken in consideration of scientifically worked expediency on the basis of studying the world experience.

Also, the Head of State identified five main priorities for social modernization in Kazakhstan:

1. Updating of the social legislation;

2. Forming an effective model of social and labor relations;

3. Kazakhstan standard of quality of life:

Social modernization in Kazakhstan should first of all be aimed at improving the quality of life of all Kazakhstanis, reducing the number of poor and preventing social exclusion.

4. Information and cultural component of social modernization;

5. An effective system of state management of social processes.

Methods of research. Abstraction is used to develop certain abstract concepts or categories, such as price, money, cheap, expensive, etc. At the same time, it is necessary to abstract from the secondary properties of the studied object, and the necessary properties should be selected. For example, to determine an economic category such as a commodity, it is necessary to disregard dimensions, weight, color and other characteristics that are not essential in this case, and at the same time fix the property that unites them: all these things are the products of labor intended for sale. The method of analysis and synthesis involves the study of socio-economic phenomena both in parts (analysis) and in general (synthesis).

Results. Innovation has long been a key competitive advantage for companies and countries, as well as a means of confronting global challenges, for example, social and environmental. In the conditions of aggravating international competition, they become an even more important factor in the struggle for Kazakhstan.

To date, intellectual value is the main component of the development of society, economic growth. Issues of the development of intellectual values occupy the main place in the advanced countries.

In the RK, there are annual internal R & D expenditures for the oblasts in mln. tenge, while the largest share is occupied by the city of Alamty, Astana and Mangistau Oblast.

Internal R & D expenditures by regions for 2013-2017, mln. tenge*

	2013	2014	2015	2016	2017
The Republic of Kazakhstan	61 672,7	66 347,6	69 302,9	66 600,1	68 884,2
Akmola	742,5	826,7	1 113,1	797,3	898,2
Aktobe	559,2	735,3	701,6	763,0	839,1
Almaty	1 117,4	804,2	1 053,6	941,7	871,1
Atyrau	1 880,0	1 885,7	2 415,9	2 753,3	3 637,7
West Kazakhstan	916,0	672,2	753,2	1 789,2	298,5
Zhambyl	1 077,0	1 322,3	689,7	456,3	1 024,3
Karaganda	3 407,7	4 048,9	3 597,8	4 279,1	3 488,1
Kostanay	445,3	574,0	599,2	562,1	1 176,5
Kyzylorda	213,3	266,0	235,6	613,6	506,3
Mangistau	5 095,4	6 160,7	7 694,5	7 800,4	8 043,5
South Kazakhstan	1 168,5	1 233,8	1 360,4	1 211,4	924,2
Pavlodar	335,3	322,9	320,8	390,4	335,7
North-Kazakhstan	209,6	236,3	224,4	180,2	185,2
East Kazakhstan	3 773,3	3 040,6	3 300,0	3 475,4	5 000,5
Astana	9 741,2	10 187,7	13 451,9	13 990,6	16 297,5
Almaty city	30 991,0	34 030,3	31 791,2	26 596,1	25 357,8

*Compiled by the author on the basis of the data of the COP of the Ministry of Education and Science of the Republic of Kazakhstan [2].

Let's consider the basic indicators of innovative activity of the enterprises on all types of innovations, in particular, the level of activity in the field of innovations (%).

In the sphere of state support of innovative business potential, special attention is paid to small and medium-sized businesses. The key support programs for innovation in small and medium-sized companies are the Small Business Innovation Research Program (SBIR) and the Small Business Technology Transfer Program (STTR). SBIR is a competition for small enterprises for R & D and R & D with a high potential for commercialization of their results at the expense of the federal budget. The US retains world leadership in the total costs of business and government for R & D, taking into account the PPP, R & D expenditures per researcher, venture investment, the number of think tanks, and the added value of science-intensive and high-tech industries. About a third of the world's best universities are in the United States. Expenditures on R & D among universities are also concentrated in several dozen universities. According to the National Science Foundation, in 2015, 20 leading universities accounted for 30% of university spending on R & D, and 100 universities – 80%. Of these 100 universities, two-thirds are private [3].

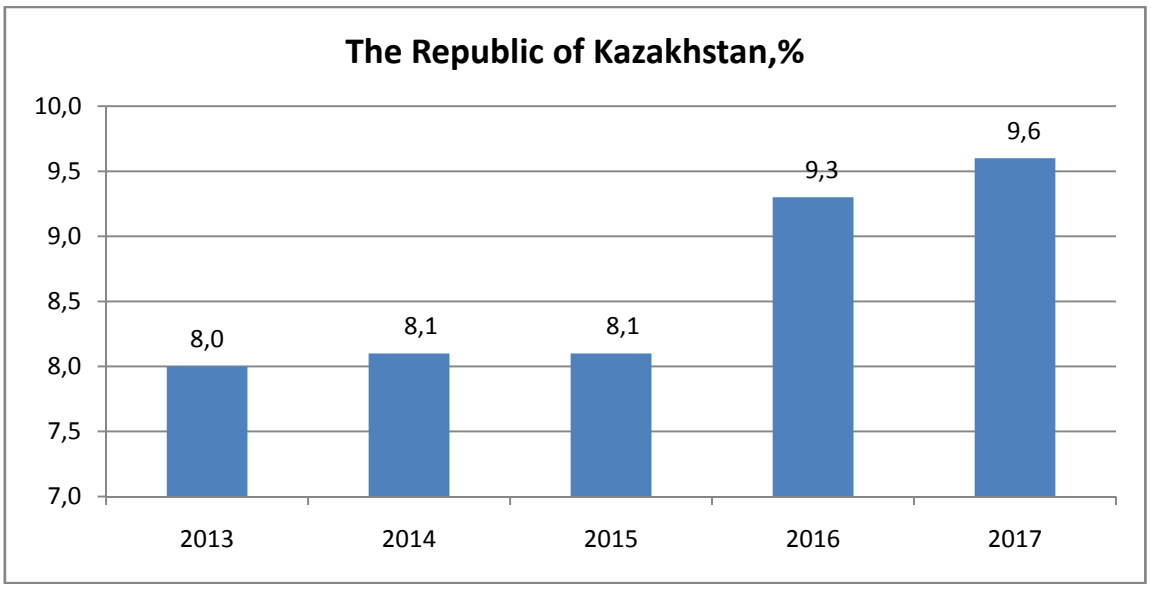

Figure 1 – Level of activity in the field of innovation, %.

Note. Compiled by the author on the basis of the data of the COP of the Ministry of Education and Science of the Republic of Kazakhstan [2].

In Kazakhstan, there is an increase in the level of activity in the field of innovation (%), Kazakhstan enterprises do not seek to engage in R & D independently, and are not inclined to invest in the creation of new products. In this sense, even those enterprises that are engaged in the modernization of production are relatively inert. They prefer turn-key projects, when technological solutions are already embodied in imported machinery and equipment [4].

In Kazakhstan, the share of domestic R & D expenditures from gross domestic product in% has a growth trend, but in the USA the share of government spending in GDP is about 35%, which is lower than in some European countries and higher than in many developing countries. For comparison, in Sweden the value of this indicator is about 50%, in Mexico – about 20%. At the same time, the share of government purchases in the US GDP in 2013 was 10.1% (in Sweden – 16.5%, in Mexico – 5.2%), of which federal government purchases accounted for slightly more than 30% [5].

Recently, important changes have taken place in the national innovation system and in the innovation policy of the United States. The popularity of this approach to financing research and innovation is growing, as the concentration of financial resources and human resources on solving certain problems in priority areas (for example, in the field of defense and energy). There is a reassessment of the role of the defense sector in scientific and technological progress and the commercialization of new technologies: if it was once thought that the defense sector is undoubtedly playing a positive role, lately there has been increasing doubt about this.

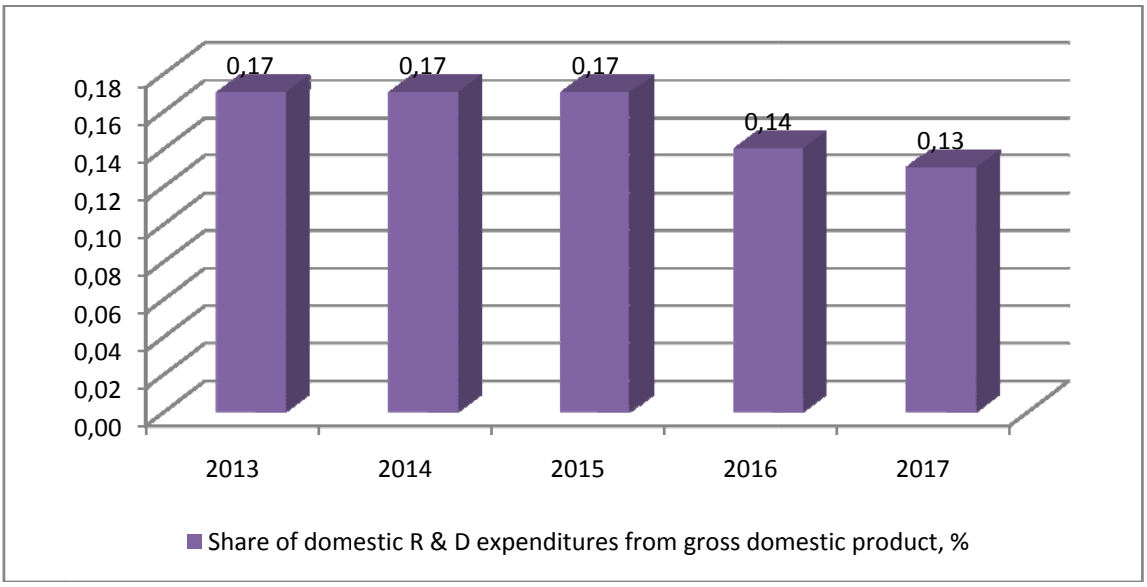

Figure 2 – Share of domestic expenditure on R & D from gross domestic product, %.

Note. Compiled by the author on the basis of the data of the COP of the Ministry of Education and Science of the Republic of Kazakhstan [2].

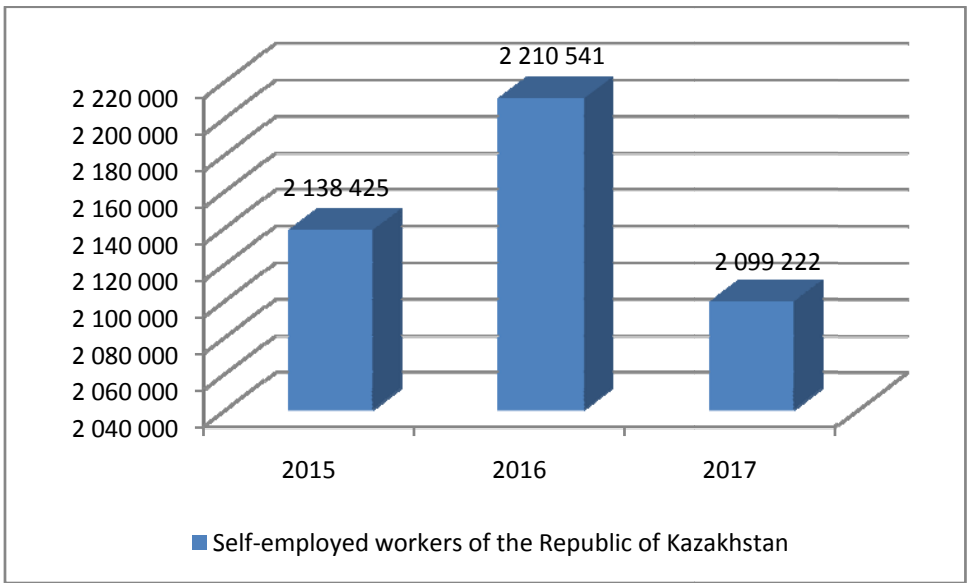

Figure 3 – Self-employed workers of the Republic of Kazakhstan.

Note. Compiled by the author on the basis of the data of the COP of the Ministry of Education and Science of the Republic of Kazakhstan [2].

The number of self-employed in the Republic of Kazakhstan in 2017 decreased, but in 2016 it increased compared to 2015. In general, about 20% of the self-employed population is in the country.

Rational use of labor resources in all regions of the country is one of the important tasks of socio-economic development of Kazakhstan. To solve it, it is necessary to determine objectively the state of the availability of labor resources at the current moment, the needs of the economy in the workforce and the ways of the most effective and full use in the regions.

Among the main problems in the Republic of Kazakhstan, which hamper the active innovative development of Kazakhstani enterprises, there are [6, 7]:

- Insufficient financing of innovative activity by enterprises due to the high cost of introducing and mastering innovations, as well as long-term investments. Enterprises do not have their own funds to finance development, and the possibility of attracting financial resources from external sources is limited.

Creditors do not have a guarantee of repaying loans and receiving dividends, since innovative activity is subject to a much greater number of risks than investment activity;

- the fact that the production enterprises do not have a modern base for implementation of developments due to wear or lack of necessary equipment. Many industrial enterprises are characterized by high resource intensity and energy intensity of production, which is exacerbated by the high level of depreciation of the production apparatus. Because of the backwardness of the fixed capital of enterprises, the economy as a whole is immune to investing in research and development;

- resistance to innovation, which most often occurs for two reasons: the lack of personnel capable of effectively managing the innovation process, and the staffing problem is felt at all levels of government, both in the country and in individual enterprises; difficulties in conducting marketing research of innovative products.

The volatile economic situation in the country makes it difficult to reliably estimate the demand for innovative products, even for the short term. lack of organizational structure of innovation management at enterprises [9-11].

The solution of these problems should become a priority of the policy of the RK in the field of science and innovation in the coming years.

An important direction for the development of innovative entrepreneurship in the near future will be the creation of a system for training and retraining personnel in the field of innovative entrepreneurship, which includes both university and postgraduate education, including abroad, as well as short-term courses, seminars, round tables for improving qualifications of existing managers [11].

The main mechanisms of state financial support for innovative activity now include direct government spending (including public procurement) and indirect support (tax incentives).

Conclusions. Public procurement can promote innovation through the formation of new markets, the creation of demand for innovative products, and through the provision of test sites for innovative products. Creating and maintaining favorable conditions for innovation is even more difficult than stimulating research and innovation. So, many countries and regions of the world tried to repeat the success of the American Silicon Valley, but could not achieve the desired results. The success of clusters is usually determined not so much by a specific cluster policy as by the unique characteristics of the cluster itself, as well as by the conditions and events that led to the formation of this cluster.

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ЕҢБЕК НАРЫҒЫНЫҢ БЕЛГІЛІ БІЛДІРІЛГЕН ҚЫЗМЕТІНІҢ ЗИЯТКЕРЛІК әлеуеті

Аннотация. Инновациялық дамудың маңызды аспектісі адам ресурстары болып табылады, өйткені инновациялық қызметті жүзеге асыруға қызметкерлердің дайындық дәрежесіне байланысты инновациялық әлеуетті енгізу. Интеллектуалды ұлт қалыптастыру, еңбек нарығының негізі және Қазақстанның дамуының стратегиялық мақсаттарының негізі болып табылады, сондай-ақ олимпиада ойындары, жарыстарға қатысу, тестілеу және т.б., сонымен бір мезгілде сапалы білім мен жас ұрпақты қолдаудың негізгі векторы болып табылады. Шетелдік сарапшылардың пікірінше, қазақстандық жастар инновациялық sigment еңбек нарығында тартылуы тиіс жоғары интеллектуалдық әлеуеті бар. Қазақстанда, бизнес және қоғам атынан қалалық жерлерде өзін-өзі жұмыспен қамту gostinichnym сауда негізінде, бірақ әлдеқайда көп ауыл тұрғындарына тән болып табылады, алайда, сондай-ақ үйретілген мамандарына талант ашуына көмек және үлгі ретінде шет елдердің келесі мүмкіндіктерді қамтамасыз етуге тиіс, алынған білімді шебер пайдалану үшін және бәсекеге қабілетті қызметкерлердің қалыптасу мақсатында қамтамасыз ететін жағдайлар жасалуы керек.

Түйін сөздер: интеллектуалдық әлеует, инновация, даму, зияткерлік капитал, экономика.

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ИНТЕЛЛЕКТУАЛЬНЫЙ ПОТЕНЦИАЛ САМОЗАНЯТОСТИ КАК СИГМЕНТ РЫНКА ТРУДА

Аннотация. Важнейшим аспектом инновационного развития является человеческий ресурс, так как именно реализация инновационного потенциала зависит от степени готовности персонала к реализации инновационной деятельности. Формирование интеллектуальной нации это фундамент рынка труда и основа стратегических целей развития Казахстана и, при этом главными векторами являются качественное образование и поддержка подрастающего поколения. Согласно отзывам зарубежных специалистов в сфере образования, а также показателям олимпиад, конкурсов, тестирований и т.п., казахстанская молодёжь обладает высоким интеллектуальным потенциалом, которую необходимо вовлекать в инновационный сигмент рынка труда. В Казахстане самозанятость в городской местности представлена в основном торговлей, гостиничным бизнесом и общественным питанием, но в значительно большей степени характерна для сельского населения, однако, хорошо обученому специалисту необходимо помочь в раскрытии таланта и предоставить возможности следуя примеру зарубежных стран, с целью создать условия для умелого использования полученных знаний и обеспечить формирование конкурентоспособных работников.

Ключевые слова: интеллектуальный потенциал, инновации, развитие, интеллектуальный капитал, экономика.

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COMPARATIVE ANALYSIS OF APPROACHES TO DESIGNING OF REGULATORY IMPACT ASSESSMENT INSTITUTE IN RUSSIA, KAZAKHSTAN, AND KYRGYZSTAN

Abstract. The goal of the research is comparative analysis of approaches to designing and adoption of the regulatory impact assessment institute in the post-Soviet countries – Russia, Kazakhstan, and Kyrgyzstan, revealing the problems and prospects of this institute development in the countries of analyzed summation.

The research was conducted using general scientific and specialized methods. General scientific methods of comparative and evolutionary-genetic researches were applied to conduct cross-national comparisons of processes on implanting of new national institutes in historical retrospective. The specialized methods of the institutional and constitutional theory allowed analyzing mutual influence of legislative and economic factors for making national decisions in the field of economy regulation within the established national systems of the state administration.

By the research results, the conclusions reflecting the specifics of the regulatory impact assessment institute designing in Russia, Kazakhstan, and Kyrgyzstan were made in view of selection of key actors and distribution of powers among them. The high role assigned in Kazakhstan, during the assessment institute designing, to structures expressing the interests of the entrepreneurs is noted. The level of the assessment institute maturity in the analyzed countries is characterized.

Key words: regulatory impact assessment institute, analysis of regulatory control, regulatory policy, post-Soviet space, problems of adoption, comparative analysis.

Introduction. An important tool favoring the enhancement of the government regulation effectiveness as of today is the regulatory impact assessment (hereinafter, RIA). RIA is aimed at improving the conditions of entrepreneur and investment activity, limitation of the overabundant regulation in economy. Especially its role should be mentioned for enhancement of transparency of the national regulatory policy, and development of the civil society. This type of the legislative acts expertise is relatively new for the post-Soviet countries. First steps in this direction, Russia and Kazakhstan made in late 90-s of the former century, and Kyrgyzstan made it in the beginning of 2000. However, it can be safely stated about specific importance of this institute for forming of optimal conditions for interaction of business and government.

In this regard the goal of the conducted research was comparison of approaches to designing and adoption of the regulatory impact assessment institute in Russia, Kazakhstan, and Kyrgyzstan, revealing of general and specific tendencies, problems and justification of development prospects of this institute for the analyzed countries. The selection of these countries is stipulated by their interest in development of RIA institute, high level of economic integration, active participation in supranational international economic unions that requires common grounds on key positions of the national regulatory policy.

Main body. Russia and Kazakhstan were among first post-Soviet countries that had the prerequisites for adoption of RSA institute (1997 – 1998) [1]. In Kazakhstan, the first step toward this direction was adoption of the Law on March 24, 1998, #213 “On laws and regulations” [2] that fixed the main principles of the research expertise conduction of legislative acts. In Russia, the starting point was 1997 when on March 13, 1997 the government has adopted a Decree #1009 “On approval of rules for preparation of laws

and regulations of federal bodies of the executive branch and its national registration" [3]. These rules fixed a capability of outside experts to conduct the work on preparation of conclusions for the laws and legislations of federal bodies of the executive branch, and assessment conditions of budget consequences of its adoption.

The next step was made in the beginning of 2000. On May 20, 2002 the Kazakhstan government has adopted a Decree #598 "On measures to improve the regulatory activity" [4] describing the process of the research expertise of laws and regulations (legislative, criminological, linguistic, anti-corruption, ecological). In Russia, the order according to which the regulation drafts regulating the relations of the entrepreneur activity relations are forwarded for expertise to the Ministry of Economic Development and Trade, for the first time was adopted in 2004 [5]. This time Kyrgyzstan started to adopt the RIA mechanism. In 2006 they have elaborated "Standards on conducting of individual specialized evaluation of law drafts". They included different types of appraisal: gender, ecological, legislative, and on observance of human rights and anti-corruption measures [6]. After that there was a Decree of the President dated 23 July 2007, #344 "On some measures on optimization of permissive-regulatory system in the Republic of Kyrgyzstan" that introduced a procedure of analysis of regulative impact (hereinafter, ARI) of permissive laws and regulations for business activity. ARI as a process for review and optimization of the permissive regulatory framework of regulation in the field of business and investment activity has become an instrument on elimination of administrative obstacles and limits in this field [7]. The order of its conduction was affirmed by "Methods of analysis of regulatory impact of legislative acts on activity of business entities" [8]. The Law of April 5, 2008, #55 "On optimization of the regulatory framework regulation of the Republic of Kyrgyzstan" has assigned ARI as the main instrument for the preparation of laws and regulations determining a united approach to projects and active legislation acts [9]. The obligation of the ARI application for laws and regulations was fixed by the Law dated July 20, 2009, #241 "On laws and regulations" [10].

In Russia, RIA becomes an obligatory procedure in 2010 [11]. In Kazakhstan, adoption of RIA elements started in 2011, when the Rules of research expertise process were amended and from now obligated the governmental body – developer to make an assessment of social and economic consequences of adopted bills actions [12].

In consequent years, Russia had been developing the regulatory impact assessment institute very actively: the number of fields of economic legal relations undergone the RIA procedures increased, a methodical base, specialized information resources and software products were developed. In Kazakhstan, the next large step was made only in 2015 [13]. The main content of this step – transition from the laws and regulations expertise to adoption of RIA institute oriented on the international standards of assessment. In 2014, Kyrgyzstan has amended the Methodic of ARI. Its new edition has provided the ARI developers more understandable tools prescribing more different analysis and determining a structure of the analytical note. It outlines a capability to conduct partial and full ARI. The full ARI is conducted in the case if a size of assumed benefits or expenditures excesses 0.1% of the country GDP for the previous year [14]. At the present time there is the ARI methodic is being improved.

While designing the RIA institute it is very important to select a proper authorized body, i.e. governmental body that will be responsible for implementation of policy in the field of RIA according to fixed powers. At selecting an authorized body, the analyzed countries used a model within which these functions are imposed on already existing executive body. In Russia, since 2010 an authorized body in the field of RIA on the federal level is the Ministry of Economic Development of RF. It exercises the functions on elaborating the national policy and legislative regulation in the field of regulatory impact assessment. In Kazakhstan, in 2011-2015 the Ministry of Economics and Budget Planning (now the Ministry of the National Economics) was an organizer of the research economic expertise of draft laws of the Republic of Kazakhstan. From 2016 for the Ministry of the National Economics, RIA becomes a constituent part of the implemented by it policy on regulating the business activity in the Republic of Kazakhstan. In Kyrgyzstan the authorized body on ARI is the Ministry of Economics. It carries out an expertise on analysis of regulatory impact of legislative acts drafts regulating business activity on its compliance with the ARI Methodic [15].

Distribution of authorities to carry out the RIA among the authorized body and regulatory bodies. Since 2010, Russia, on the federal-wide level, used the centralized model of RIA arrangement.

The assessment was conducted directly by the Ministry of Economic Development of Russia. The centralized model is the most appropriate at the stage of a new institute adoption. It helps to provide the higher quality of RIA reports preparation, and form national standards of the assessment process. However, it has some disadvantages. An authorized body cannot provide specialists who are experts in that fields of economy for regulating of which this or that legislation act is prepared. Accumulating necessary experience, from July 1, 2013 Russia transited to decentralized model of assessment. From that moment, the reports on RIA conducting were prepared directly by developers, federal executive bodies. The Ministry of Economic Development of RF was to control the quality of the prepared reports, prepare final conclusions, and carrying out additional public consultations, returning a report for renewal. Along with this, RIA arrangement in Russia is quite flexible. Particularly, at adopting in Russia a new form of retrospective assessment (assessment of actual impact), initially, from 01.01.2016 to 01.07.2017 the assessment report and its public discussion was conducted by the Ministry of Economic Development of Russia. By this, the base for transition to a new form of assessment by the regulatory bodies was prepared.

In Kazakhstan, an authorized body initially was the organizer of research economic expertise of draft legislative acts that could be conducted by research institutes, higher education institutes, experts (scientists and specialists). Since 2011, the role of regulatory bodies, that earlier actually only waited for the expertise results, became more active. The regulators started to prepare Passports on assessing social and economic consequences of adopted bills action. And, finally, since 2016 the regulatory bodies prepare a report on assessment carrying out that is further forwarded to the authorized body. Along with this, the model currently forming in Kazakhstan cannot definitely be considered as decentralized. The major part in its functioning belongs to the National Chamber of Entrepreneurs of the Republic of Kazakhstan that conducts the obligatory expertise of draft laws concepts, drafts of legislative and other regulatory acts related to the interests of private entrepreneurship entities [16], and the Interagency Committee on the issue of business regulation [17]. Adoption of a new regulatory instrument is conducted upon the recommendation of the authorized body only after consideration at the session of the Interagency Committee.

The Republic of Kyrgyzstan uses the decentralized approach for ARI development. In 2008, for implementation of ARI process, the Interagency Commission on optimization of legislative base for entrepreneurship activities regulation was created; it was the body assessing the reasonability of keeping these or those regulation standards. And this assessment was conducted after the interested national bodies provided ARI for the existing legislative act [18]. Its legal successor was the Interagency Commission on reforming the system of the national regulation of entrepreneurship activities. The operation of this Commission is aimed at introducing proposals on creating legislative base regulating the entrepreneurship activities, and meeting the principles of market economy [19]. The analysis of regulatory impact is conducted according to the adopted Methodic and is ensured by the developer of the legislative act, i.e. by executive bodies and local authorities. However, at local level ARI is not applied during development of the draft legislative acts regulating the entrepreneurship activities.

Mechanism of conflict resolution between an authorized authority and regulatory body. One of the key parameters for RIA institute designing is also a mechanism of conflict resolution between the authorized body and regulatory body. In practice, to resolve the arising conflicts, different instruments are used. If the conclusion is negative then a long cycle of conciliation procedures is launched: the laws and regulation draft can be returned for renewal, submitted for additional discussion, repeated public consultations, etc. In some countries, the authorized body has veto power on adopting laws and regulations act hampering the entrepreneurship activities.

In Russia, the authorized body possesses quite wide capabilities for solving the arising conflicts. In the case of negative conclusion of the authorized body the law and regulation act draft is returned for renewal. If after this action, the disagreements are not resolved, a supervisor submitting the draft shall ensure its discussion with leaders of the authorized body to come to mutually acceptable solution. On federal level the draft act of the government can be submitted to the government with disagreements only together with a protocol of conciliation meeting and remark originals signed by corresponding leaders or their deputies by order of the leaders having the disagreements. Since July 1, 2015 the Ministry of Economic Development of Russia has a right to return a draft act to the developer without its conclusion on RIA if the RIA procedure was violated (Ministry of Economic Development of Russia informs the developer in written form during five developer days on revealed violations of the procedure). Earlier upon revealing of

violations and sending of cumulative report for renewal, the Ministry of Economic Development, nevertheless, had to prepare a conclusion on carrying out the RIA.

Along with this, quite often, at early stages of RIA adoption an opinion of the authorized body on the results of laws and regulations assessment is of advisory nature. For instance, in Kazakhstan, at negative conclusion of the research expertise, the Majilis Bureau made a decision itself on renew of a draft legislative act according to proposals of expert conclusion. Since 2016 the situation changed significantly [20]. Now, if the authorized body gives a negative conclusion the regulator renews the report and forwards it for repeated consideration. If complaints to the report still remain after the renewal, and alternative assessment can be carried out. An initiator of the alternative assessment can be the authorized body, National Chamber of Entrepreneurs or other interested persons. In case of the regulatory body disagreement with the results of alternative assessment, the renewed documents are again submitted to the authorized body. In case of regulatory national body disagreement with results of alternative analysis, the final decision is made by the Interagency Commission on issues of business activity regulation.

In Kyrgyzstan, by the results of draft legislative act consideration, there can be a decision to return the draft for renewal indicating the remarks and suggestions. However, the laws and regulation act is to be rejected in case of lack of justification prepared on the base of regulatory impact analysis [21].

Discussion. The analysis of the obtained results show that Russia, Kazakhstan, and Kyrgyzstan consider RIA as a contemporary institute of the state management having large potential [22, 23]. While designing RIA institute the variety of economic, legislative, social, and culture factors should be considered for its effective functioning, as well as necessity of integrated researches in this field [24-26].

In view of approaches to adoption of RIA institute into the practice of the state management, there are some definite differences. For instance, Kazakhstan authors underline a necessity to use simple and understandable methods, gradual adoption of RIA institute [27, 28]. In whole, it is necessary to agree with this approach. However, the analysis conducted within this research shows that transition to a new model of assessment in Kazakhstan in 2016 has interrupted this succession to some degree. In Russia, in view of scale and intensity, RIA institute adoption can be considered as more mature. For example, RIA is obligatory for implementation at RF entities, and at major part of municipal bodies [29]. At this, the priority one is the problem of RIA institute operability and often its formal, bureaucratic character, lack of through economic analysis of consequences of legislative acts adoption [30, 31].

The important thing for investigation of approaches to designing of RIA institute is analysis of this institute role in the system of the national economic policy in whole, and regulatory policy in particular. And here the important is the difference related to the issue, if the development of a definite institute enters the system of the national priorities of the highest order [32, 33]. Within such an approach it is necessary to admit that despite long history and scales of RIA adoption into the practice of decision-making process in Russia, for the present moment Kazakhstan tries to implement more well-shaped and integrated concept in its content. Within the implemented paradigm, RIA institute becomes one of the key instruments of the national policy on economy regulating. Its development is considered together with development of the institutional system of entrepreneurship activity regulation, the system of permissive procedures, the state control and supervision, and self-regulation [34]. Creation of RIA effective system is fixed as a strategic priority for Kazakhstan development [35]. The future will show what approach -– maximum wide coverage of possible subject areas and authority levels, enlargement of RIA application field in real managing practice, or affirmation of values that in future will gradually become a base for making decisions, will be more effective.

The problems mentioned above are also noted by Kyrgyzstan experts [36, 37, 38]. Within the institutional model active in Kyrgyzstan, application of ARI to draft legislation acts regulating the entrepreneurship activity, in essence, is of formal nature. There are no full-fledged structural subdivisions in Ministries and Agencies to carry out ARI, no effective mechanisms of the institutes interaction on ARI between the government, Zhogarku Kenesh and the National Bank; independent institutes for monitoring and assessment of actual impact of active laws and regulations on entrepreneurship development. The active institutes of ARI do not cover Zhogarku Kenesh, the National Bank of Kyrgyzstan and regions level, including the local autonomous bodies [39].

Conclusion.

1. Designing of RIA institute in the considered countries, on the one hand, is based on the experience of the national regulation of economy available in the country, and on the other hand reflects the features of interaction between the state, business and society. As result, even at formal coincidence of the implemented institutional models, the influence capabilities of the main RIA participants on the process of decision making can differ significantly.

2. The functions of the authorized body, in Russia, Kazakhstan, and Kyrgyzstan are imposed on a Ministry responsible for implementation of the national economic policy in the country (Ministry of Economic Development, Ministry of the National Economics, Ministry of Economics, respectively). Under such approach, at the stage of RIA national system establishing, there is an opportunity to use knowledge, qualification and other resources of already long-time operating structures, optimize expenditures on adopting new instrument of management.

3. Russia, Kazakhstan, and Kyrgyzstan are forming the national system of RIA orienting on decentralized model of assessment arrangement. The flexibility and adaptability of the RIA national system in Russia is ensured by free selection of assessment model on the subnational level and opportunity to choose another RIA model at adopting of new types of assessment. In Kazakhstan and Kyrgyzstan, an opportunity of different models coexistence within a united legislative field is not provided yet. However, Kazakhstan has mechanisms of "checks and balances". This role is implemented by the National Chamber of Entrepreneurs and Interagency Commission on the issues of entrepreneurship activity regulation.

4. In case of conflicts arising between an authorized body and regulatory body in the analyzed countries, the complex conciliation procedures are foreseen. In Kazakhstan, while solving such disagreements the role of advisory bodies and organizations protecting the interests of entrepreneurs is much higher. In particular, the National Chamber of Entrepreneurs of the Republic of Kazakhstan can initiate the process of alternative assessment of regulating impact, and the Interagency Commission on the issues of entrepreneurship activity regulation has a right to make a final decision if irremediable disagreements exist between the authorized authority and regulatory body.

5. At the present time, Russia, Kazakhstan, and Kyrgyzstan created the main legislative and organizational prerequisites to conduct the regulatory impact assessment; however, the adoption of the discussed institute cannot be considered as completed. In Russia the RIA institute is more mature, starting from 2010 the RIA develops within one concept which developer and performer is the Ministry of Economic Development of RF. In Kazakhstan, in 2015 there was sharp step forward, there was a reject, to some extent, from the established practice of gradual adoption of new institutes of management. In Kyrgyzstan the ARI institute continues its development. However, there are some system problems impeding to enhance the quality of ARI process. Along with this, enhancement of RIA role in the system of instruments of the national regulation of economy, more integrated interpretation of RIA as a key element of regulation policy of the entrepreneurship activity allow making positive forecast regarding the prospects of its development. At this, the quality of the countries models and RIA systems is important for forming of effective supranational model including the system of Eurasian economic commission regulation.

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РОССИЯ, ҚАЗАҚСТАН ЖӘНЕ ҚЫРҒЫЗСТАНДАҒЫ РЕТТЕУШІЛІК ӘСЕРДІ БАҒАЛАУ ИНСТИТУТЫН ЖОБАЛАУ ТӘСІЛДЕРІНЕ САЛЫСТЫРМАЛЫ ТАЛДАУ ЖАСАУ

Аннотация. Зерттеудің мақсаты – посткеңестік кеңістіктегі, яғни Ресей, Қазақстан және Қырғызстан елдеріндегі реттеушілік әсерді бағалау институтын жобалау мен енгізу тәсілдеріне салыстырмалы талдау жасау және аталмыш институттың талдау жасалған елдердегі даму проблемалары мен келешегін анықтау болып табылады..

Зерттеу жалпы ғылыми және мамандандырылған әдістерді пайдалана отырып жүргізілді. Салыстырмалы және эволюциялық-генетикалық зерттеулердің жалпы ғылыми әдістері тарихи ретроспективада жаңа мемлекеттік институттардың имплантация процестеріне кросс-ұлттық салыстырулар жүргізу үшін пайдаланылды. Мамандандырылған институционалдық және конституциялық теория әдістері мемлекеттік басқарудың қолданыстағы ұлттық жүйелерінің шеңберінде экономикалық реттеу саласындағы мемлекеттік шешімдерді қабылдау кезінде құқықтық және экономикалық факторлардың өзара ықпалдастығын талдауға мүмкіндік берді.

Зерттеудің қорытындысы бойынша Ресей, Қазақстан және Қырғызстандағы реттеушілік әсерді бағалау институтын жобалаудың олардың арасында негізгі субъектілерді іріктеу және олардың арасында өкілеттіктерді бөлу аясындағы ерекшеліктерін көрсететін тұжырымдар жасалды. Бағалау институтын жобалау кезінде Қазақстандағы кәсіпкерлердің мүддесін білдіретін құрылымдарға жоғары рөл бөлінген. Талдау жасалатын елдерде бағалау институтының жетілу дәрежесіне сипаттама берілді.

Түйін сөздер: реттеушілік әсерді бағалау институты, реттеуші әсерді талдау, реттеуші саясат, посткеңестік кеңістік, ендіру проблемалары, салыстырмалы талдау.

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СРАВНИТЕЛЬНЫЙ АНАЛИЗ ПОДХОДОВ К ПРОЕКТИРОВАНИЮ ИНСТИТУТА ОЦЕНКИ РЕГУЛИРУЮЩЕГО ВОЗДЕЙСТВИЯ В РОССИИ, КАЗАХСТАНЕ И КЫРГЫЗСТАНЕ

Аннотация. Целью исследования является сравнительный анализ подходов к проектированию и внедрению института оценки регулирующего воздействия в странах постсоветского пространства – России, Казахстане и Кыргызстане, выявление проблем и перспектив развития данного института в странах анализируемой совокупности.

Исследование проведено с использованием как общенаучных, так и специализированных методов. Общенаучные методы сравнительных и эволюционно-генетических исследований использованы для проведения кросс-национальных сравнений процессов имплантации новых государственных институтов в исторической ретроспективе. Специализированные методы институциональной и конституциональной теории позволили проанализировать взаимное влияние правовых и экономических факторов при принятии государственных решений в сфере регулирования экономики в рамках сложившихся национальных систем государственного управления.

По итогам исследования сделаны выводы, отражающие специфику проектирования института оценки регулирующего воздействия в России, Казахстане и Кыргызстане с точки зрения выбора ключевых актеров и распределения между ними полномочий. Отмечена высокая роль, которая при проектировании института оценки отведена в Казахстане структурам, выражающим интересы предпринимателей. Охарактеризована степень зрелости института оценки в анализируемых странах.

Ключевые слова: институт оценки регулирующего воздействия, анализ регулятивного воздействия, регуляторная политика, постсоветское пространство, проблемы внедрения, сравнительный анализ.

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THE PSYCHOLOGICAL STUDY OF TRAGEDY IN KEMEROVO "SAFETY ILLUSIONS" AND "ILLUSIONS OF JUSTICE"

Abstract. One of the first requirements, according to Maslow, is the need for safety. We build buildings, fortresses, gate to protect ourselves from danger. According to some researchers, the aspiration to reproduction is some protective mechanism too in the way to save us from death. However, the concept of safety is a beautiful demonstration of illusion where we feel comfortable. Historically it developed so that children represent as small angels, but till the middle of the 18th century, they were treated as adults. The Institute of the childhood gained the development since the beginning of industrial revolution. Then, the attention society concentrated on the protection of the childhood and the right of little citizens for safe existence. The tragedy in Kemerovo became 25.03.2018 one of the most shocking and terrifying. In peacetime 60 people, 42 of which children died. Children who did not survive in the place where everything made for the fan. In media, there was KEMEROVOMYSTOBOY flashmob. In our article, we tried to consider ways and methods of experience of loss, and the related sense of guilt. The fault of survivors, and the fault which did not save as a phenomenon of "illusion of justice" and experience of PTSD.

Keywords: the psychology of grief, the illusion of justice, safety illusion, childhood, PTSD, Kemerovo.

On March 25 dozens of children died in the fire in the Kemerovo shopping center "Winter Cherry." Many parents survived because they waited for children after the film session on other floors of the shopping center; some of them tried to break to the burning cinema halls, but could not. The modern history of Russia knows, perhaps, only one similar event – Beslan where terrorists occupied school at the beginning of September 2004.

Aman Tuleyev directed the Kemerovo region for nearly 21 years. The record-holder governor retired itself, a week later after the tragedy in "Winter cherry." Left with words that "it is impossible to work with such hardest freight." On March 25, 60 people, including 41 children died in the fire in the shopping center. "Winter cherry" is almost in the center of Kemerovo. Locals do not want to pass or pass constantly by the burned-down shopping center. The decision is already pleasant – it will demolish, and on its place there will be a square of memory. Demolition of the building will begin on May 15. It was decided to be done right after the Victory Day.

Due to the events to Kemerovo, we would like to write how the tragedy can affect on each of us. Perhaps, you remember the losses, losses today, let is not necessarily conscious, and at the level of physical feelings. The breast area can hurt you; there is heavy or faltering a breath, you can cry. And about those who were lost or suffered, or about itself.

The meeting with death is always a meeting with the mortality and with experience of the losses and losses. There are five stages of accommodation of grief: denial, rage, bargaining, depression, and acceptance.

Very often the person gets stuck on someone of them. Time from the moment of loss can pass enough to your measures, and all of you do not trust yet, are angry or endure a depression.

Very perhaps so it happened because for the moment of loss at you it was not given by a number of the necessary support. Especially at the first stage. Here it is most comfortable to be frozen and go to a chronic trauma. Caseworkers yesterday to parents of the lost children "Do not cry, tears still will be necessary, the most terrible ahead!".

The most awful that is the automatic reaction in our society. The person not only that loses the most precious – the child, and he still has to get itself it together, gather and protect itself (himself) from bureaucratic machine.

People went at once to Kemerovo to take a blood test; many psychologists started conducting free psychological consultations. Perhaps, and you will find something unique that will help you to feel the life, force, participation. You should not force yourself, only, if you feel in yourself a resource and energy to give, share. Perhaps, you only want to spend more time with the family and to feel your unification and each other value. And the most important is essential to living now any feelings which were stirred up. To give them space and time. Foreign death is always a meeting and with own life.

The grief is a reaction to the loss of the significant object, part of identity or the expected future. It is well-known that reaction to the loss of significant object - the specific mental process developing under the laws. The essence of this process is universal, invariable and does not depend on what was lost by the subject. Experience of grief always proceeds equally. Only its duration and intensity which depend on the importance of the lost object and features of the identity of the grieving person differ.

Grief that goes underground is deadly. The shutting down or pushing aside means that it will eventually back up on you. If you have had other losses that you never really grieved, both the tendency to do this and potential damage is even stronger, because losses all tend to be connected. If you find that you are seemingly out-of-touch with your feelings, if you're marching ahead with business as usual, if you are telling yourself that this was just meant to be or somehow is for the best, question yourself.

In the beginning, the grief was part of the stages which are consistently replacing each other. The number of stages at different authors fluctuated from four to twelve. The psychotherapist helps the client to move from a stage to a stage. However, as it appeared, stages have no clear boundary and sometimes already lived stage recrudesces at stages of later. Besides, sometimes some stages were absent or were so severely expressed that they did not manage to be traced and respectively to work. Besides, manifestations of grief at all stages are very individual, therefore, often remained evident, on what psychotherapist tried to do. That is why the process of grief could be difficult and inconvenient.

Recently the new view for work with the grieving client offered by J. William Vorden was widely adopted. Vorden's concept, though not only, now remains to the most popular among the people working with loss. It is very convenient for diagnostics and work with real grief and also if it is necessary to deal with the grief which is not endured many years ago and opened during the therapy begun by entirely other inquiry.

According to Vorden grief's description consists not stages or phases, but four tasks which person has to solve. These tasks, in fact, are similar to those problems which are solved by the child in the process of a growing and separation from mother. Vorden considers this approach as the most convenient for clinical physicians and the closest to Freud's theory about work of grief.

Vorden believes that thought forms of a current of grief and their manifestation are very individual; however, the invariance of the content of process allows to allocate those universal steps which have to make a grieving person return to healthy living. It is quite essential to psychotherapist control this process. Problems of grief are invariably by the process, and forms and ways of their decision are individual and depend on personal and social features of the client. Four problems of grief could be by the subject consistently. It is convenient to understand, what psychological task is solved and what is – No, much more straightforward than to define poorly expressed grief stage. Besides, as it is clear that there is a solution to this task, it is clear where the psychotherapeutic process has to be directed.

If grieving client cannot solve a task, the grief will not develop further and to seek for the end which can cause problems in this regard even in many years. The reaction of grief can be blocked on any of tasks, and behind it, there can be a different level of pathology. The reaction stopped at any stage of grieving has specific symptomatology.

In this article, I would like to make a summary of four tasks which has to solve person, "The consultation and therapy of grief generally made according to the fundamental book of Vorden" on the example of reaction on the death of the loved one. This example it is most developed illustrates loss reaction, and it is important to remember that any reaction of loss will always develop similarly according to the contents, only duration and intensity differs. Forms of manifestation of the process are uniquely individual.

So, it is evident that it is impossible to start enduring loss until the fact of loss is not admitted. Thus, the first task – recognition of the fact of loss.

When someone dies, even in case of the expected death, the emergence of feeling as if it happened nothing is healthy. Therefore, first of all, it is necessary to admit the loss fact, to realize that darling died, it left and will never return. During this period, the same as the lost child looks for mother; the person mechanically tries to contact with the dead - mechanically dials his telephone number, " see" among passersby on the street, buys to its products, etc. This behavior of "search" described by Boulbi and Parks as communication restoration. In norm, this behavior has to be replaced by the behavior directed on the refusal of communication with the dead close. The person who makes the actions described above, in norm bethinks and speaks to himself:" That I do, after all, he (she) died." Quite often the opposite behavior – denial (denial) of an event meets. If the person does not overcome denial, then work of grief is blocked at the earliest stages. Denial can be used at the different levels and take the different forms, but as a rule, includes or denial of the fact of loss, either its importance or irreversibility.

Denial of the fact of loss can vary from natural frustration to massive psychotic forms when the person spends some days in the apartment with the dead before notices that that died. Gardiner and Pritcher described six such cases as extreme forms of psychotic reaction to death.

More often the meeting and less pathological form of manifestation of denial were called by the English author Gorer mummification. In such cases of people keeps everything as was at the dead all the time to be ready to his return. For example, parents keep rooms of the died children. It is normal if proceeds not for long, thus some "buffer" which has to soften the most difficult stage of experience and the adaptation to loss is created. However, if such behavior lasts for years, the experience of a grief stops and the person refuses to recognize those changes which happened in his life, "keeping everything as was" and without moving a little in mourning, is a manifestation of denial. The easier form of denial when the person "sees" the dead in somebody another – for example, the widowed woman sees the husband in the grandson." The poured-out grandfather". Such mechanism can alleviate loss pain, but seldom satisfies quite – the grandson after all not the grandfather and if "he continues to live in children," with them (children) all the same will not enter the same relations, as with the dead. Moreover, eventually, this situation comes to an end with acceptance of the reality of loss.

Another way with which people avoid the reality of loss, – denial of the importance of loss. In this case, they say something it seems "we were not close," "he was the bad father" or "I do not miss it." Sometimes people hasty clean all personal belongings of the dead, everything that can remind him, is the behavior opposite to mummification. Thus endured loss preserve themselves against facing face to face reality of loss. Those who show such behavior, treat a group of the risk of development of pathological reactions of grief.

Another manifestation of denial is "selective amnesia." In this case, the person forgets something, the concerning dead. For example, the man of years 35 who lost the father at fifteen-year age could not remember his appearance, even growth or hair color. After successfully carried out therapy of grief he remembered the appearance of the father, lived all feel connected with loss and could return to healthy living.

The third way to avoid loss understanding - denial of irreversibility of loss. Vorden gave an example from the practice – the woman who lost a mother and the twelve-year-old daughter at the fire, two years went on aloud, as a spell:" I do not want that you died." She told it as if her relatives did not die yet and she this spell can keep their life. Another example when after the death of the child parents console each other – "we will have other children, and everything will be good." We anew will give birth to the died child, and everything will be as was. The irrational hope again to reunite with the dead is standard in the first weeks after a loss when the behavior is directed on communication restoration, but if this hope becomes steady, it is abnormal. At religious people, such behavior looks a little differently as they have other picture of the world. Then the critical relation of the morning to the events will be the norm; he under-

stands that in this life already will never be together with the dead and will reunite with it only, having lived the life in this world as the kind Christian or the respectable Muslim has to live it. This expectation of reunion after death does not need to be destroyed as it enters a reasonable picture of the world of deeply religious people.

The second problem of grief, on Vorden, consists in enduring loss pain. Means that it is necessary to endure all complicated feelings which accompany loss.

If mourning cannot feel and live the pain of loss which is always, it has to be revealed and worked using the therapist, differently pain will prove in other forms, for example, through a psychosomatic or frustration of behavior.

Parks wrote: "If the grieving person has to feel loss pain so that work on overcoming of this loss was done, then everything that allows will avoid or suppress this pain to prolong mourning term." Reactions of pain are individual and not all feel the pain of equal force.

Clients on this stage often complaints about problems in contact not only with external reality but also with intimate experiences. "I feel like nothing, even it is strange," "I thought, it happens differently, some strong experiences, and here – anything." The pain of loss is felt not always, sometimes a loss is endured as apathy, the absence of feelings, but it has to be surely worked.

Performance of this task is complicated by people around. The people who are often nearby feel discomfort from client's severe pain and feelings, they do not know that with it to do and consciously or unconsciously report to it: "You should not grieve." This unexpressed wish of people around often enters an interaction with own psychological protection of the person who endured a loss that leads to denial of need or inevitability of a process of grief. Sometimes it even is put following into words: "I should not cry about it" or "I should not grieve," "Now not the time to grieve." The manifestations of grief are blocked, emotions will not be reacted and do not come to the logical end.

Avoiding of performance of the second task is reached in the different ways. It can be denial (negation) of existence of pain or other painful feelings. In other cases it can be avoiding of painful thoughts. For example, thoughts of the dead can be allowed only positive, "pleasant", according to Vorden, up to full idealization. It too helps to avoid the unpleasant experiences connected with death. Avoiding of all memories of the dead is possible. Some people start taking alcohol or drugs for this purpose. Others use "a geographical way" – continuous travel or continuous work with the big tension which does not allow to reflect on something, except daily affairs. I know a case when the person went for work in day of death of the mother thus that it was the lecturer. Such public work does not give the chance to relax for a second. He made the same in day of a funeral, and specially asked to reconstruct the schedule. It was very purposeful behavior allowing to avoid the experiences connected with death of mother. Parks described cases when euphoria was reaction to death. Usually it is connected with refusal to believe that the death occurred and is followed by constant feeling of presence deceased. These states usually unstable. Wrote Bulb:" Sooner or later everything who avoids the feelings connected with the experience of grief most often being depressed." One of the purposes of therapeutic work – to help people to solve this difficult problem of grieving with loss, to open and live pain, without collapsing before it. It needs to be lived not to bear through all life. If not to make it, therapy can be necessary later and will come back to these experiences more painfully and challenging, than at once to endure them. The delayed experience of pain is more difficult also because if pain of loss is endured later considerable time, the person cannot receive that sympathy and support any more from people around which usually appear right after loss and which help to cope with a grief.

Such guarding behavior has the reasons, and with them, it is necessary to work separately before work with feelings. It is necessary to find out the reasons for which the person avoids the experiences connected with loss pain and at first to work them. For example, to work with fear of hard feelings. In other cases change of a stereotype of the behavior connected with the ban on the open manifestation of feelings which arose earlier is necessary or it is necessary to understand how to be about the resistance of people around which uncomfortable to be near the person in sharp grief.

The following task with which has to cope, client, is an adjustment of an environment where he felt the lack of the deceased. When the person loses close, he loses not only the addressed feelings object, and from which feelings turn out, he loses a specific tenor of life. The dead close participated in life, deman-

ded performance of some actions or individual behavior, execution of any roles, assumed part of duties. Moreover, it leaves together with it. This emptiness has to be filled.

The organization of a new environment means different things for different people, depending on those relations in which they were with the dead, and from those roles which the dead played their lives. Parks wrote:" In any grieving it is not always clear that loss represents. Loss of the husband, for example, can mean, for example, - or not to mean - loss of the sexual partner, partner, accountant, gardener, clown, etc., depending on those roles which were carried out usually by the husband". The client can realize or not realize those roles which the deceased played his lives. Even if the client does not realize these roles, the therapist needs for to plan that the client lost and as it can be filled. Sometimes it is worth pronouncing them with the client. Often the client spontaneously starts doing it during session. My client after death of mother, feeling very helpless and unprotected, began to argue - and what I lost? The tender word, a look, a voice, a touch – yes, it is irreplaceable. But a lot of things from this that were done for me by mother and that gave feeling of safety, I can do for myself. I can learn to sew – mother sheathed it, – I can learn to prepare and to create to myself comfortable conditions when I come from work – earlier mother met her with a dinner, - for example, the dinner can be put since morning in a microwave and it is necessary only to press the button. It so helped with our work that I began to use it as exercise with other clients. The grieving person has to gain new skills. The family can give support in their acquisition. Vorden cited as an example the client, the young widow. Her late husband treated that type of people who are inclined to assume all responsibility for the events and independently to solve all problems. The wife lived with it "absolutely safe". The husband did for it everything. After his death the widow became isolated and, without knowing how to interact with the outside world and to solve the problems arising beyond a limit of a family world, practically refused social activity. But when one of her children started behaving badly at school, its meetings with the staff of school and social workers were required. Willy-nilly it had to overcome the internal resistance and to leave the house in the outside world. She learned to interact with the staff of school, solved the arisen problem, and it gave it necessary experience and feeling that difficulties such are surmountable. Often at the grieving person new ways of overcoming the arisen difficulties are developed and before it new opportunities so there is a loss fact reformulation in something making also positive sense open. It is frequent option of a successful completion of the third task. For example, my client who lost mother with whom was in very close symbiotic connection told once: "Mother died, and now I started living. It did not allow me to become adult, and now I can build the life as I want. It is pleasant to me".

Except for the loss of the object, some people at the same time endure the feeling of loss of own personality. The last researches showed that the women are defining the identity through interactions with relatives or care of others, having lost object of care, endure the feeling of loss. Work with such client has to be much broader, than the small development of new skills and ability to cope with new roles.

The grief often leads the person to strong regress and perception of as helpless, incapable of coping with difficulties and inept, as the child. Attempt to carry out roles of the dead can fail, and it conducts to deeper regress and damage of a self-assessment. Then it is necessary to work with a negative image of at the client. It demands time, but gradually, leaning on the image of becoming more positive, the client learns successfully to work in those areas of life collision with which avoided earlier.

Preservation of a passive, helpless position helps to avoid loneliness – friends and relatives have to help and participate in human life, endured the loss. At first, after the tragedy it is normal but further starts preventing to return to full-fledged life. Sometimes impracticality to the changed circumstances and helplessness serve a family. Other family members have to rally in care of someone on whom loss struck most strongly, and only thanks to it feel substantial and well-founded. Alternatively, the status quo remains - the family should not change the conduct of life. For example, the grandfather died after a long illness. While he was ill, in a family there was the specific conduct of life including care of the patient, and such situation for some reason all arranges. In this case, the family starts invalidation of the widowed grandmother, and with the best intentions. "You endured such tragedy. Why to you to work, we will support you".

The last, fourth task is to build the new attitude towards the dead and to continue to live. In the first works, Vorden formulated this task as "withdrawal of emotional energy from the former relations and its room in new communications." However later he refused this formulation, first, because of its some

mechanicalness and secondly because it was understood by many as the disappearance of the emotional attitude towards the dying loved one. Therefore Vorden considered necessary to explain that the solution of the fourth task assumes neither oblivion, nor lack of emotions, but only their reorganization. The emotional attitude towards the dead has to be changed so that there was an opportunity to continue to live, enter the new emotionally rich relations.

Many incorrectly understand this task and therefore need the therapeutic help for its decision, especially in case of death of one of the spouses. It seems to people that if their emotional communication with the dead will weaken, thereby they will offend his memory and it will be treachery. In some instances there can be a fear of that new close relations can end too and it is necessary to pass again through loss pain – such happens especially often if the feeling of loss is still fresh. In other cases the inner circle can oppose to a performance of this task, for example, the conflicts to children in case of new attachment at widowed mother begin. Behind it quite often there is an offense - mother for herself found the replacement to the dead husband, and for the child, there is no replacement for the dead father. Alternatively, on the contrary – if someone from children found to himself the partner, the widowed parent can have a protest, jealousy, feeling that the son or the daughter is going to conduct full-fledged life, and the father or mother remains alone. Often stirs performance of the fourth task passionate belief that love only once, and all the rest – is immoral. It is supported by culture, especially at women. Society approves the behavior of "the faithful widow." On Harvard researchers of grief only 25% of elderly widows entered repeated marriage, it is a little more than a percent of young widows and widowers. Moreover, this with the fact that 75% divorced enter repeated marriage.

Performance of this task interrupts a ban on love, fixing on last communication or avoiding of opportunity again to face the loss of the loved one. The sense of guilt follows all these barriers as a rule.

Sign of that this problem is not solved, the grief does not abate and the mourning period does not come to an end, often there is a feeling that "life stands still," "after his death I do not live," the concern increases. As completion of this task it is possible to consider the emergence of feeling that it is possible to love another person, the love to deceased did not become from it less, but after death, for example, the husband, it is possible to love another man. That it is possible to revere the memory of the lost friend, but thus to hold the opinion that in life there can be new friends. Vorden gives the letter of the girl who lost the father, written to mother from college as an example: "Other people can be loved. It does not mean that I love the father less".

The moment which can be considered as the end of mourning is evident. Some authors call concrete temporary terms – month, year or two. Vorden considers that it is impossible to determine the particular term throughout which loss experience will be developed. It can be considered complete when the person who endured loss takes all four steps, will solve all four problems of grief. Vorden considers as a sign of its ability to direct the most of feelings not deceased, but to other people, to be susceptible to new impressions and events of life, ability to speak about the dead without severe pain. The grief remains, it is natural when the person speaks or thinks of the one whom he loved and lost, but it already grief quiet, "light." Work of grief is complete when the one who endured loss is again capable of conducting a healthy life, he feels adapted when there is an interest in life, new roles are mastered, the new environment was created, and he can function in it adequately the social status and a warehouse of character.

We analyzed how often after tragedy in Kemerovo people requested or posted messages in social network as VK.

The statistical review of frequency of request “Kemerovo tragedy” in Russia shows that more than 3.5 billion people were affected by this terrible fire accident.

Why do so many people try to get information in social networks?

Because all of us live in illusions. First, apparently, that it will never happen to us. Secondly, we do not think of the death (that is natural), are not ready to it. When there is such tragedy as in Kemerovo, our strongest deep fears come to light. It turns out that actually we vulnerable, not all-powerful – a lot of things in life occur at all not as we want. And, above all, we feel all injustice of the world. Innocent children died for what? All illusions fall. It only in fairy tales the good overcomes the evil. We remain in private with the fears. Also time that illusions "were restored" is necessary. It is normal reaction to abnormal events. And we should not prepare for them.

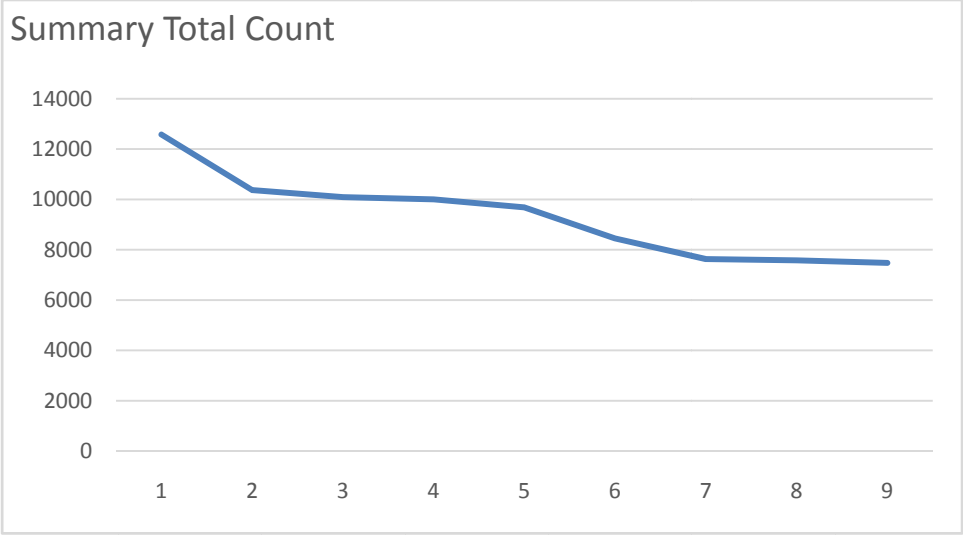

Figure 1 – The average number of requests of “Kemerovo” in VK

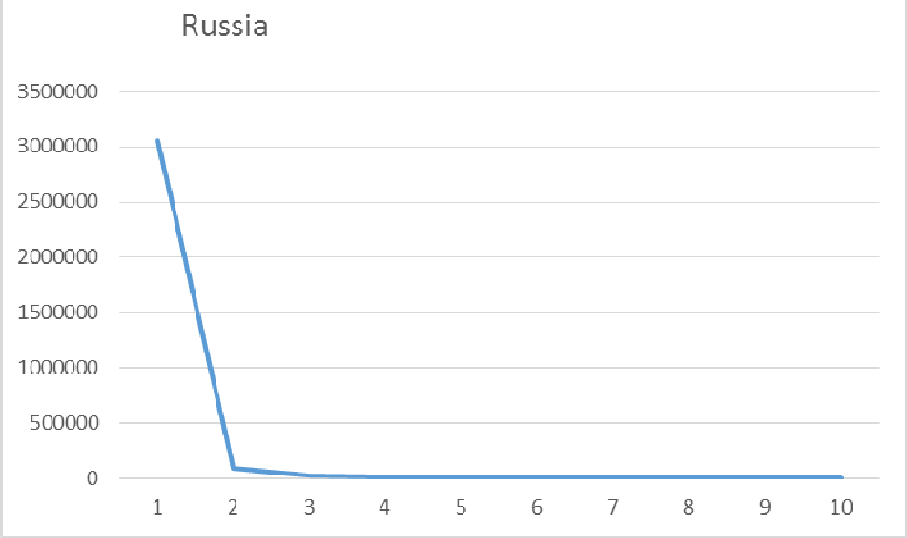

Figure 2 – How many people search for “Kemerovo tragedy” in Russia

Of course, there are in social networks also posts that Putin is guilty personally, and response remarks on "dancing on bones," allegedly arranged with his opponents. But there are also attempts to get to the bottom of causes of the tragedy at the "local" level. Write about dangers of the Russian shopping centers, about corruption at issue of construction licenses much, about negligence and notorious "a human factor" – someone locked doors at movie theaters at which children and fire escapes were lost.

When after heavy experiences at people the related difficulties are observed, we speak about post-traumatic stress disorder (PTSD). People can pay attention that thoughts or memories of a traumatic event rush into their thoughts, influence their concentration during the day and appear as dreams at night.

Also, waking dreams are possible, and they can seem so real that the person can feel as if again ensures that traumatic experience. Sometimes such repeated experience is called as a psychopathological re-traumatization.

Psychopathological re-traumatization differs from each other and depend on nature psychological trauma. People with such re-traumatization usually have the sharpest symptoms of post-traumatic stressful frustration. One of the features of these experiences – persuasive memoirs and thoughts about traumatized. Patients usually remember sad events which they faced in the past, for example, death of other people.

Besides, it can be frightening memoirs because while receiving a psychological trauma of people usually feels strong fear. Sometimes memoirs of the past force the person to feel guilty, grief or fear. Even if the person does not remember especially, and faces merely something that reminds him of trauma, he starts feeling a tension, alarm, and vulnerability.

The main symptoms of post-traumatic stressful frustration – it is the notions of compulsion about traumatized, hyper excitement, and sometimes shame, fault. People cannot sometimes test emotion and behave as robots in everyday life.

In other words, people do not test any emotions or do not test any certain emotions like pleasure.

Besides, always it seems to them that they have to be protected, they stay in a condition of alarm, they observe some symptoms of depression. These are primary groups of symptoms of post-traumatic stressful frustration.

Its interesting fact that situation in Kemerovo cause different reaction in CIS. The number of requests was significantly less than in Russia.

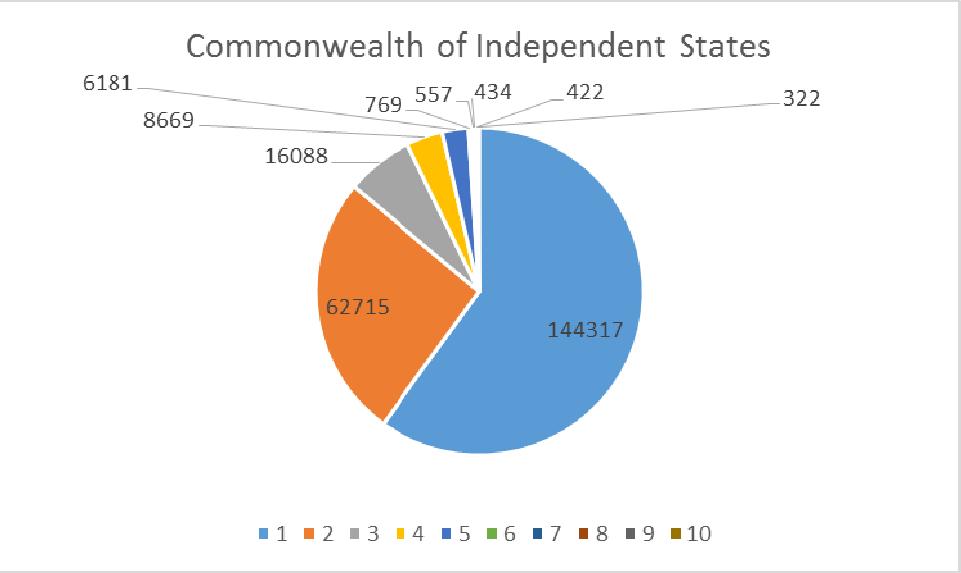

Figure 3 – How many people search for “Kemerovo tragedy” in CIS

We would like to pay attention on a fact that we couldn’t collect any information about number requests in USA cause of new State program for safety of personal information.

Conclusion. Despite different circumstances, the grief of any person, in general, it is universal. It develops on certain stages; in it, there are regularities, and the most critical – the grief of course. It gives hope that people will be able to cope, return with it to full-fledged life. Of course, the person will not forget those who lost. However, his grief will pass into slight grief over time. With it, it is possible to live further and to build the relations.

It is good to test grief – it even. There are cases when the person in every possible way denies irretrievability of loss and does not express emotion. Here such reaction just wrong, it is impossible to dull pain. Then it will, all the same, be shown, but, quite perhaps, in the form of diseases or severe mental deviations.

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"ҚАУІПСІЗДІК ЕЛЕСІН" ЖӘНЕ "ӘДІЛДІК ЕЛЕСІН" ПСИХОЛОГИЯЛЫҚ ЗЕРТТЕУ КЕМЕРОВОДАҒЫ ҚАСІРЕТ

Аннотация. Маслоу бойынша, қауіпсіздікті қажетсіну, бірінші негізгі қажеттіліктерінің бірі болып табылады. Біз, өзімізді қауіптен қорғау үшін, ғимараттар, қамалдар, қақпалар соғамыз. Кейбір зерттеушілердің пікірі бойынша, ұрпақ жалғастыруға ынталану да, өзінше бір қорғаныс механизмі, өзін өлімнен құткарудың тәсілі болып табылады. Бірақ, қауіпсіздік ұғымы, елестің бірқилы манифестациясы болып табылады, біз белгілі бір уақытқа дейін өзімізді онда ыңғайлы сезінеміз. Тарихтың қалыптасуы барысында, балалар әрқашан кішкене періштелер ретінде қабылдана берген жоқ, 18 ғасырдың ортасына дейін оларға үлкендерге сияқты қарайтын болған. Балалық шақ институты өндірістік төңкерістен кейін дами бастаған. Дәл сол кезден бастап, қоғамның назары балалық шақты қорғау және кішкене азаматтардың қауіпсіз өмір

сүру құқықтарына шоғырланды. Кемероводағы, 25.03.2018 жылы болған қасірет, ең қорқынышты және жан түршігерлік оқиғалардың бірі болды. Бейбітшілік уақытында 60 адам қаза тапты, оның ішінде 42 бала болды. Барлығы олардың ермегі үшін салынған жердегі, құтқару мүмкін емес болған балалар. БАҚ-та КЕМЕРОВО БІЗ СЕНІМЕН БІРГЕМІЗ атты флешмоб пайда болды. Біздің мақаламызда біз жоғалтуға байланысты күйзелістің тәсілдері мен әдістерін және оған байланысты кінә сезімін қарастыруға тырыстық. Тірі қалғандар кінәсі және құтқара алмағандар кінәсі – "әділдік елесінің" феномені ретінде және ЖКСБ (жарақаттан кейінгі стресстік бұзылыстар) бастан өткізу. Біздің зерттеуіміздің аясында, біз контент-сараптаманы пайдаландық (БАҚ және әлеуметтік желілер).

Түйін сөздер: психология, қайғыны бастан өткізу, эмпатия, әділдік елесі, қауіпсіздік елесі, балалық шақ, ЖКСБ, Кемерово.

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ПСИХОЛОГИЧЕСКОЕ ИССЛЕДОВАНИЕ «ИЛЛЮЗИИ БЕЗОПАСНОСТИ» И «ИЛЛЮЗИИ СПРАВЕДЛИВОСТИ» – ТРАГЕДИЯ В КЕМЕРОВО

Аннотация. Одной из первых базовых потребностей, согласно Маслоу, является потребность в безопасности. Мы строим здания, крепости, ворота, чтобы оградить себя от опасности. По мнению некоторых исследователей, стремление к продолжению рода, тоже является своего рода защитным механизмом способом спасти себя от смерти. Однако само понятие безопасности является своеобразной манифестации иллюзии, в которой мы себя комфортно чувствуем до определенного времени. Исторически сложилось так, что дети не всегда воспринимались как маленькие ангелы, до середины 18 века к ним относились как к взрослым. Институт детства получил свое развитие с начала промышленной революции. Именно тогда, внимание общество сконцентрировалось на защите детства и праве маленьких граждан на безопасное существование. Трагедия в Кемерово, 25.03.2018 г. стала одной из самых шокирующих и ужасающих. В мирное время погибло 60 человек, 42 из которых дети. Дети, которых не удалось спасти там где все построено для их развлечения. В СМИ возник флешмоб КЕМЕРОВОМЫСТОБОЙ. В нашей статье мы попытались рассмотреть способы и методы переживания потери, и связанное с ними чувство вины. Вины выживших, и вины не спасших как феномен «иллюзии справедливости» и переживания ПТСР.

Ключевые слова: психология переживания горя, иллюзия справедливости, иллюзия безопасности, детство, ПТСР, Кемерово.

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COMPARATIVE ANALYSIS OF THE KAZAKHSTANI COMPANIES' PERFORMANCE BEFORE AND AFTER IMPLEMENTATION OF THE NORMS OF CORPORATE GOVERNANCE

Abstract. Nowadays, the quality of corporate governance is one of the most significant factors in making investment decisions. Modern investors prefer companies where corporate governance is performing effectively. That is why in Kazakhstan many companies are implementing the international standards of corporate governance. These standards based on the principles given in the Cadbury Report of 1991, the OECD principles of corporate governance (1999), the Sarbanes and Oxley Acts of 2002, and other. In 2015 "Samruk-Kazyna" JSC, the national strategic holding and active investor, approved the new Corporate Governance Code. The primary goal of this article is to analyze the main financial and economic indicators of large Kazakhstani listed firms and to make the forecast as they will change in connection with entering of new regulations of corporate governance. There were calculated and analyzed the numerous indicators of companies' performance, such as return on assets (ROA), return on equity (ROE), and return on sales (ROS) of ten Kazakhstani business giants, portfolio companies of the national holding "Samruk-Kazyna" JSC, during the period of 2012-2016.

Key words: corporate governance, company, ROA, ROE, ROS, economic and financial performance, Kazakhstan.

Introduction. Corporations are one of the most significant factors of economy development of any country. Such organizational and legal forms provide a unique means of business, permitting practically unrestricted access to financial resources for their own development. The successful development of such companies has demonstrated the development of proprietary and managerial tools and mechanisms, the sharing of interest between shareholders and other interested parties. All of these questions relate to areas of corporate governance, actuality of which is significant among professionals [1-3], as well as in mass media.

The international experience of corporate practice on the example of numerous corporate crises shows the following. A company with weak corporate governance poses a serious threat to the interests of investors, society and the state. The brightest example is the American company "Enron". The collapse of this giant of the American industry occurred in a matter of days. It happened only due to a lot of mistakes, abuses and fraud in the activities of the company's managers and directors, which became possible due to the poor quality of corporate governance. Losses of unsuspecting shareholders amounted to 60 billion US dollars, 5.6 thousand employees were left without work, the directors of the company were sentenced to long prison sentences and compensation of million losses. This was very much reflected in the company's counterparties. And this is just one of the high-profile episodes of the consequences of poor corporate governance in the history of corporate scandals in the international arena [4].

The practice of joint stock companies in Kazakhstan and other countries of the former USSR relating to emerging markets shows that the development of the corporate sector and the stock market, involving both domestic and foreign investments, requires corporate governance system, the level of which corresponds to world standards. This is due to the fact that the degree of the company's compliance with the

basic principles of good corporate governance is becoming an increasingly important factor in making investment decisions [5, 6]. In June 2000, McKinsey consultancy conducted a survey of 200 major international investors to find out how the quality of corporate governance in companies influences investment decisions. During the survey more than 80% of investors stated that they are willing to pay more for the shares of companies in which corporate governance is performed effectively than for shares of companies that have obvious problems in that area, even if the two companies have similar indicators of profit and sales volumes. The same study showed that in emerging economies, to which Kazakhstan belongs, more than half of investors put first and foremost the quality of corporate governance in comparison with financial results [7].

In this regard, in recent years, interest in international standards of corporate governance has increased in Kazakhstan, both from companies and investors, and from government agencies designed to ensure investors' rights.

Methods. This study focuses on the influence of companies' performance by the implementation of corporate governance norms. The main methods used in this work was analysis of secondary data, such as statistics, literature review and case study approaches and synthases of new ideas and models. During the model development process, the authors searched several databases for relevant Corporate governance norms frameworks and their related concepts by using a broad search strategy. To identify the key Corporate governance norms and principles frameworks and consolidate them into one model, the authors used consensus-based decision-making and a narrative thematic synthesis guided by several qualitative criteria. Our first task was to identify the scope of the Corporate governance norms and related literature within and outside of business and economic databases; thus, our aim was to get a large sample of the concepts by using a broad search strategy. We searched several databases using each database's unique thesaurus and field codes. We also identified key texts from both academia and consultative business practitioners by cross referencing these texts from resources identified in the search. We reviewed all frameworks and their concepts independently and later, during a retreat, built consensus around our final choices. During the retreat, each author described her/his reasoning for choosing specific frameworks and concepts using the criteria. Another author would subject these arguments to critical discourse and offer opportunities for rebuttal. The discourse continued until both authors could agree on which frameworks and constituent concepts to include in the review [8].

Theoretical analysis of works in the field of assessing the effectiveness of corporate governance allows us to conclude that there are two principal approaches to this assessment: quantitative and qualitative. Quantitative methods for evaluating the effectiveness of corporate governance are based on an analysis of the economic activities of the corporation. The unity of methods of this approach is the understanding that effective financial and economic activities of the corporation entail a stable financial state, which confirms the effectiveness of corporate governance. This approach absorbed both methods for assessing the financial condition, as well as methods for assessing market value. Quantitative methods for assessing the effectiveness of corporate governance, based on the analysis of the financial condition of the corporation, are currently most used, that is why it was chosen as a main scientific method of this research [9].

Results. Despite the fact that the term "corporate governance" has recently been widely used in practice, which is largely due to the increase in the scope of management tasks in large companies, and a significant number of publications have been devoted to it, the very concept of corporate governance does not have an unambiguous definition.

For example, The World Bank defines corporate governance as "a set of laws, rules, regulations and codes of conduct adopted voluntarily allowing a company to attract human and material resources necessary for its activity and it also offers the opportunity to conduct an efficient activity, generating long-term value to shareholders, interest groups and society as a whole"[10]. A well-known definition is that given by *A. Shleifer and R. Vishny:* corporate governance "refers to how lenders of a company ensures that they will receive the benefits due on the investment made" [11]. Another prestigious institution, the International Federation of Accountants (IFAC) defines the concept as follows: "corporate governance is a set of practices of the Board and executive management exercised to ensure strategic directions for action, achieve goals, risk management and responsible use of financial resources" [12]. The Organization for Economic Cooperation and Development (OECD), identifies corporate governance as the system by

which companies are directed and controlled [13]. This refers to how rights and responsibilities are divided between Board of Directors, executive managers, shareholders and other stakeholders, specifying also how decisions regarding the activity of the company are made.

From our perspective, the term "corporate governance" is used in various treatments:

– in narrow sense: the principles of interaction of owners of corporation (shareholders) with corporate management and hired operating managers. In this context the main attention is paid to realization of ownership rights in corporate control and to the rights of control;

– broader interpretation assumes system of relationship of managers with all financial investors;

– in the broadest sense: system of interaction of all stakeholders having the interests in corporation and influencing their activities.

1. Corporate Governance Norms and Principles. After decades of unhurried growth in the Western economy, corporate governance became the subject of close scrutiny in the early 1990s, after the UK was shaken by a series of major corporate bankruptcies (in which investors lost billions of pounds. In fact, it is after these scandals that corporate governance becomes a separate, key management resource for investors.

To investigate these incidents, an ad hoc committee was established in May 1991, headed by Sir Adrian Cadbury, whose purpose was to investigate the shortcomings of British corporate governance and develop measures to restore investor confidence.

The recommendations of the report issued by the committee in December 1992 subsequently formed the basis for a wide range of corporate governance codes in the United Kingdom, the United States and other countries. In fact, these recommendations offered new approaches in delineating the spheres of activity and responsibility between shareholders and management, the distribution of executive and supervisory functions. There were stipulated rules and procedures that would provide investors with access to full and reliable information about the company's activities [14].

In 1999 the OECD formulated and published its own principles, which is the only set of principles generally accepted in the world, having been adopted by the World Bank in its work recognized and approved by the Financial Stability Forum as one of the 12 key standards for international financial stability.

These principles are:

– protection of the legal rights and interests of shareholders;

– equal treatment of all shareholders;

– mutual trust and respect for all stakeholders;

– transparency of corporate decision making;

– transparency and provision of information to all the interested parties on the development strategy and current activities;

– personal liability of the members of the Board of Directors and Executive Bodies and their accountability to the Joint Stock Company and the shareholders;

– adherence to generally accepted standards of business ethics;

– continuous improvement of the corporate management system based on international and domestic best practices.

Table 1 – Periods and discourses of corporate governance

Period of events	1973-76	1991-92	2001-03	2007-10
Field-configuring events	Rise of mutual funds; stagflation; corporate underperformance esp. US	Corporate failures, esp. UK: Maxwell, BCCI, Colorall, Polly Peck	Corporate failures, worldwide: e.g. World Com, Tyco; Parmalat; HIH; dot-com bubble	Global financial crisis: Lehman, Merrill Lynch, AIG; RBS, HBOS, Northern Rock; Fortis
Discourse	Market mechanisms of corporate and managerial control	Board structure	Board independence and professionalism	Board, investor relationships
Key documents	Jensen and Meckling (1976); Rappaport (1981)	Cadbury (1992)	Library of Congress (2002); Breeden (2003); Higgs (2003)	FRC (2010b); European Commission (2014)

The next push was taken by corporate governance in the early 2000s, after a series of scandals with falsified financial reporting in the US that led to the creation of the Sarbanes-Oxley Act in 2002 in the US [15], and, finally, after the financial crisis of 2008 [16]. Generally, modern scientists identify four periods in the corporate governance policy making (table 1) [17].

So, we can confidently say that corporate governance is a rather young direction, which is in an active phase of its development and search for its best forms.

2. Kazakhstani Companies' Performance Before and After Implementation of the Norms of Corporate Governance. The principles of corporate governance are the initial principles underlying the formation, functioning and improvement of the corporate governance system of the society.

The main objective of our study is to analyze financial and economic indicators, such as ROA, ROE, and ROS, the group of companies of the national holding Samruk-Kazyna before and after the implementation of corporate governance standards.

"Samruk-Kazyna" JSC is a strategic holding and active investor whose mission is to increase the national welfare of the Republic of Kazakhstan, and to support modernization of its economy. Following the Presidential Decree in 2008, the Fund was established as a business corporation – an investment holding, where the sole shareholder is the Government of the Republic of Kazakhstan.

The Samruk-Kazyna Fund fulfill its mission through the efficient management of portfolio companies for increasing their long-term value and sustainable development as well as through making catalytic investments in the development of priority sectors of the national economy. "Samruk-Kazyna" group includes thirteen companies in oil and gas, transport and logistics sectors, chemical and nuclear industry, mining and metallurgy, energy, machinery building, and real-estate sectors (table 2) [18].

Table 2 – Net asset value of "Samruk-Kazyna" JSC, 2016

Industries and Sphere	In percentage	In million USA dollars
Oil and Gas	62.43	16 727
Transport	10.9	2 920
Energy	8.45	2 264
Industry	6.5	1 741
Mining	5.85	1 568
Communication	4.09	1 096
Chemical Industry	1.16	311
Real Estate	0.38	102
Machine Building	0.25	66
Total	100	26793

In October 2014 the Board of Directors of "Samruk-Kazyna" JSC approved so called Transformation Program. The main reason of launching such tremendous changes in the holding was the proclamation of a new Kazakhstani strategy until 2050 "Kazakhstan 2050 Strategy: New Political Course of the Established State". This document outlines Kazakhstan's aspirational target to become one of the world's top 30 developed nations. To achieve this aspiration, Kazakhstan will need to make a major breakthrough in terms of investment growth and improved productivity of its existing assets. Samruk-Kazyna controls some of the country's key assets and has a critical role in setting the necessary conditions to achieve the Strategy goals.

The Transformation Program's main goals are:

– to increase value of Fund's group of companies;

– to increase efficiency of portfolio management;

– to implement new principles of corporate governance, following standards of the Organization for Economic Cooperation and Development.

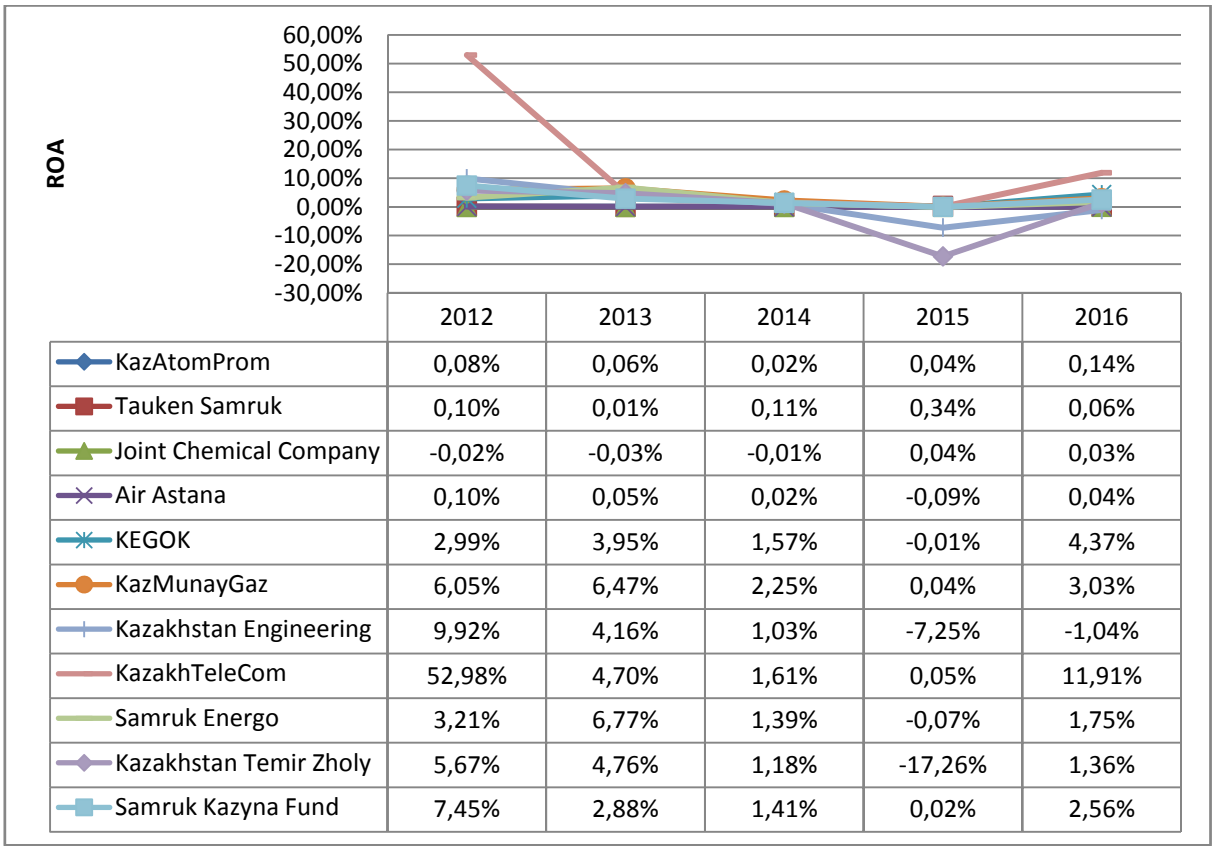
The transformation of Samruk-Kazyna and its portfolio companies consisted two stages: in the first stage (2014-2015) the Program involved the Fund itself and three pilot companies, and in the second stage (2015-2016) the Program cascaded into the other portfolio companies. By starting the transformation

program, the Fund's group will launch a process of continuous improvement which will become the new corporate norm after completion of the Program [19].

In 2015 the RK Government approved the new Corporate Governance Code. The Code takes into account the management specifics of state holdings and covers the best corporate governance practices. The international experts of the OECD level were actively involved in its development. Numerous consultations were held with the stakeholders both inside and outside the Fund. The document can be easily cascaded to the entire quasi-public sector in Kazakhstan [20].

For this research we (1) analyzed the data of the 10 largest portfolio companies of "Samruk-Kazyna", operating in various industries of economy over the last five years starting 2012; (2) identified the main factors affecting the possible changes, and (3) made future forecasts.

Figure 1 represents the amount of return of assets of the 10 largest companies of "Samruk-Kazyna" in percentage from 2012 to 2016. There are eleven graphs, which respectively relate to return of assets in the following companies, including the whole Fund itself: KazAtomProm, Tauken Samruk, Joint Chemical Company, Air Astana, KEGOK, KazMunayGaz, Kazakhstan Engineering, KazakhTeleCom, Samruk Energo, Kazakhstan Temir Zholy, and Samruk Kazyna Fund.



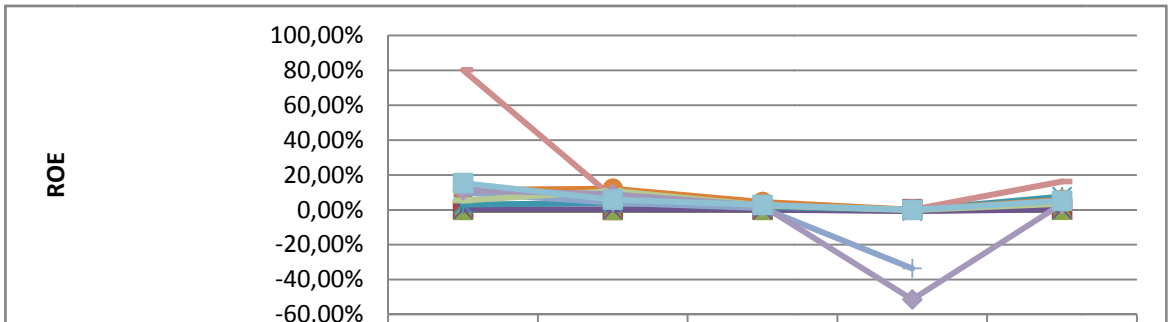
	2012	2013	2014	2015	2016
KazAtomProm	0,08%	0,06%	0,02%	0,04%	0,14%
Tauken Samruk	0,10%	0,01%	0,11%	0,34%	0,06%
Joint Chemical Company	-0,02%	-0,03%	-0,01%	0,04%	0,03%
Air Astana	0,10%	0,05%	0,02%	-0,09%	0,04%
KEGOK	2,99%	3,95%	1,57%	-0,01%	4,37%
KazMunayGaz	6,05%	6,47%	2,25%	0,04%	3,03%
Kazakhstan Engineering	9,92%	4,16%	1,03%	-7,25%	-1,04%
KazakhTeleCom	52,98%	4,70%	1,61%	0,05%	11,91%
Samruk Energo	3,21%	6,77%	1,39%	-0,07%	1,75%
Kazakhstan Temir Zholy	5,67%	4,76%	1,18%	-17,26%	1,36%
Samruk Kazyna Fund	7,45%	2,88%	1,41%	0,02%	2,56%

Figure 1 – Dynamics of ROA ratio by "Samruk-Kazyna" portfolio companies, 2012-2016

In this graph representing the return of assets between 2012 and 2016, we can see a large contrast between the dynamics of changes in return of assets between telecommunication company and other enterprises. That tendency is caused by the increase of Kazakh Telecom net income. In 2012, the return of assets of communication went down significantly by the year of 2013 and then continued to fell steadily until 2015. Contrary to such fluctuations in communicational field the return of assets in other firms remains almost the same throughout three years period, except Kazakhstan Engineering and Kazakhstan Temir Zholy (national railway operator). Their ROA indicators felt down significantly in 2015.

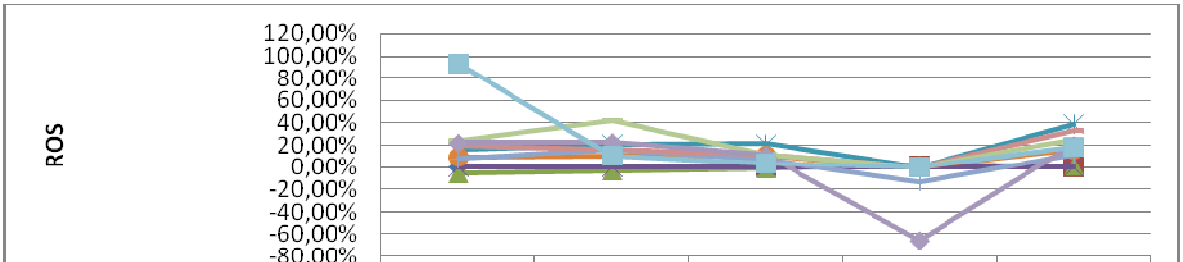
In 2016 we can see a positive tendency of grow of almost all "Samruk-Kazyna" portfolio companies and expect that this trend will be kept the upcoming years.

Figure 2 shows the dynamics of ROE ratio of large Kazakhstan companies.



	2012	2013	2014	2015	2016
KazAtomProm	0,13%	0,09%	0,03%	0,08%	0,21%
Tauken Samruk	0,10%	0,01%	0,12%	0,36%	0,07%
Joint Chemical Company	-0,03%	-0,04%	-0,01%	0,04%	0,05%
Air Astana	0,21%	0,16%	0,07%	-0,75%	0,28%
KEGOK	2,99%	3,95%	1,57%	-0,02%	7,62%
KazMunayGaz	11,50%	12,11%	4,51%	0,08%	5,74%
Kazakhstan Engineering	9,92%	4,16%	1,03%	-33,54%	
KazakhTeleCom	80,27%	7,37%	2,49%	0,08%	16,24%
Samruk Energo	5,37%	10,89%	2,69%	-0,16%	3,56%
Kazakhstan Temir Zholy	11,33%	8,91%	2,38%	-51,42%	3,53%
Samruk Kazyna Fund	15,34%	5,86%	2,88%	0,03%	5,23%

Figure 2 – Dynamics of ROE ratio by “Samruk-Kazyna” portfolio companies, 2012-2016



	2012	2013	2014	2015	2016
KazAtomProm	0,16%	0,12%	0,05%	0,09%	0,30%
Tauken Samruk			0,87%	1,85%	0,22%
Joint Chemical Company	-5,59%	-3,12%	-0,96%	2,13%	1,18%
Air Astana	0,07%	0,05%	0,02%	-0,13%	0,06%
KEGOK	16,08%	20,52%	21,23%	-0,07%	38,93%
KazMunayGaz	9,46%	10,75%	10,31%	0,45%	15,92%
Kazakhstan Engineering	7,86%	15,63%	6,39%	-13,01%	11,09%
KazakhTeleCom	18,80%	15,58%	11,51%	0,13%	32,81%
Samruk Energo	23,37%	42,09%	11,41%	-0,33%	24,92%
Kazakhstan Temir Zholy	21,96%	22,49%	10,93%	-65,47%	19,96%
Samruk Kazyna Fund	92,89%	10,43%	3,81%	0,10%	17,82%

Figure 3 – Dynamics of ROS ratio by “Samruk-Kazyna” portfolio companies, 2012-2016

The return of equity of all companies' average had a moderate decline from 2012 till 2014 which was continued by steady decrease by the year 2015. According to the data of 2016 we can see the positive changes in this financial indicator.

Figure 3 shows the dynamics of ROS ratio over the last five years. Here we can see almost the same picture as in previous two figures. Two companies that were unsuccessful in 2015 were the railway transportation which faced more than 65 percent loss and machinery building with 13 percent loss. In general, it is forecasted that there will be an upward tendency of the return of sales of all given companies.

Discussion. As we can see from the above analysis, the decline in financial and economic performance of portfolio companies which has been observed over the past five years has reached its bottom in 2015. Since 2016, their steady growth has been observed. This is also confirmed by the data of the first half of 2017. In our opinion, such a positive trend is due to the changes that have occurred since the implementation of the transformation program at "Samruk-Kazyna", one of the goals of which was to improve corporate code and introduce new modern standards of corporate governance.

The Code itself is only a set of principles and provisions that the Fund and its portfolio companies should follow. To know whether the company fulfills the principles of the Code or not, the Fund has created a corporate governance diagnostic which helps to measure the corporate governance rating and make recommendations to improve corporate governance in the companies. This rating allows the Fund as a shareholder to assess how far the portfolio companies have progressed in the corporate governance development. The new Corporate Governance Code has significantly expanded the range of tasks and raised the level of corporate practice. Several leading companies of the Fund have been tasked to prepare for an IPO. And this means that corporate governance in companies have to meet all the necessary requirements of the best international practice, otherwise these companies will simply not be of interest to investors. After all, investors should be convinced that their investments are protected, they are provided with qualitative growth, and the management methods in the companies are transparent and accessible for understanding.

To summarize, corporate governance is a complex system including not only board of directors, executive managers, and shareholders, but also investment banks, auditors, consultants, credit rating agencies, and regulators. Corporate governance has its own rules, norms, and regulations. Corporate governance affects firm's economic and financial performance, and finally shareholders' wealth. Nowadays, company's efficiency mostly depends on how well the corporate governance principles are instilling into overall management process.

For this study, we analyzed the data of the ten largest "Samruk-Kazyna" National Holding's portfolio companies during 2012-2016. In our opinion, the trends of the ROA, ROE, and ROS indicators shows that the implementation of the Transformation program and the new Corporate Governance Code positively affect companies' performance. According to our forecast, this trend will be kept in perspective.

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СРАВНИТЕЛЬНЫЙ АНАЛИЗ ДЕЯТЕЛЬНОСТИ КАЗАХСТАНСКИХ КОМПАНИЙ ДО И ПОСЛЕ ВНЕДРЕНИЯ НОРМ КОРПОРАТИВНОГО УПРАВЛЕНИЯ

Аннотация. В настоящее время качество корпоративного управления является одним из наиболее важных факторов при принятии инвестиционных решений. Современные инвесторы предпочитают компании, где корпоративное управление работает эффективно. Именно поэтому в Казахстане многие компании внедряют международные стандарты корпоративного управления. Эти стандарты основаны на принципах, изложенных в Докладе Кэдбери 1991 года, принципах корпоративного управления ОЭСР (1999 год), Актах Сарбанса и Оксли 2002 года и других. В 2015 году АО «Самрук-Казына», национальный стратегический холдинг и активный инвестор, утвердило новый Кодекс корпоративного управления. Основная цель статьи – проанализировать основные финансово-экономические показатели крупных казахстанских компаний и сделать прогноз по их изменению в связи с введением новых правил корпоративного управления. В работе были рассчитаны и проанализированы ряд показателей деятельности компаний, такие как рентабельность активов (ROA), рентабельность собственного капитала (ROE), доходность продаж (ROS) десяти казахстанских бизнес-гигантов, портфельных компаний национального холдинга «Самрук-Казына», в период с 2012 по 2016 годы.

Ключевые слова: корпоративное управление, компания, ROA, ROE, ROS, финансово-экономическая деятельность, Казахстан.

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КОРПОРАТИВТІК БАСҚАРУ НОРМАЛАРЫН ІСКЕ АСЫРУ АЛДЫНДА ЖӘНЕ КЕЙІН ҚАЗАҚСТАНДЫҚ КОМПАНИЯЛАР ҚЫЗМЕТІНІҢ ТИІМДІЛІГІН САЛЫСТЫРМАЛЫ ТАЛДАУ

Аннотация. Бүгінгі таңда корпоративтік басқару сапасы инвестициялық шешімдер қабылдаудың маңызды факторларының бірі болып табылады. Заманауи инвесторлар корпоративтік басқару тиімді жұмыс істейтін компанияларды артық көреді. Сондықтан Қазақстанда көптеген компаниялар корпоративтік басқарудың халықаралық стандарттарын енгізіп жатыр. Бұл стандарттар 1991 жылғы Кадбери туралы есепке негізделген қағидаттарға негізделген, ЭЫДҰ корпоративтік басқару принциптері (1999), Сарбанс және Оксли 2002 жылғы актілері және басқалар. 2015 жылы «Самұрық-Қазына» АҚ, ұлттық стратегиялық холдинг және белсенді инвестор, корпоративтік басқарудың жаңа кодексін бекітті. Осы мақаланың негізгі мақсаты - ірі қазақстандық компаниялардың негізгі қаржы-экономикалық көрсеткіштерін талдау және корпоративтік басқарудың жаңа ережелеріне байланысты өзгеретіндіктен, болжам жасау. Өз кезегінде, 2012 жылдан бастап 2016 жылға дейінгі, қазақстандық бизнес-гиганттар, «Самрук-Казына» ұлттық басқарушы холдингі портфельді компанияларының активтер рентабельділігі (ROA), меншікті капиталдың рентабельділігі (ROE), және сатудан түскен кірістері (ROS) сияқты компаниялар қызметінің көптеген көрсеткіштері есептелді және талданды.

Түйін сөздер: корпоративтік басқару, компания, ROA, ROE, ROS, қаржы-экономикалық қызмет, Қазақстан.

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THE PROBLEMS OF THE CONSTITUTIONAL CONTROL IN THE REPUBLIC OF KAZAKHSTAN

Abstract. One of legal means of the protection of the constitutional system is the institute of the constitutional control, which functionsin the condition of stability of the Supreme Law, creates necessary conditions for realization and adaptation of its provisions to public practice. In the modern legal doctrine, the institute of the constitutional control is considered as the most important component of the constitutional democratic state, the necessary step of advance of the state to the democratic law-abiding state with the rule of law, adoption of laws and other regulations to the constitution. At the same time, the contents of the legal safeguards are much wider and means the specialized constitutional control, carried out by the constitutional justice, include the activity of the supreme bodies of the government, judicial authorities and prosecutor's office, represent complete system of the protection of the Constitution. The institute of the constitutional control has gained wide recognition in the modern states of the world, including the Republic of Kazakhstan. Consideration of the constitutional control gives the chance to reveal the main regularities of its emergence, dynamic development, to show the place and the role in the modern political and legal system of our society.

Keywords: constitution, legality, constitutional council, constitutional security, international law, internal law, system of guarantees, constitutional system, constitutional legal consciousness, constitutional responsibility.

Legal supremacy of the constitution assumes control over its observance. There are specialized and non-specialized bodies which are obliged to prevent the application of laws and other acts contrary to the constitution, and in some countries - to prevent their publication. The constitutional control (supervision) is the most important way to protect the constitution by the legal means. There are several organs of the constitutional control: prosecutorial oversight of legality, the president's role as the guarantor of the Constitution, Parliament authorized activities (ombudsman , etc.).

However, exists non-legal ways to protect the constitution. During the constitutional control procedure does not only protect the constitutional norms, but their development in accordance with the changing situation. The most striking example of this - the United States, where the acting constitution was adopted in 1787, in an entirely different socio- economic and political conditions. Nearly two centuries of constitutional supervision (1803) , the courts , and especially the U.S. Supreme Court, their interpretations have created almost a new "living" constitution.

On the other hand, the constitutional control is not always constitution protects it from violating the law. This is especially true in the countries, where supervision is carried out only after: the unconstitutional regulations (especially the acts of the executive authorities, in particular, taken in the order of delegated legislation) are sometimes decades, before the question of their constitutionality.

Finally, in the practice of constitutional bodies themselves, there are times when their decisions misinterpreted provisions in their constitutions. Indirectly evidenced dissenting opinions of members of constitutional courts, rather frequent decisions with minimal preponderance of votes. However, the institution of constitutional control (supervision) - the most important democratic institution [1, p. 17].

Proper operation, ensure observance of the basic law, which expresses the relation of the social forces in the society, and which is designed to maintain the required stability. Among the bodies exercising constitutional control, eating establishments and officials who are engaged in it, along with other duties, and there are specially created for the purpose of constitutional bodies.

In some countries, the differentfunctions of the constitutional perform a president who, in accordance with the basic law, is the guarantor of the constitution. In some countries, the functions of the Constitutional Court perform specialized Chamber with the constitutional guarantees of constitutional justice, acting alone or as part of the Supreme Court.

In some countries combine both models the control of the general and special courts, if the judge in the process comes to a conclusion (usually by the statements of the parties) on the possible unconstitutionality of the applicable law, it appeals to the Constitutional Court.

Apply to the bodies of the constitutional control can be the supreme bodies of state officials and subjects of the federation, autonomous entities, a group of deputies and senators , courts, ombudsmen , citizens, if violated their constitutional rights (usually only after consideration of the case by the courts or other common). Finally, if you have exhausted all means of protecting constitutional rights in the country, citizens can appeal to international bodies and international courts.

In the different countries, the institution of constitutional control varies; almost it has unique features that relate to the time control, shape control, and mind. Constitutional control can be classified with a certain degree of conditionality, but the classification reveals some similarities control in various countries.

By the time of application of the constitutional control can be pre-and post. Determining in this case is the control point. During the pre - check act carried out prior to its entry into force, until the promulgation of the head of state. Follow-up - control after the entry into force of the Act. The first example can serve as a control in France, for instance: the second - in the U.S., Italy, Germany [2, p. 24].

Legal consequences of the constitutional control can be consultative and decides. The first can be called the control exercised by the State Council in Belgium and France, have the right to speak on the proposed to them by the acts in terms of their compliance with the fundamental law. Advisory control does not bind the requesters. Conclusion control authority in such cases has a moral rather than legal force. Decides to adopt such control, in which the competent authority shall decide whether the act of the basic law and this decision is binding. As a result of this decision an act declared unconstitutional or appropriate and in the latter case, therefore, invalid. Most often it refers to a constitutional operative control.

By its constitutional obligation to be compulsory and optional. In the first case, any act of mandatory regardless of one's faith must be tested for compliance with the basic law. So are subject to mandatory inspection organic laws and regulations of the parliamentary chambers in France. Optional control takes place when it depended on one’s will: the body, the official or individual. Most often performed optional verification.

The shape of the constitutional control can be abstract and concrete (individual). Abstract control is in cases where compliance with the constitution is considered an act or part thereof is due to the specific circumstances. Adjudication confirms compliance with the constitution or annual act, and part of it. This kind of monitoring can be advanced.

Always follow a specific control and linked to circumstances that have arisen in the application of legal acts issued. Protesting against the act party asserts that the disputed fact has no legal power as a consequence of its contradiction with the Constitution. Often such control is exercised as a result of the specific case before the court. In some countries, the functions of the Constitutional Court perform specialized Chamber constitutional guarantees of constitutional justice, acting alone or as part of the Supreme Court.

Specific control unlike the abstract does not annual act or some of its provisions, the act or part “frozen”, they do not act in time and space after the decision. In other words, a specific control is not absolute, as opposed to abstract control. In the latter, directly compared the challenged act and the constitution; specific control involves mediating link: case about which correlates specific act and the basic law. But the result is both abstract and concrete control one - contested and declared unconstitutional act would not apply.

Different bodies of the constitutional control in the western countries have the different names. Sometimes control is carried out bodies for which this function is just one of several sometimes super-

visory powers vested special bodies. Depending on the type of control can be divided into exercised by the Parliament and judicial or quasi-judicial bodies. Parliamentary control is undoubtedly the most democratic, despite the fact that it is complex in terms of legal technique.

It is now possible to speak two constitutional systems of control exercised by the judiciary: the traditional American and European or arising after the First World War in Austria. The traditional system, in addition to the United States [3, p. 58], there exists in Argentina, Japan, Brazil, Norway and several other countries.

It is based on the regular courts to consider the constitutionality of which - one of the functions. This same system includes cases constitutionality only supreme courts (for example, in Australia, India, and Malta). However, other courts do not have the right to constitutional control, but the Supreme Court cases come after consideration of individual cases in the national courts.

The second group of constitutional control, built on the so-called European model and spread first in Europe [4, p. 64], constitute a special institution with the purpose bodies. These are the constitutional council in France, and the Constitutional Chamber of the Supreme Court in Morocco.

The bodies of the constitutional control of the first group are simple. Members of the judiciary of general jurisdiction in the western countries are appointed by the head of state for life term, although there is an age limit at which a judge resigns. The bodies of the second group are more diverse. In the different countries, the term of office of members is quite different.

Important procedure for appointing members of the control bodies. In the courts of the first group - it is always a specially selected person from the ruling class or strata of the population, whose social position adjacent or fused with this class. In the second group, adhering to the European model, the order of appointment and qualification of judges often established by the constitutional law, which stresses the importance of the control body. Most acute in this case is the question of open or disguised political commitment of the members belonging to the control authority. One thing is certain - apolitical person cannot be appointed to these bodies. Matter how overtly officially recognized political “sympathy” appointees. Assessing the overall qualification of constitutional bodies should recognize the high level of training, education and experience of its members. But it does not affect the political nature of these bodies, regardless of the fact that these bodies can make positive decisions.

Particularly important is the question of the subjects with the right to appeal to the body of the constitutional control. In the countries where there is the traditional or the American system of constitutional control, have the right to request the subjects entitled to court. More difficult is the composition of the subjects in the system of constitutional control of the European standard. In some cases, the control body may review the constitutionality of laws on their own initiative.

Legal basis of a special body of constitutional control in Kazakhstan was founded in 1989 in addition to the Constitution of the Kazakh SSR, providing for the establishment of Constitutional Oversight Committee, which, however, has not been established. Then the Constitutional Law of the Republic of Kazakhstan of 16 December 1991 “On the State Independence of the Republic of Kazakhstan” was established that the highest judicial protection of the Constitution is the Constitutional Council of the Republic of Kazakhstan. This body was elected Supreme Council of 2 July 1992 and carried out by the constitutional control in October 1995.

The Constitution of the Republic of Kazakhstan, adopted in August 30, 1995 by a national referendum, has completed an important period of reform of public bodies independent Kazakhstan is a democratic, secular, legal and social state.

Section Six of the Constitution contains the fundamental rules establishing the constitutional control in the Republic, the implementation of which is assigned to the Constitutional Council. It is not part of the judicial system, is a government agency that provides the rule of the Constitution as the Basic Law of the State on the territory of Kazakhstan.

Constitutional Council consists of seven members. Chairman and two members are appointed by the President, two members appointed by the Speakers of the Senate and the Majilis of the Parliament for a term of six years. Half of the members of the Council updated every three years.

On the basis of the 1995 Constitution, the Constitutional Council of Kazakhstan was appointed in February 1996 , was updated twice in 1999 and half in 2002. Today, as part of the Constitutional Council of three doctors and professors, one PhD, professor and two practicing lawyers with extensive experience in the judiciary and prosecutors.

The legal basis for the organization and activities of the Council is the Constitution of Kazakhstan and the Decree of the President of Kazakhstan, having the force of constitutional law "On the Constitutional Council of the Republic of Kazakhstan" dated December 29, 1996. According to constitutional status, the Council in exercising their powers of self-sufficient and independent of government agencies, organizations, officials and citizens, is subject only to the Constitution and cannot be based on political or other motives.

The Constitution established the terms of reference of the Constitutional Council, comprising: a decision in the case of dispute over the validity of the election of the President of the Republic, members of Parliament and of the republican referendum, consideration before the President signs laws adopted by the Parliament on their compliance with the Constitution , consideration to the ratification of international treaties of the Republic on their compliance with the Constitution , an authoritative interpretation of the Constitution; provision of an opinion in the case of consideration by Parliament on early dismissal of the President of the Republic of Kazakhstan to illness or removal from office in case of high treason.

Constitutional proceedings on given issues can only be initiated on the appeals of the President of Kazakhstan, Chairman of the Chamber of Parliament, at least one fifth of the total number of Members of Parliament, the Prime Minister.

Among the subjects of appeal to the Constitutional Council did not include citizens of the Republic. Their constitutional rights and freedoms can be protected in the courts of general jurisdiction and the Constitutional Council - in the cases and in the manner prescribed in Article 78 of the Constitution. If a court finds that a law or other normative legal act subject to application infringes on the rights and freedoms of man and citizen, it shall suspend the proceedings and ask the Constitutional Council with a proposal to declare the act unconstitutional.

Over the six-year period of the Constitutional Council considered more than 120 hits. Among them: 17 - on the constitutionality of laws passed by Parliament before being signed by the President (14 %), 54 - the official interpretation of the Constitution (43%) , 45 - recognition of regulatory legal acts unconstitutional on representations of ships (37%). As for the subjects of circulation, in accordance with Article 72 of the Constitution to the Constitutional Council of the Republic of Kazakhstan has been accessed: President - 16 times (13%), Chairman of the Senate - 5 (4%), Chairman of the Majilis - 12 (10 %), 1/5 of deputies - 24 (20%), the Prime Minister - 14 (11 %), the courts of the Republic of Kazakhstan - 47 (39%).

In the conclusion we would like to say, that 17 laws enacted by the Parliament of the Republic and the Constitutional Council for compliance with the Constitution, eight unconstitutional. Among these laws: “On languages in the Republic of Kazakhstan”, the Civil Code (special part), “On Chambers of Commerce”, “On the rare and endangered species of animals”, “On mandatory insurance of employer’s liability for injury to the worker”,“On amendments and additions to some legislative acts on issues of religious freedom and the activities of religious organizations”.

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Б. Ж. Рахметулин[1], Б. С. Рахметулина[2], Уинстон П. Наган

[1]Қазақстан Республикасы Ішкі істер министрлігінің Төтенше жағдайлар жөніндегі комитетінің Көкшетау техникалық институты, Өрт қауіпсіздігін қамтамасыз ету департаменті, Көкшетау, Қазақстан,
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ҚАЗАҚСТАН РЕСПУБЛИКАСЫНДАҒЫ КОНСТИТУЦИЯЛЫҚ БАҚЫЛАУ МӘСЕЛЕЛЕРІ

Аннотация. Конституциялық құрылысты қорғаудың құқықтық құралдарының бірі конституциялық бақылау институты болып табылады, оның қызметі. Негізгі заңның тұрақтылығын сақтап қана қоймай, оның ережелерін қоғамдық тәжірибеге енгізу және бейімдеу үшін қажетті жағдайларды жасайды. Заманауи құқықтық доктринада конституциялық бақылау институты мемлекетті демократиялық жағдайға алға басуының маңызды сатысына өту үшін қажетті заң үстемдігін жүзеге асырып, Конституцияға қайшы келетін заңдар мен өзге де нормативтік құқықтық актілер қабылдануының жолын кесетін құқықтық демократиялық мемлекеттің маңызды құрамдас бөлігі ретінде қарастырылады. Сонымен бірге, құқықтық әдебиеттерді талдау көрсеткендей, құқықтық кепілдіктердің мазмұны конституциялық әділет органдарының мамандандырылған конституциялық бақылауынан басқа айтарлықтай кең,оның құрамына Конституцияны қорғаудың біртұтас жүйесінің (құрылыс, қорғаныс механизмі) жиынтығын қамтитын мемлекеттік биліктің жоғарғы органдарын, әділет органдары мен прокуратураның қызметін біріктіретін институционалдық біркелкі топтар кіреді. Конституциялық бақылау институты әлемнің көптеген заманауи мемлекеттерінде, оның ішінде Қазақстан Республикасында танымалдылыққа ие болды. Конституциялық бақылау мәселесін зерттеу оның пайда болуының негізгі үлгілерін анықтауға, даму динамикасын қадағалауға, қоғамның қазіргі саяси және құқықтық жүйесіндегі орны мен рөлін көрсетуге мүмкіндік береді.

Түйін сөздер: конституция, заңдылық, конституциялық кеңес, конституциялық қауіпсіздік, халықаралық құқық, мемлекетішілік құқық, кепілдіктер жүйесі, конституциялық құрылыс, конституциялық құқықтық сана, конституциялық жауапкершілік.

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ПРОБЛЕМЫ КОНСТИТУЦИОННОГО КОНТРОЛЯ В РЕСПУБЛИКЕ КАЗАХСТАН

Аннотация. Одним из юридических средств защиты конституционного строя является институт конституционного контроля, функционирование которого позволяет сохранять не только стабильность Основного закона, но создает необходимые условия для реализации и приспособления ее положений к общественной практике. В современной правовой доктрине институт конституционного контроля рассматривается как важнейший компонент правового демократического государства, необходимая ступень продвижения государства к демократическому состоянию, посредством которого обеспечивается господство права, пресекается принятие несоответствующих Конституции законов и других нормативных правовых актов.Вместе с тем, как показывает анализ юридической литературы, содержание юридических гарантий намного шире и кроме специализированного конституционного контроля, проводимого органами конституционной юстиции, в его состав включают институциональный пласт, объединяющий деятельность высших органов государственной власти, органов юстиции и прокуратуры, которые в совокупности представляют собой целостную систему (конструкцию, защитный механизм) охраны Конституции. Институт конституционного контроля получил широкое признание в большинстве современных государств мира, в том числе и в Республике Казахстан. Рассмотрение конституционного контроля дает возможность выявить основные закономерности его появления, проследить динамику развития, показать место и роль в современной политической и правовой системе общества.

Ключевые слова: конституция, законность, конституционный совет, контитуционная безопасность, международное право, внутригосударственное право, система гарантий, конституционный строй, конституционное правосознание, конституционная ответственность.

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LEGAL CHARACTERISTIC OF THE ILLEGAL BUSINESS

Abstract. Within development of the market relations of one of fundamental basis of economic stability of the state is business activity. Business is the independent, initiative activity of citizens, oralman and legal entities, directed to receiving income by use of property, production, sale of goods, performance of work, rendering services, based on the right of private property (private business), or on the right of economic maintaining, or operational management of the state enterprise (state business). Business activity is carried out from name, risk and property responsibility of the businessman. Small business entities are individual entrepreneurs without formation of legal entity and the legal entities, carrying out business, with an average annual number of workers, no more than hundred people and average annual income not over three hundred thousand monthly settlement indicators, the corresponding financial year, determined by the law on the republican budget and operating for January 1. Subjects of microbusiness are the small business entities, carrying out private business with an average annual number of workers no more than fifteen people or average annual income not over thirty thousand monthly settlement indicators. Subjects of average business are the individual entrepreneurs and legal entities, carrying out business and average annual income over 300 000 three hundred thousand monthly settlement indicators, 3 000 000-fold MRP, inclusive with the number of workers from 101 to 250 persons. Subjects of large business are the individual entrepreneurs and legal entities, carrying out business and answering to one or two of the following criteria: the average annual number of workers is more than two hundred fifty people and (or) average annual income over three million monthly settlement indicator. The state gives not only support, but also control on the introduction of the unified register.

Keywords: business activity, private property, economic maintaining, operational management, state business, legal entity, natural person, sector of economy, subject of business, trade secret.

Entrepreneurial activity is determined by the civil legislation of the Republic of Kazakhstan as an independent, carried out at your own risk activities aimed at systematically profit from the use of property, sale of goods, works or services by persons registered as such in accordance with the law [1].

But how is interpreted the concept of “entrepreneurship” in the Encyclopedic Dictionary entrepreneur: “Entrepreneurship - leading independent activity of the citizens, aimed at making profit or personal income, carried out on his behalf, under your financial responsibility, or under the legal responsibility of a legal entity. An entrepreneur may carry out any economic activities not prohibited by law, including commercial mediation, purchase, consulting and other activities, as well as securities transactions” [2].

We can findvery interesting characteristic of business, contained in the book “market entrepreneurship”: “Entrepreneur in the activity aims to provide the necessary combination or blend of the required personal benefit from the public good for profit. ... Entrepreneurship is an activity that is associated with an investment in order to generate profits through a combination of personal benefit to the public good” [3].

Having considered the above definition of entrepreneurship, we can identify the main features of the business to be considered at a subsequent discussion of the research. The most important features of the business, in our opinion, include:

- Autonomy and independence of economic entities; any entrepreneur is free to make a decision on a particular issue, of course, under the rule of law;

- Economic interest.The main objective of business - obtaining the maximum possible profit. At the same time, pursuing their very personal interests a high profit, the entrepreneur contributes to the achievement of public interest;

- Economic risk and responsibility.The most for any calculations verified the uncertainty, the risk remains.

These essential features of entrepreneurship are interrelated and operate simultaneously.Article 180 of the Criminal Code of the Republic of Kazakhstan has fixed “illegal entrepreneurship”, whichhas included in chapter 22 of the Criminal Code of the country “the crimes in the sphere of economic activity”.

The adoption of the Constitution of the Republic of Kazakhstan in 1995, enshrines the right to the free use of each of their abilities and property for entrepreneurial and other economic activities, prompting lawmakers to recognize that law is independent object of the criminal law protection.

From this point of view, it is clear the position of the newCriminal Codeof the Republic of Kazakhstan (adopted in July, 2014) about the responsibility for the various forms of abuse in the sphere of economic activity. This Criminal Code of our country works since January, 2015. In the articles of the Criminal Code of the Republic of Kazakhstan described the symptoms of conduct “illegal business”, “illegal banking activity”, and “so calledentrepreneurship”.

The objectives of the criminal law are prevent the actual transfer of business activity in the sphere of illegal or “underground” economy, and accordingly, its withdrawal from the control of the state, which usually entails non-compliance with the legal obligations of entrepreneurs to the state and citizens.

Article 180 of the Criminal Code of the Republic of Kazakhstan is directed against this illegal business, which is, at least, caused large-scale damage or associated with the generation of income, or carried out with other qualifying features.

The business activity in the field of production, trade, services, production work, etc. is carried out the statutory registration or licensing procedure. Such activities may be widespread, but the criminal liability arises only in cases where this activity represents a significant danger to the public and prohibited by the criminal law.

Object of the crime are the social relations, governing entrepreneurial activities in good faith and protected by the criminal law. Professor Z. A. Neznamova believes that the generic composition of the object of the crime to the social relationships that provide the normal, established procedure for state business. The author agrees with this definition of a generic object of illegal business [4].

The immediate object of the crime are legitimate business interests, the normal state of the economy, the interests of customers, partners and other individuals and organizations, as well as the financial interests of the state as the result of illegal business, which creates the possibility of an uncontrolled state, its income tax authorities.

Supporting and protecting the business, government, at the same time, ensure its legality, it exercises control needed to ensure the interests of the state, society and the legitimate rights and interests of citizens. The state bans or restrictions on certain activities, failure of which makes these activities illegal [5].

Article 180 of the Criminal Code of the Republic of Kazakhstan “Illegal Business” consists of two parts. The first part of the article provides the basic structure of the offense, and the second - provides the qualifying circumstances. The main part of the offense is delimited by the character action.

Implementation of business activity without the registration or without a special permit (license) in cases where such a permit (license) is required, including any acts constituting the registration or permit entrepreneurial activity or inactivity, consisting of dereliction of duties imposed by law.

This procedure is characterized by three features: the commission described the wrongful act of socially dangerous consequences in the form of a large damage that is caused to the citizens, organizations or the state, and a causal link between the act and the damage incurred.

The objective side, along with the acts, also includes the removal of a large amount of income.

Identify signs of illegal business, the legislator has provided, and form the commission of the act:

1) Carry out business activities without registration;

2) Carry out business activities without a special permit (license);

3) Carry out business activities in violation of the licensing conditions.

The first form - entrepreneurial activity without registration. Under the entrepreneurial activity without registering means occupation without evidence produced in due course. The status of the entrepreneur acquired after registration. This is a mandatory requirement of the current legislation (Articles 25, 52, 53, 54 of the Civil Code of the Republic of Kazakhstan).

The order of business registration of the citizens defined in Art. 25 of the Civil Code of the Republic of Kazakhstan, the procedure for registration of business entities engaged in commercial activities, defined in Art. 53. A citizen has the right to engage in entrepreneurial activities without forming a legal entity from the moment of state registration as an individual entrepreneur. The head of a peasant (farmers) economy, carrying out activities without establishing a legal entity, an entrepreneur from the moment of state registration of a peasant (farmers) economy. Since then, the activity becomes legitimate enterprise. Therefore, it is illegal entrepreneurial activity without any registration or before the date of registration.

Implementation of business activity without registration: such activities prior to the submission of documents required for registration, or even after the filing of such documents, but before it was an act of state registration of such activities (if such act had taken place).Justified refusal to register the business makes last illegal.

Entrepreneurial activity is illegal and is recognized in the event that its activity is carried out in the period of appeal against the decision to refuse registration (before the entry into force of the court that the denial of registration to be unfounded, of course, provided that this decision took place) [6].

The offense is missing if entrepreneurial activity is registered in accordance with the law changes and additions to the constituent documents, or changed the legal form of the company (except for enterprises with the foreign investment).

The second form of the analyzed crime – carry out business activities without a special permit in cases where such permission is required.An entrepreneur may carry out any activities, as defined in the Charter. The only exceptions are for those activities, which are prohibited by the law of the Republic of Kazakhstan.

Certain activities require a special permit. In Kazakhstan, the main list of these activities and the procedure for obtaining a license contained in the decree of the Government of the Republic of Kazakhstan dated January 14, 2016“On licensing of certain activities” [7]. Resolution of the Government approved a list of activities licensed in the territory of regions, cities of regional importance, which include: medical practice (except for the treatment of patients suffering from infectious and oncological diseases), public demonstration of films and videos, the organization and content of sweepstakes and gambling institutions, activities for the production of food, veterinary practice and pharmaceutical activity, motor activity of passenger in the maintenance and operation of gas stations, tourist and excursion activities, etc.

Licensing of specific activities provided by separate laws and regulations of the Republic of Kazakhstan. For example, the law “On private detective and security activities”, Law of the Republic of Kazakhstan “On Education”, the Law “On psychiatric care and guarantees of citizens' rights in its provision” and others. In accordance with the requirements of law, entrepreneurial activity is illegal if carried out at all without a license or during the execution of the license prior to its receipt.

The third form of the analyzed crime is to carry out business activities in the violation of the licensing conditions. Breach of license – it's non-compliance in the implementation of business requirements specified in the special permit (license). This form of crime will occur if a person with a license for a certain kind of activity will begin to engage in other activities. For example, a doctor with a license to engage in private medical practice begins to treat patients suffering from cancer or veterinarian having a license to engage in veterinary practice. Of course, it treats people. Violation of the licensing terms can be expressed in the business in the area, where the activity permitted by license or after the expiration of the license prior to its extension.

However, the commentary to the Criminal Code of the Russian Federation A. E. Zhalinsky believes that such a sign of illegal business as activities not specified in the license, it is necessary to refer to a breach of licensing conditions. We believe that the above topic refers to business without a special permit.

If the employer for violations of the law deprived of the license, the continuation of its business activities should be classified as a business without the special permit.

It is well known, that the crime is an alternative structure. It will be completed or after the effects have come in the form of large-scale damage to the citizens, organizations or the state. Therefore, the construction of the objective side of the crime being analyzed by the material and formal elements.

Illegal business, causing major damage to the citizens, organizations or the state, is the composition of the material, since the crime is considered to be completed as soon as major damage. Illegal business, combined with the generation of income in a large amount is formal structure, and therefore considered as completed from the moment of committing any of the specified disposition. Article 180 of the Criminal Code of the Republic of Kazakhstan involves the illicit extraction of income in a large amount. Under this article was recognized a large amount of income, the amount of which exceeds two hundred times the minimum wage. However, the definition of large-scale damage caused by illegal business to individuals, organizations or the state, has not received a legal interpretation and is estimated category.

Recognition caused by an individual entrepreneur or a commercial organization major damage depends on their financial position, extent and quality of the property caused by physical, organizational and other damage. Recognizing the damage major decided by the court, based on the specific circumstances of the case. Below we take a look on especially illegal business qualifications related to the definition of major damage.

The subjective aspect of illegal business is determined by the fault of a direct or indirect intent. The perpetrator is aware that engaged in business without registering, or carries on business, for employment which requires a special permit (license) or that is engaged in this activity in violation of the licensing conditions, foresees the possibility or inevitability of causing large-scale damage to the citizens, organizations or the state, and wishes or deliberately admits causing such damage, or is indifferent to it. The offender may also be aware that extracts from illegal activities income on a large scale and wish the extract.

So, if it's illegal business, causing large-scale damage to the citizens, organizations or the state, is directed into a person in any form of intent. For example, the possible harm to human health as a result of negligence employment medical practice in violation of licensing conditions.

The subject of the crime can be both general and specific. The subject of the crime can be imputed to any individual, i.e., the citizen of the Republic of Kazakhstan, a foreigner or a stateless person who is required to register as an entrepreneur or to obtain the appropriate license to engage in certain activities. The subject – a person capable of the actions to acquire and exercise civil rights, create for themselves civic duties and perform them (civil capacity), including carrying out business activities.

The subject of the business activities in the case of violation of the licensing terms can lose the license. In the Republic of Kazakhstan making business with the individual person is possible only if he has almost achieved eighteen years old (Art. 20 of the Civil Code of the Republic of Kazakhstan).

Professor Z. A. Neznamova believes in entrepreneurial activity without registration of the subject of the crime may be any person who has attained 16 years of age. The legal literature concerns age limit culprit (sixteen or eighteen years of age) lost the urgency in connection with the introduction of the civil law concept of “emancipation”.

Part 2 of Art. 180 of the Criminal Code define aggravating circumstances of illegal business. They are: illegal business activity by an organized group, gaining income on a large scale, entrepreneurial activity by a person previously convicted for illegal enterprise or illegal banking activity.

According to Art. 35 of the Criminal Code of the Republic of Kazakhstan, the crime committed by an organized group, if it was committed by a stable group of the persons, who combined beforehand to commit one or more crimes. This variety is peculiar complicity professionalism and stability. Organized group is characterized by mandatory signs, which should include the preliminary agreement and sustainability.

Sustainability refers to the presence of an organized group of permanent links between the members and the specific methods of the preparation or commission of one orseveral crimes. On the stability of this criminal association indicates the duration of its existence in time. This may be the time elapsed since the formation of the group until the moment of the first of its participants planned crimes. This may be a period of time within which its members committed crimes. At the same time the length of the existence of such a group over time indicates a high degree of consistency in the criminal conduct of its participants.

In addition with the high degree of coherence and stability of the relations between the members of an organized group could indicate the existence of a plan of criminal activity labeled it the roles and functions of individual acts and operations. At the same time sustainability of links between the members of an organized group reflects not only the high degree of consistency of their behavior, but also the level of isolation, isolation from society, the criminal formation (with its own rules of communication, chain of command, discipline, etc.).

In the conclusion we would like to note, that each organized group is no longer just a participant in it, as a member regardless of the location and functions allocated to it in the implementation of the plan of criminal activity. This conclusion is confirmed by the fact that the law does not limit the participation in an organized group, or only the performing co-member actions, as is the case with "a group of persons".

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ЗАҢСЫЗ КӘСІПКЕРЛІКТІҢ ҚҰҚЫҚТЫҚ СИПАТТАМАСЫ

Аннотация. Нарықтық қатынастар дамуының шеңберінде мемлекеттің экономикалық тұрақтылығының іргелі негіздерінің бірі кәсіпкерлік қызмет болып табылады. Кәсіпкерлік, жеке меншік құқығына (жеке кәсіпкерлік) немесе шаруашылық жүргізу немесе мемлекеттік кәсіпорындарды жедел басқару құқығына негізделген (мемлекеттік кәсіпкерлік), мүлікті пайдалану, тауарларды өндіру, сату, жұмыстарды орындау, қызметтер көрсету арқылы таза табысты алуға бағытталған азаматтар, оралмандар мен заңды тұлғалардың бастамашыл, жеке қызметі болып табылады. Кәсіпкерлік қызмет кәсіпкердің тәуекелдікке және мүліктік жауапкершілігіне байланысты жүзеге асырылады. Шағын кәсіпкерлік субъектілері республикалық бюджет туралы заңмен бекітілген және тиісті қаржы жылының 1 қаңтарында сәйкес келетін орташа айлық табысы айлық есептік көрсеткіштің үш мыңнан бір бөлігінен және орташа айлық қызметкерлер саны жүз адамнан аспайтын заңды тұлғалар және заңды тұлғаларды құрмай кәсіпкерлікті жүргізетін жеке кәсіпкерлер болып табылады.

Микрокәсіпкерлік субъектілері болып қызметкерлерінің орташа жылдық саны он бестен немесе орташа айлық табысы айлық есептік көрсеткіш отыз мың аспайтын жеке кәсіпкерлікті жүзеге асыратын шағын кәсіпкерліктің субъектілері табылады. Орта кәсіпкерлік субъектілері кәсіпкерлікті жүргізетін қызметкерлер саны 101 адамнан 250 адамға дейін орташа жылдық табысы АЕК 3 000 000 еселенген мөлшерін қоскандағы орташа айлық есептік көрсеткіштің 300 000-астам табысы бар жеке кәсіпкерлер және заңды тұлғалар болып табылады. Ірі кәсіпкерлік субъектілері кәсіпкерлік қызметті жүзеге асыратын және келесі критерийлердің біреуін немесе екеуін қанағаттандыратын жеке кәсіпкерлер мен заңды тұлғалар болып табылады: қызметкерлердің орташа жылдық саны екі жүз елуден асады және (немесе) орташа жылдық табысы айлық есептік көрсеткіштің үш миллион еседен астамын құрайды. Мемлекет тек қана қолдау көрсетіп қана қоймайды, сонымен қатар бірыңғай тізілім енгізу арқылы бақылауды жүзеге асырады.

Түйін сөздер: кәсіпкерлік қызмет, жеке меншік, шаруашылық жүргізу, жедел басқару, мемлекеттік кәсіпкерлік, заңды тұлға, жекетұлға, экономика секторы, кәсіпкерлік субъектісі, коммерциялық құпия.

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ПРАВОВАЯ ХАРАКТЕРИСТИКА НЕЗАКОННОГО ПРЕДПРИНИМАТЕЛЬСТВА

Аннотация. В рамках развития рыночных отношений одной из фундаментальных основой экономической стабильности государства является предпринимательская деятельность. Предпринимательством является самостоятельная, инициативная деятельность граждан, оралманов и юридических лиц, направленная на получение чистого дохода путем использования имущества, производства, продажи товаров, выполнения работ, оказания услуг, основанная на праве частной собственности (частное предпринимательство) либо на праве хозяйственного ведения или оперативного управления государственного предприятия (государственное предпринимательство). Предпринимательская деятельность осуществляется от имени, за риск и под имущественную ответственность предпринимателя. Субъектами малого предпринимательства являются индивидуальные предприниматели без образования юридического лица и юридические лица, осуществляющие предпринимательство, со среднегодовой численностью работников не более ста человек и среднегодовым доходом не свыше трехсот тысячекратного месячного расчетного показателя, установленного законом о республиканском бюджете и действующего на 1 января соответствующего финансового года. Субъектами микропредпринимательства являются субъекты малого предпринимательства, осуществляющие частное предпринимательство, со среднегодовой численностью работников не более пятнадцати человек или среднегодовым доходом не свыше тридцати тысячекратного месячного расчетного показателя. Субъектами среднего предпринимательства являются индивидуальные предприниматели и юридические лица, осуществляющие предпринимательство, и имеющий среднегодовой доход свыше 300 000 трехсот тысячекратного месячного расчетного показателя, 3 000 000-кратного МРП включительно, с количеством работников от 101 до 250 человек. Субъектами крупного предпринимательства являются индивидуальные предприниматели и юридические лица, осуществляющие предпринимательство и отвечающие одному или двум из следующих критериев: среднегодовая численность работников более двухсот пятидесяти человек и (или) среднегодовой доход свыше трех миллионно кратного месячного расчетного показателя. Государство оказывает не только поддержку, но также и осуществляете контроль путем введения единого реестра.

Ключевые слова: предпринимательская деятельность, частная собственность, хозяйственное ведение, оперативное управление, государственное предпринимательство, юридическое лицо, физическое лицо, сектор экономики, субъект предпринимательства, коммерческая тайна.

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NATIONAL BANK OF UKRAINE AND NATIONAL COMMISION OF SECURITIES AND STOCK MARKET AS THE MAIN REGULATORS OF UKRAINE FINANCIAL MARKET FUNCTIONING

Abstract. The article focuses on the basic principles of powers of Ukraine National Bank and National Commission of Securities and Stock Market as the main regulators of functioning of Ukraine financial market. The mechanism of state regulation of financial market has been determined on the basis of sector model; it helps to stipulate the main directions of forming development strategies of financial market. The problems restricting the powers of the main regulators on the financial market of Ukraine have been found. The state of financing the activity of regulators in state budget of Ukraine and the peculiarities of generating continuum of the sources for replenishing the budget according to the profile has been analyzed.

The basic measures to improve the performance of functions in the conditions of joining the European Union have been proposed. The necessity of creating a mega-regulator as an integral part of forming an effective policy of regulating the financial market has been substantiated.

Keywords: regulator, national bank, financial market, expenditures, Ukraine, control and supervisory bodies.

Introduction. The problems of changing the powers of certain control and regulation bodies in the financial market are extremely relevant in the context of modern globalization processes and the manifestations of crisis phenomena. Considering the innovations carried out by Ukraine and the National Bank of Ukraine (the NBU), there is the task of analyzing contemporary changes in the legislative and regulatory framework to understand further development of Ukraine financial market. Bringing the legislative framework of Ukraine, in relation to the regulation of financial market, to international standards creates the ignorance of business entities with their rights and responsibilities regarding their participation in the financial market.

Despite the broad outline of the issue being studied in the works of national and foreign scholars, there is a need to further study the theoretical and practical principles for the distribution of powers of regulatory and supervisory bodies in the financial market of Ukraine due to the innovations in the policy of the state and the NBU.

The goal of the research is to identify the impact of changes in the legislative framework on financial market regulation and the allocation of functions between different participants in control, supervision and regulation.

1. Legal background. The conducted scientific analysis of literary sources shows that the creation of an effective mechanism of state regulation of financial market is important for ensuring the development of financial market as a determining sector of the economics and the protection of its participants. The construction of a system of interconnections between financial institutions in the process of implementing their functions, which determines the effectiveness of the functioning of the financial market, is of particular importance [1].

The mechanism of the state financial market is constructed on the basis of a sector model, i.e. the system of regulation is three-level: the regulation of bank activity is carried out by the National Bank of

Ukraine; the regulator of the market of securities is National Commission of Securities and Stock Market (NCSSM); the activities of other financial intermediaries and financial companies (insurance companies, credit unions, non-state pension funds, etc.) are regulated by the National Commission which carries out state regulation in the field of financial service markets (NCSRFSM). The NBU as a regulator is independent of the government and economically independent; and the activities of the other two are coordinated by the Cabinet of Ministers of Ukraine.

Therefore, there was a need to reorganize such a system of nonlinear subordination of state regulation of financial markets.

The initiator of the changes in the structure of supervising the market of financial services is the NBU since insurance companies, credit unions, leasing companies, investment companies and other financial companies usually make all payments through bank accounts. However, the reporting of these financial institutions is scattered and submitted to other regulating bodies.

This approach is proposed in the draft of Comprehensive Program for the Development of the Ukraine Bank System for 2015-2020 (hereinafter referred to as the Program) [5]. According to this program, the NBU will perform the part of mega-regulator and exercise the prudential supervision on key financial markets of the country. The consolidated supervision of domestic financial markets is believed to enable timely and more efficient diagnosing of high risks and thus to prevent crisis processes in the financial system; and the high level of independence and accountability of the central bank will increase confidence in regulatory measures.

Creating the only mega-regulator of the financial bank based on the Department of bank supervision of the Ukraine National Bank and the National Commission performing state regulation in the sphere of financial service markets is also initiated according to the introduction of norms and principles of the Comprehensive Program for the Development of the Ukraine Bank System till 2020 approved by the Resolution of the Board of the Ukraine National Bank dated by June 18, 2015, No. 391 [4].

According to this program, it was planned to give the powers to regulate financial markets to three bodies of state regulators. In 2016, Law of Ukraine “On Amendments to Certain Legislative Acts of Ukraine Concerning the Consolidation of Functions of State Regulation of Financial Service Markets” with the aim of optimization and more effective work of state bodies of supervision and regulation [6]. The goal of the draft law was to optimize the work of state control and supervision bodies.

With the adoption of this draft law, the changes were extended to the main legislative acts regulating the activities of participants in the financial market.

The main change that can be tracked in the legislative framework is the elimination of the National Commission that carries out state regulation in the field of financial service markets and the division of its functions between the NBU and the NCSSM.

2. Systematic analysis of the law. Considering the current trends in the domestic financial market and globalization processes in the economics, we believe that in order to develop and improve functioning of financial market, the mechanism of its state regulation needs to be improved.

Taking into account the adoption of the Ukraine Law “On Amendments to Certain Legislative Acts of Ukraine regarding the Consolidation of Functions of the State Regulation of Financial Service Markets”, changes occurred in the function distribution of the regulatory institutes of the NBU and the NCSSM (table 1).

The changes were significantly extended to the Law of Ukraine “On the National Bank of Ukraine”, which expanded and extended the powers of the authority to regulate financial markets.

It is necessary to draw attention to the fact that the method of standards and codes has recently had greater influence on functioning of national financial markets and their integration into the global financial markets.

In this context, it is necessary to highlight firstly the method of standards and codes, which regulates the functioning of the financial market.

The mentioned method was called “soft law” in practice that is the regulation, which is based not on legal norms and rules defined by the legislation and state regulation bodies, but on voluntarily accepted norms and rules; failure of which will lead to loss of reputation and non-recognition by the society. In this case, the elements of “soft” legislation can be successfully combined with the rules and regulations, established by law.

Table 1 – Function distribution of the regulatory institutes of the NBU and the NCSSM

	National Commission for State Regulation of Financial Market Services		NBU and NCSSM
	Supervised on a consolidated basis for non-bank financial groups, whose predominant activity is carried out by financial institutions.		The NBU monitors, on a consolidated basis, banking groups, as well as non-bank financial groups, except for financial groups, whose predominant activity is carried out by financial institutions supervised by the NCSSM.
	Carried out the state regulation of financial service markets in relation to other financial service markets.		State regulation of financial service markets is carried out: by the NCSSM, on activity in the markets of securities and derivatives, professional activity in the stock market; by the NBU, regarding activities in the market of banking services and activities.
	Inspected the activities of financial service market participants (except for financial service customers), their affiliated and related parties.		Within its powers in the field of state regulation of the markets for non-banking financial services, the NBU has the right to audit (inspect) the activities of financial market participants (except for financial service customers), their affiliates and related persons.
Before	Cooperated with international organizations, state bodies and non-government organizations of foreign states on questions within its competence.	**After**	Within its authority in the field of state regulation of the markets for non-bank financial services, the NBU cooperates with international organizations, state bodies and non-government organizations of foreign states on matters within its competence.
	Issued licenses for the implementation of financial institution transactions within its competence.		Within the scope of the powers in the field of state regulation of non-bank financial service markets, the NBU issues licenses for financial institutions to carry out operations.
	Set up requirements for the auditors who audit entities of non-state pension provision.		Establishes the requirements for auditors who carry out the audit of legal entities of the subjects of non-state pension provision of the NCSSM.
	Acted as the authorized body for organizing the formation and circulation of credit histories.		The NBU acts as the authorized body to organize the formation and circulation of credit histories.
	Carried accounting of mortgage coverage and transactions with it for the issuers of non-bank financial institutions.		Mortgage coverage and transactions with it are accounted by the NCSSM.
	Exercised functions of state regulation, supervision and control in the field of issue and circulation of mortgage bonds, concerning the activities of non-bank financial institutions.		State regulation, supervision and control in the issue and circulation of mortgage bonds and activities of financial institutions are carried out by the NCSSM.
	Accepted information on administrative offenses by participants in financial markets, except for banks.		Information and other legal requirements regarding administrative violations by financial market participants are submitted to the NBU.
	Supervised and determined the procedure for establishing an insurer.		Functions and rights concerning supervision and procedure of establishing an insurer pass to the NBU.
	Prudential supervision regarding established criteria and standards.		The NBU establishes guidelines for prudential supervision regarding the established criteria and standards of financial institutions.

Compiled by the author on the basis of [6-8].

The main principles of state regulating and functioning of financial market in Ukraine must comply with the principles developed by the international organizations in the sphere of control in supervision of financial markets, namely, the Basel Committee on Supervision of Bank Activities, the International Organization of Securities Commissions (IOSCO) and International Association of Insurance Supervisors (IAIS), the Financial Action Task Force (on Money Laundering) (FATF) and the Committee on Payment and Settlement Systems (CPSS). The essence of these principles is to ensure transparency, financial sustainability, solvency and responsibility. If these principles are adhered by the national financial systems, the global financial market will function stably [6–8].

We can conclude that the financial market in its development entered a new strategic stage, as there have been changes in many legislative acts regulating the activities of both financial institutions and the state, in the person of the bodies of state regulation of financial markets.

3. Analytical data. With the change of legislation, changes should be made in the process of fund allocation for the activities of financial market regulators. Therefore, there is a need for a more in-depth analysis of budget expenditures in order to identify the main areas of funding (table 2).

Table 2 – Budget expenditures for financing the main regulators of financial service market for 2015-2018

(UAH million)

Authorities	2015	2016	2017	Plan 2018	Deviation 2016-2015	Deviation 2017-2016	Deviation 2018-2017
National Commission of Securities and Stock Market	42.0	53.4	86.9	126.0	10.4	33.5	39.1
National Commission for the regulation of financial service markets	25.9	27.4	52.2	80.0	1.5	24.8	27.8
Compiled by the author on the basis of [9–11].							

Table 1 shows that expenditures from the budget for the financing of the NCSSM and the National Commission of Financial Services considerably increased for the analyzed period. The expenditures for the maintenance of state regulators in 2016 did not significantly increase, and in 2017-2018, there is a rapid growth, namely:

- In 2016, the National Commission of Securities and Stock Market received expenditures by 19.43% more than in 2015, in 2017 - by 38.58% than in 2016, and in 2018, an increase of expenditures is planned by 30.97% more than in 2017.
- The National Commission for State Regulation of Financial Services markets received financing from the budget by 5.37% more in 2016 than in 2015, increased by 47.67% in 2107, and in 2018, it is planned to increase expenditures by 34, 71% than in 2017.

The analysis of the expenditure distribution for 2015-2017 and the plan for 2018, show that budget expenditures significantly increased while transferring the functions from the National Financial Service Commission to the NBU and the NCSSM. In our opinion, such a division is not effective in terms of using budget funds.

We determine the ratio of expenditures of state bodies concerning the regulation of financial service markets to income received from their activities by the country's budget.

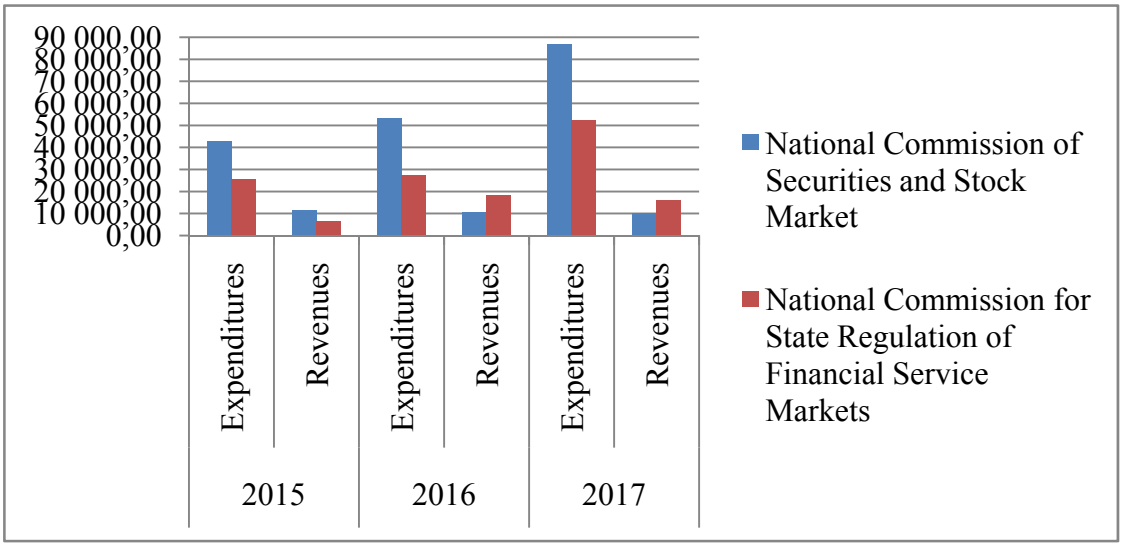

Figure 1 – Expenditure share of financial services market regulators to GDP of Ukraine for 2015-2017

For further understanding of the situation, we will analyze the financial activities of the NBU as a mega-regulator in the system of the state regulation of financial markets.

The main difference between the National Bank of Ukraine and the National Securities and Stock Market Commission and National Commission for State Regulation of Financial Service Markets is the fact that the NBU is the only state regulator that generates significant revenue in the budget rather than expenditures (table 2).

Table 2 – Analysis of the NBU profit, which is transferred to the budget of Ukraine for 2015-2017

(UAH million)

	2015	2016	2017
Expenditures	47 035	30 053	30 025
Revenues	85 199	74 432	74 425
Profit	81 325	68 453	68 425
Funds transferred to the budget of Ukraine	38 164	44 379	44 400
Compiled by the author on the basis of [12–14].			

According to the results of financial activity, the NBU transferred 38 164 million UAH to the budget in 2016 from the profit of 2015 and 44 379 million UAH according to the results of 2016. In 2018, the Ukraine Ministry of Finance plans that the NBU will remit funds in the amount of 44 400 million UAH to the budget.

Thus, the NBU, from the financial and economic point of view, is the most promising body for assuming the primary responsibility for regulating the financial services market.

4. Discussion. The analysis of the power distribution of the National Commission of Financial Service between the NBU and the NCSSM and the formation of expenditures for the function performance of the state regulation of the financial market showed several inconsistencies, namely:

1. Uncertainty in the further activities and functions of the National Financial Service Commission. The further role of the National Commission of Financial Services is not substantiated in the legislative acts confirming the transfer of powers to the NBU and the NCSSM. It means that this body will function without an effective and clearly defined goal, which is ineffective in terms of public authority management.

2. Unclear distribution of the Ukraine budget among state financial market regulators. In the budget of 2017, funds from the budget of Ukraine were allocated to the National Financial Services Commission irrationally to the Law of Ukraine "On Amendments to Certain Legislative Acts of Ukraine regarding the consolidation of the functions of state regulation of financial service markets". Besides the unclear allocation of funds, there was a problem of the unjustified increase in funding to the state regulatory body, for which any functions were not legally established.

To resolve the issue of effective cooperation on the regulation of the financial market by the National Bank of Ukraine and the National Commission on Securities and Stock Exchange, with the support of the EBRD, it is planned to establish an external project office that will coordinate and synchronize the actions of all participants in the process of reforming the financial sector of Ukraine, namely: strategic planning within the framework of the transformation of financial sector regulators; lending renewal, including the introduction of effective mechanisms for protecting creditors' rights and the work with problem assets; developing the market of FinTech; increasing the financial competence of the Ukraine population; enhancing the protection of rights of financial service consumers; improving the corporative management of financial sector participants; developing the infrastructure of financial sector; strengthening coordination between financial sector regulators [12].

Conclusions. The emergence of a number of problems during the implementation of modern reforms is largely due to the lack of an integrated, systematic and planned approach to their practical implementation. The revealed discrepancies should not be an obstacle to the full functioning of the state financial market authorities, but should be taken into account and eliminated, in order to increase the efficiency of the activity.

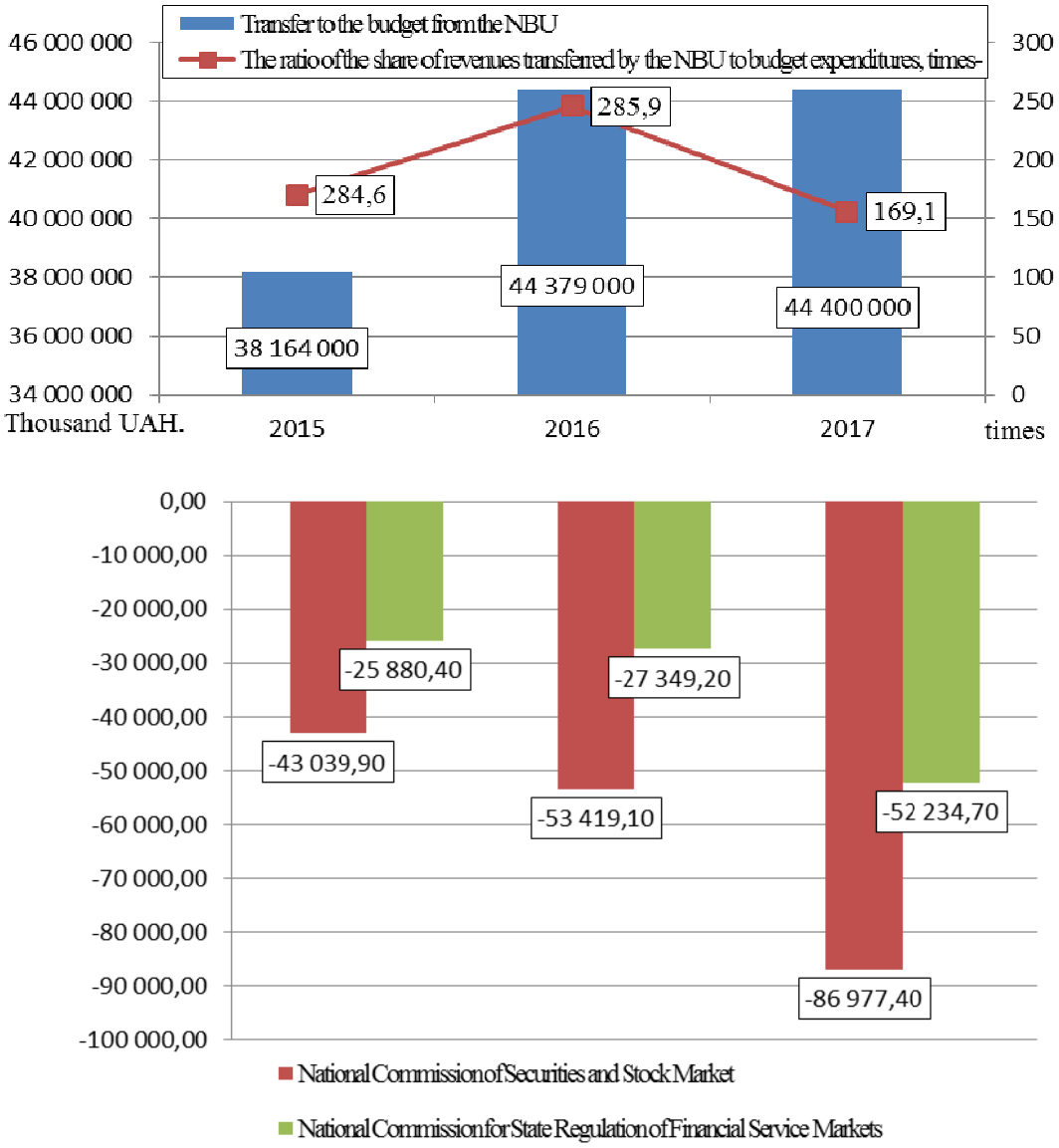

Figure 2 –The ratio of expenditures and revenues of the state regulators of financial markets.
Compiled by the author on the basis of [12-19].

Bringing the Ukraine legislation to the international standards concerning the function distribution of the financial service market between the NBU and the NCSSM will improve the efficiency of the supervision system of financial market objects, will ensure bringing the function to the universal standards on all segments of control by the state authorities.

Positive moments of the proposed reform can be made by reducing the number of control bodies in the financial service market, which, in its turn, will result in a corresponding reduction in the number of regulatory acts, better coordination of the regulator within a single body. However, we get more negative effect - instead of realizing the chance of a real reform of non-bank financial sector, they offer the usual mechanical transfer of the Commission's powers to the NBU.

The analysis of the Ukraine budget expenditures on the state regulators of the financial service market shows positive consequences in the elimination of the National Commission of Financial Services, since there is an annual substantial economy in 52 234.7 thousand UAH.

The main negative point can be determined that the National Bank will concentrate all functions of influence on the financial market immediately: methodological, control, and emission ones. In fact, it is

about creating the "regulator-monopolist" monopolizing all power in the person of the National Bank. Due to the high corruption in Ukraine, it will lead to control of the entire financial market in the hands of politicians.

In addition, the NBU specialists do not have practical experience in regulating the non-bank financial services market, which may pose a threat to excessive state interference in this area and negative trends in the form of market stagnation.

The Law did not cover one more aspect, namely, the fate of the workers of the eliminated structure. Most likely, we will witness that people from the National Commission of Financial Services will simply become employees of the NBU and will carry out the same work.

In general, the reform of reducing the number of regulators appears to be negative. The mechanical transfer of functions from one controlling authority, with its subsequent elimination, to another, is a quantitative component of reducing the state pressure on financial activities, but not a qualitative one. The main problems associated with corruption, for example, issuing financial licenses to unscrupulous companies, further supporting of these companies for a part of profits; the ordered custom checks of competing companies; illegal orders and sanctions; will not disappear if taking into account the proposed changes.

In addition, an incomplete "reform" can even lead to increasing the number of officials and the cost of maintaining the body. The termination of the National Commission of Financial Services activity and the transfer of its powers to another body, the NBU, will not significantly affect the financial market, as the law does not specify how exactly the National Bank will pursue its regulation policy for non-bank financial institutions.

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УКРАИНА ҰЛТТЫҚ БАНКІ ЖӘНЕ БАҒАЛЫ ҚАҒАЗДАР ЖӘНЕ ҚОР НАРЫҒЫ ЖӨНІНДЕГІ ҰЛТТЫҚ КОМИССИЯСЫНЫҢ ЕЛДЕГІ ҚАРЖЫ НАРЫҚТАРЫНЫҢ ЖҰМЫС ІСТЕУІН РЕТТЕУШІ РЕТІНДЕ

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НАЦИОНАЛЬНЫЙ БАНК УКРАИНЫ И НАЦИОНАЛЬНАЯ КОМИССИЯ ПО ЦЕННЫМ БУМАГАМ И ФОНДОВОМУ РЫНКУ КАК ОСНОВНЫЕ РЕГУЛЯТОРЫ ФУНКЦИОНИРОВАНИЯ ФИНАНСОВЫХ РЫНКОВ СТРАНЫ

Аннотация. В статье рассмотрены основные действующие полномочия Национального банка Украины и Национальной комиссии по ценным бумагам и фондовому рынку как основных регуляторов функционирования финансового рынка Украины. Определен механизм государственного регулирования финансового рынка на основе секторной модели, что позволило обосновать основные направления формирования стратегии развития финансового рынка. Выявлены проблемы в законодательской базе, которые ограничивают полномочия основных регуляторов на финансовом рынке Украины. Проанализировано состояние финансирования деятельности регуляторов из государственного бюджета Украины и особенности генерации континуума источников пополнения бюджета в соответствии с их профилем работы.

Предложены основные мероприятия по улучшению выполнения функций в условиях вхождения в ЕС. Обоснована необходимость создания мегарегулятора как неотъемлемой составляющей формирования эффективной политики регулирования финансового рынка.

Ключевые слова: регулятор, национальный банк, финансовый рынок, расходы, Украины, контрольно-надзорные органы.

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THE CONCEPT OF «ENTREPRENEURIAL UNIVERSITY» AND THE MODEL OF DEVELOPMENT

Abstract. In the article the definitions of the entrepreneurship and entrepreneurial university were explored, the peculiarities of the entrepreneurial activities in higher education institutions (HEI) were considered, the definition of entrepreneurial university on the basis of different references was determined. The classification of the model of entrepreneurial university is presented in research. The purpose of the article is to analyze the definition of the essence of the concept «entrepreneurial university» and develop a model of it. Methods of collecting and processing information for this article: to research, analyze the sources, to compare and generalize the material. Also, the main conclusions on the definition of the concept of entrepreneurial university were described. A model of the entrepreneurial university was developed, which is characterized by four main activities: scientific, educational, entrepreneurial and digital. Materials from various foreign sources, examples of various models of an entrepreneurial institution were used in this research, included some recommendations for Kazakhstan's higher education system.

Keywords: university, higher education institutions, entrepreneurship, business activity, entrepreneurial university, education system, university transformation.

Today, we are at the root of the formation of a new type of educational institution in Kazakhstan as an entrepreneurial university. This phenomenon essentially is global and occurs in many countries, where the reflection is obviously on the importance of the university in the socio-economic development of the country.

As society develops, people's attitudes toward educational organizations are changed. However, the speed of these changes is different and regard to various structures and organizations. The business environment is probably the quickest to transform. As for the education system, on the whole, it is very conservative, and its subsystem, as universities, especially.

Undoubtedly, this issue is up-to-date in developing countries, because the tasks that facing the entrepreneurial university are more complex. Naturally, this is understood by all subjects of this process - from teachers to legislators who making decisions. At the same time, universities are not considered only as a labor-training tool.

The main problem facing modern universities is the ever widening «gap» between cultures. In the early 1960s, the publication of the report of C. Snow «Two Cultures», which emphasized the danger of mutual hostility between representatives of humanitarian and natural science cultures, now there is a need of the new report that could be called «Three Cultures». To the confrontation between the humanitarian and natural science cultures described by Snow can be added a hostile misunderstanding between the representatives of these cultures to business culture. What the role should the university play in this regard in overcoming this truly civilizational gap between cultures? [1]

In our opinion, one of the important ideas concerning the transformation of a modern university which is aimed at ensuring a better correspondence of the results of its activities to the requirements of the time is the concept of an *entrepreneurial university.* Thus, the question of understanding the model of an entrepreneurial university becomes very relevant.

The purpose of the article is to analyze the definition of the essence of the concept «entrepreneurial university» and develop a model of it. Methods of collecting and processing information for this article: to research, analyze the sources, to compare and generalize the material.

In order to analyze the concept of «entrepreneurial university» more thoroughly, it is necessary to understand what «entrepreneurship» is.

The definition «entrepreneurship» was introduced into scientific circulation by J. Schumpeter. The term tried to define in many different ways. Such features of entrepreneurship as ingenuity, perseverance in achieving goals, willingness to take risks, have become almost universally accepted. Since the publication of the famous Schumpeter's work «The Theory of Economic Development» (1911), there have been written hundreds of articles and books devoted to the phenomenon of entrepreneurship. In our opinion, the most capacious formulation of entrepreneurship was given by professor Howard Stevenson, who worked at Harvard Business School: «Entrepreneurship is a quest for opportunities beyond the resources currently controlled». [2], [3], [4]

In order to carry out similar searches, it is necessary to possess all the above qualities. This definition is especially positive because it is not limited to the sphere of business: according to Stevenson, entrepreneurship is possible in virtually all spheres of human activity.

The exploration of sources reflecting the facts and realities of the term «entrepreneurial university» is used in a lot of works published since the mid-1990s. However, there is still no clear definition of this concept. Most authors simply describe the characteristics of an entrepreneurial university.

Nevertheless, a significant contribution to the formation of the concept of an entrepreneurial university was made by such scientists as J. Ropke [5], S.V. Golubev [6], L.V. Kobzeva [7], S.R. Filonovich, G. N. Konstantinov [8], B.R. Clark [9], E.V. Dolzhenkova, A.G. Mokronosov, I.N. Mavrina [10], A.O. Grudzinsky [11], G.L. Ovsyannikova [12], A.A. Sidorova, N.A. Rumyantsev [13], H. Etzkowitz [20] and others.

In the opinion of J. Ropke, the following requirements are put forward to the entrepreneurial university:

– the university should demonstrate entrepreneurial behavior as an organization;

– university members - teachers, students, employees - should be entrepreneurs;

– the interaction between the university and the environment should lead to a «structural interface» between the university and the region [5].

Since the mid-1990s, many scientists have proven that science and universities are undergoing changes [14]. The challenges of the world economy have led to the fact that the university has become an institution that is losing its traditional characteristics, whereas higher education institutions become involved in the global economy of knowledge and must comply with the national innovation policy of the country [15], [16].

Clark is one of the most famous developers of the concept under consideration. In his book «Creating Entrepreneurial Universities», the notion of «entrepreneurial university» appears, which later played an important role in the development of the modern concept of management in education [17].

By Clark's definition, the **entrepreneurial university is an institution actively seeking ways to reduce its dependence on the state. These universities set a goal: to train, research and develop such tasks that will lead to results.**

Based on his research and describing the experience of five European universities, the author formulated the first generalized concept of a modern, at that time, entrepreneurial university. This concept has proved its theoretical and applied value by virtue of a new dimension in the academic community. Clark identifies five elements of university behavior and their transformation into an entrepreneurial institution:

– a discretionary funding base;

– a strengthened steering core;

– an enhanced development periphery;

– a stimulated academic heartland;

– an integrated entrepreneurial culture.

A critical comprehension of this model helps to draw the following conclusion, Clark does not give step-by-step instructions on how to use the presented five elements to transform the university into an entrepreneurial organization. Also, the Clark's model assumes independence from the state and is not aimed at the development of the region, but this is not ruled out. The main goal of his concept is to support and help HEIs during the transformation period to become a sustainable entrepreneurial organization in

the market [9]. Nevertheless, Clark's work created the concept of an entrepreneurial university and outlined aspects related to the development of an entrepreneurial university.

One of the most modern concepts is the model of the entrepreneurial university, presented by Harvard University scientists: J. Angell and E. Dangerfield to designate an educational institution whose main purpose is material income [18].

So, before entrepreneurial universities are performing the following tasks, as an entrepreneurial university:

– offers ready-made ideas and entrepreneurship programs and prepares for the future creation of their business;

– develops entrepreneurial thinking among students from different specialties;

– serves as an entrepreneurial institution, creates business incubators, technology parks and also attracts students and graduates to work, thereby helping them to create their own business [19].

So, paramount in this model of the entrepreneurial university is the modification of the traditional model as a transition from public financing to multi-channel financing, based on its own search for additional sources of income.

From the point of view of researcher H-STAR Institute of Stanford University Henry Etzkowitz in the book «Triple Spiral. Universities - enterprises - the state. Innovations in action» the following definition is presented: **«entrepreneurial university» is the key to the rise of industry, the creation of new businesses and jobs, economic stability.**

The main idea of the «triple spiral» theory is the dynamic development of relations between universities, government and enterprises for the effective development of new industries and solving problems in existing ones. One of the key roles is assigned to universities, which not only serve as a teaching institution, but also focus on accumulating knowledge. This model assumes that entrepreneurial universities are the centers which creating new technologies, and they are simultaneously working on scientific research [20].

The developed model is more open and describes concrete steps, if Clark's model is generalized, then Etzkowitz talks about specific elements of university transformation - in entrepreneurial. Also, the main difference between these models is that the Clark model does not take into account the development of the region and does not seek to do so in its concept, although in practice universities have worked with the business community most often of a specific region, and the Etzkowitz's model is aimed at the development of the region.

Nevertheless, the notion of «entrepreneurial university» as an innovative concept was often supplemented and refined in the process of self-assessment by universities in the course of their transformation and development.

The analysis of various approaches to the definition of the essence of the concept of «entrepreneurial university» allows us to conclude that often the entrepreneurial function of universities is associated with the commercialization of the results of its scientific research, that is, with the realization of the so-called «The third mission». Significant role in the activity of such an educational institution is played by entrepreneurial culture, management, marketing, education crediting.

Thus, according to the presented definitions, a university that shows entrepreneurial activity:

– diversifies the sources of financing;

– reduces its institutional dependence on public and state institutions;

– conducts training of competitive professionals with creative entrepreneurial thinking, capable of implementing innovative projects in various fields of activity;

– carries out the production of new knowledge and their capitalization;

– has a flexible organizational structure capable of quickly adapting to changes in the requirements of the society and the market;

– encourages the creation of new enterprises by teachers and students in order to commercialize the results of scientific research;

– realizes a full cycle of reproduction of new knowledge (from generation of ideas to creation of prototypes of innovations);

– promotes the integration of education, science, business and thereby creates prerequisites for the country's innovative development;

– is the center of development of an innovative territorial cluster [21].

Despite the significant advantages that the transition to the entrepreneurial university model provides, most scientists are cautiously concerned with this process. They have a question, what for such a higher educational institution in the first place: business or teaching?

Entrepreneurial activity carries hidden threats to the institution itself. This is due to the fact that teachers, using its resources, can pay more attention to the implementation of their own entrepreneurial projects, while neglecting their own direct responsibilities - teaching students [22].

In fact, a contradiction arises between the traditional values of teaching and the need for teachers to develop entrepreneurial skills in order to earn additional funds for the university [22]. At the same time, it should be noted that there is no universal model of the entrepreneurial university, as well as the ways of its formation.

An entrepreneurial university or an entrepreneur-teacher is a completely new concept for Kazakhstan, from our point of view. This tactic is successfully implemented abroad, where many teachers successfully realize their potential in the entrepreneurial sphere and simultaneously contribute to the development of this or that environment. Material income and social recognition are an important component of our lives as human beings, starting from the well-known pyramid, developed by the psychologist Maslow [23].

Unfortunately, in Kazakhstan, speaking about the situation in educational institutions, the social component is higher, where the teacher receives more moral satisfaction from recognizing their merits by colleagues and students than material. However, following the Maslow pyramid, the need for food, shelter, protection, which is often associated with money, are basic needs, accordingly the entrepreneurial concept in the university has a high chance of success in connection with encouraging a person's basic desire to receive material rewards for his\her work and in a worthy measure.

In progressive countries, any innovation, research, and discovery are encouraged not only in words, but also materially. This, of course, stimulates the entrepreneurial activity of teachers, increases their motivation to create, something to study and discover. This also contributes to their authority, since any student can not only listen to a lecture about an item, but also get acquainted with the specific work or research conducted by this teacher.

So, in our opinion, **an entrepreneurial university is a university that successfully performs educational, scientific, innovative and digital activities, organizes academic entrepreneurship, combining interaction between employers and graduates, exporting knowledge and technology of this university through teachers-entrepreneurs to solve socio-economic tasks of society.**

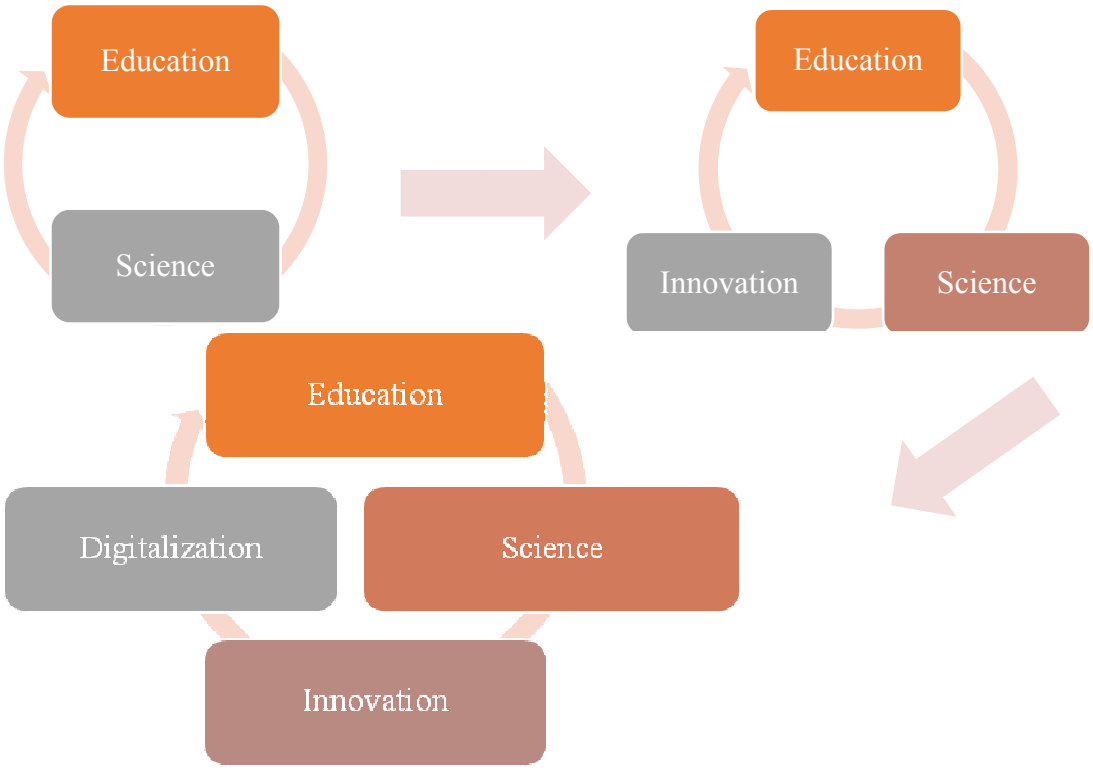
Of course, for the establishment and stabilization of such a phenomenon, greater support is required from the university and the state. The process of teaching requires certain modifications in order to encourage the entrepreneurial development of the university teacher in a positive way. Often, teachers may simply not have enough time for entrepreneurial activity, but more often for any activity because of unnecessary paperwork, which is a pure formality, but takes up a significant amount of time that could be used constructively.

To fill the system of higher education with the desired dynamic - dynamics of the entrepreneurial university and to strengthen the links between industry and education to stimulate a practice-oriented and project approach in education, it is important to include an entrepreneurial university in the typology of universities in Kazakhstan. This will require the integration of this institution into the existing classification of Kazakhstan universities, which in the future will determine its place in the structure of higher education in Kazakhstan.

This will require the integration of this institution into the existing classification of Kazakhstan universities, which in the future will determine its place in the structure of higher education in Kazakhstan.

In connection with global changes in our society, we can see the following trend in the transformation of universities. For example, universities until 2015 drew attention and built a policy of synergy between science and education, the so-called «Universities 2.0». The requirements of modern economy force universities to develop as «University 3.0», this is the cooperation of science, education, and innovation. Soon, the demands of the future economy will be aimed at creating a new form of the university.

Having studied the research of foreign scientists and the modern vision of the role of universities, we propose a model of an entrepreneurial university, which includes the development of science, education, innovation (entrepreneurship) and digitalization (figure).



Model of entrepreneurial university

This model of the entrepreneurial university is characterized by four main activities: scientific, educational, entrepreneurial and digital. At the same time, regardless of how entrepreneurial activity manifests itself, entrepreneurial universities combine teaching, research, and entrepreneurial activities, receive income from it, and also act as an important participant in innovative processes in the country. Implementing the model of the entrepreneurial university, it is necessary to take into account all its «pluses» and «minuses», as well as institutional features of the country and the possibilities of the university itself. At the same time, an important component of their successful activity is the availability of highly qualified managers, as well as teachers who have an entrepreneurial vision, entrepreneurial idea, creative thinking, strive for success, ready to take risks and are not afraid of change.

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«КӘСІПКЕРЛІК УНИВЕРСИТЕТІ» ТҰЖЫРЫМДАМАСЫ ЖӘНЕ ОНЫ ҚҰРУ МОДЕЛІ

Аннотация. Мақала, оқыған көздері негізінде бизнес мектебінің анықтау бойынша құрылған жоғары оқу орындарының (ЖОО), кәсіпкерлік қызметті салу, ерекшеліктерін кәсіпкерлік және кәсіпкерлік университетінің анықтамасын танысты. Зертте кәсіпкерлік университет үлгілерінің классификациясы берілген. Зерттеудің мақсаты - «Кәсіпкерлік университет» тұжырымдамасын мәнін анықтау, талдау және моделін әзірлеу. осы баптың үшін ақпаратты жинау және өңдеу әдістері: зерттеу, көздерін талдау, материалды салыстыру және синтез. кәсіпкерлік университет моделі және кәсіпкерлік университетінің тұжырымдамасын анықтау бойынша жасалады негізгі тұжырымдар. Ғылыми, білім беру, бизнес және сандық - кәсіпкерлік университет моделі төрт негізгі қызмет сипатталады, ол әзірленді. Зерттеуде әртүрлі шетелдік көздерден алынған материалдар пайдаланылды, кәсіпкерлік жоғары оқу орнының түрлі модельдерінің мысалдары. Қазақстанда жоғары білім алуға қатысты ұсыныстар бар.

Түйін сөздер: университеттер, жоғары оқу орындары, кәсіпкерлік, кәсіпкерлік қызмет, кәсіпкерлік университеті, білім беру жүйесі, университет трансформациясы.

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ПОНЯТИЕ «ПРЕДПРИНИМАТЕЛЬСКИЙ УНИВЕРСИТЕТ» И МОДЕЛЬ ЕГО ПОСТРОЕНИЯ

Аннотация. В статье изучены определения предпринимательства и предпринимательского университета, рассмотрены особенности построения предпринимательской деятельности высших учебных заведений (ВУЗ), сформировано определение предпринимательского вуза на основе изученных источников. В исследовании представлены классификации моделей предпринимательского университета. Цель исследования – анализ определения сущности понятия «предпринимательский университет» и разработка модели. Методы сбора и обработки информации для данной статьи: изучение, анализ источников, сравнение и обобщение материала. Описана модель предпринимательского вуза и составлены основные выводы по определению понятия предпринимательский университет. Была разработана модель предпринимательского университета, которая характеризуется четырьмя основными видами деятельности: научной, образовательной, предпринимательской и цифровой. В исследовании использовались материалы из разных зарубежных источников, примеры различных моделей предпринимательского вуза. Включены некоторые рекомендации для системы высшего образования Казахстана

Ключевые слова: университет, высшие учебные заведения, предпринимательство, предпринимательская деятельность, предпринимательский университет, система образования, трансформация университета.

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EVALUATION OF THE PERFORMANCE OF THE HACCP APPROVAL SYSTEM OF HACCP QUALITY ASSESSMENT

Abstract. In a market economy, the quality problem is an important factor in raising living standards, economic, social and environmental security, in particular, issues related to the analysis of the effectiveness of production processes and finished products are important. In this paper, approaches are described in the analysis of processes and products in a single production of fermented milk products based on camel milk after the introduction of the quality assurance system of HACCP. As a result, the indicators of the effectiveness of the production process of sour-milk products were determined, the collection and analysis of the data obtained as a result of the testing of the finished product was carried out. The advantages of using the process approach are shown. A relationship between the ongoing production process and the workforce was found. The developed evaluation methodology and performance criteria for the introduction and operation of a quality management system can be applied to improve the quality of finished products.

Key words: HACCP, performance evaluation, quality assessment systems, software.

Introduction. At present, much attention is paid to the quality and safety of the products. In the conditions of market relations only stable quality of the goods can attract the buyer and provide the enterprise with profit. An indisputable fact is that the consumer has the right to expect that the food they use is safe (harmless), suitable for eating and, importantly, they are the source of all the substances necessary for proper development [1, 2]. Diseases and disorders caused by food are at best unpleasant, at worst - deadly. Therefore, ensuring the safety and harmlessness of food is part of the policy, including in the field of protecting the population in the conditions of food crises [2-4, etc.].

Materials and methods of research. The indicators of the effectiveness of the process of production of sour-milk products were determined by assessing the compliance of the measured data, as a result of the process, to the process data that was planned to be received, including by selected indicators:

1. Implementation of the production plan for the development of finished products, the percentage of the fulfilled from the planned;

2. The quantity of finished products produced, the discrepancies in which were revealed before shipment to the consumer, the percentage of the output produced

3. The amount of non-conforming products received as a result of production, the inconsistencies in which were identified by the consumer, the percentage of the output produced

4. Return of the main raw materials to the supplier based on the results of the incoming inspection, the percentage of the analyzed main raw materials

5. The number of semi-finished products with inconsistencies in key technological processes, the percentage of completed volume

Since the activities of enterprises are carried out on a commercial basis, the productivity directly depends on the applications of retail and wholesale trade networks, as well as on the possibilities of selling through branded stores. To minimize the influence of the quantity of products produced on the degree of the evaluation of the performance of the production process, the relative values in percentage terms were used as performance indicators [5].

Results study and discussion. For the indirect assessment of the effectiveness of the quality system functioning at the enterprise and the efficiency of the production process, the data obtained as a result of testing the finished products of the selected assortment list were collected and analyzed. Tests were carried out during the first stage of work on the development and implementation of the system in the period from March to August 2012. Tests on physico-chemical and microbiological indicators were carried out by an accredited production laboratory. Tests on safety indicators were carried out by an accredited testing center.

In carrying out all studies, the rules of average samples were strictly observed, each sample was examined for the same index twice, with the calculation of the mean value.

In the process of diagnostic audit and research of finished products, it was established that the quality and safety control system has a number of weaknesses. First of all, this is the lack of regulated ways of collecting and transmitting information, which significantly reduces the effectiveness and effectiveness of the quality system as a whole. At the same time, there are a large number of separate elements of the system, covering the activities of individual structural units or individual chains of subprocesses. Most of these elements are effective enough in the first place with regard to identifying nonconforming products, and not preventing its production. Therefore, for the indirect assessment of the effectiveness of the finished product quality system functioning at the enterprise, the data characterizing the productivity of the production of the dairy products of the selected assortment list were collected and analyzed. Data were collected weekly for five months.

During the collection of information, the following observations were made: in most cases, inappropriate products identified before the completion of the process by order of the site master or replacement technologist were sent for processing within the production site or the direction of processing of such raw materials within the production process was changed; therefore, such rearrangements were not fixed in production reports as non-conforming products. For the purposes of the study, it was possible to calculate this index of inappropriate products obtained at various stages of the production process. As it was not possible to cut off the index at all production sites, we selected key technological operations in which the main raw materials undergo significant qualitative changes, in particular homogenization of the milk mixture, pasteurization, fermentation and fermentation of the cream mixture. Accordingly, the quality and safety of the finished product depend more on these changes. From another point of view, these stages of the production process have a large number of controlled (including critical) parameters, which presumably involves a large number of negative deviations in the case of imperfection of the control system or other weaknesses in the production process. The collected information is summarized and presented in table.

The results showed that, on the whole, the results are sanitary in general, as none of the results of the studies gave a negative or borderline result, which allows to doubt the safety of the finished food products from a microbiological point of view [6]. However, production can improve the production process from a sanitary point of view, in consequence:

– significant differences in the value of the resulting outcomes (standard deviation comprise 14% of the mean signals)

– comparative increase in QMAFAnM by 25.4% in finished products compared to previous studies;

At the same time, the results of product research have a wide spread [7]. For example, standard deviations in the mass fraction of fat are from 3.15 to 3.25, while the value of the indicator itself does not exceed 1.4%.

In some samples of the finished product, an excess of the fat content was detected, since the production technology allowed the deviation of the mass fat percentage + 0.1% due to the fact that the fat content in camel milk varies in a fairly wide range, which depends on the species, season, forage, individual and other factors.

The finished prodet by the index of the mass fraction of the protein was similar to other indices, but the spread of the values is also wide (standard deviations from 0.98% to 1.01%). In addition, all the products examined had an Acidity lower than the regulated normative document by an amount equal to 5% of the regulated one.

The results of the studies testify to the instability of qualitative characteristics in the implementation of the production process. Existing measures and a control system allow to effectively identify inconsis-

Average values of indicators by months from January to June 2012 and the overall average for a given period of time

Indicator name	Average values of indicators by months from January to June 2012 and the overall average for a given period of time					
	January	February	March	April	May	Average
Indicator 1, Execution of the production plan, %	90,3	90,32	90,3	90,3	90,29	90,3
	±1,14	±1,11	±1,14	±1,16	±1,14	±1,14
Indicator 2, The number of products, inconsistencies in which were identified before SEND to the consumer, %	0,51	0,53	0,53	0,49	0,48	0,5
	±0,05	±0,03	±0,05	±0,03	±0,06	±0,04
Indicator 3, The number of products, the discrepancies in which were identified by the CONSUMER, %	0,33	0,34	0,32	0,31	0,36	0,33
	±0,05	±0,03	±0,05	±0,03	±0,08	±0,05
Indicator 4.1, Number of incidents detected in the process Milk collection and sorting	10,03	10	10,04	10,03	10,02	10,02
	±3,16	±3,14	±3,17	±3,15	±3,19	±3,16
Indicator 4.2, Number of cases of non-compliance in the process	0,02	0,03	0,03	0,01	0,02	0,02
	±0,15	±0,02	±0,01	±0,01	±0,01	±0,04
Indicator 4.3, Number of incidents detected in the process Normalization	0,01	0,01	0,02	0,04	0,02	0,02
	±0,01	±0,01	±0,01	±0,02	±0,01	±0,01
Indicator 4.4, Number of incidents detected in the process Homogenization of the milk formula	0,03	0,01	0,04	0,05	0,03	0,03
	±0,02	±0,01	±0,02	±0,03	±0,01	±0,02
Indicator 4.5, Number of incidents detecting inconsistencies in the process Pasteurization	0,02	0,01	0,05	0,05	0,03	0,03
	±0,01	±0,01	±0,02	±0,02	±0,02	±0,02
Indicator 4.6, Number of cases of non-compliance in the process Fermentation and fermentation of the cream mixture	0,02	0,05	0,02	0,02	0,03	0,03
	±0,01	±0,01	±0,01	±0,01	±0,02	±0,01
Indicator 4.7, Number of incidents detected in the process Cooling and mixing.	0,02	0,01	0,02	0,04	0,01	0,02
	±0,01	±0,01	±0,01	±0,02	±0,01	±0,01
Indicator 4.8, Number of cases of identification of discrepancies in the process	0,04	0,06	0,07	0,07	0,04	0,06
	±0,02	±0,03	±0,02	±0,04	±0,02	±0,02
Indicator 4.9, Number of incidents detected in the process Pre-cooling and maturation	0,05	0,04	0,04	0,02	0,03	0,04
	±0,02	±0,03	±0,02	±0,01	±0,01	±0,02
Indicator 4.10, Number of incidents detected in the process Quality control of the finished product	0,09	0,07	0,07	0,11	0,12	0,09
	±0,02	±0,01	±0,04	±0,04	±0,03	±0,03
Indicator 4.11, Number of cases of non-compliance in the process Storage	0,07	0,04	0,04	0,09	0,1	0,07
	±0,04	±0,06	±0,02	±0,07	±0,03	±0,04

tencies (including consumer characteristics of products), after they occurred in production. The inconsistencies in the finished product, revealed before the implementation, reach 0.53%, the average value is 0.50% [8].

There are refunds and complaints from trading enterprises. Despite the fact that significant (critical) inconsistencies among such cases have not been identified, but the percentage of returns is 0.33% (data do not include returns due to the expiration of the expiration dates). The maximum amount of refunds was 0.5%.

All deviations in the production process recorded at the time of collection of information entailed costs of various origins for the enterprise, including:

– The intrinsic value of nonconforming products or semi-finished products by the technological process;

– Loss of profit due to lack of sales of this product;

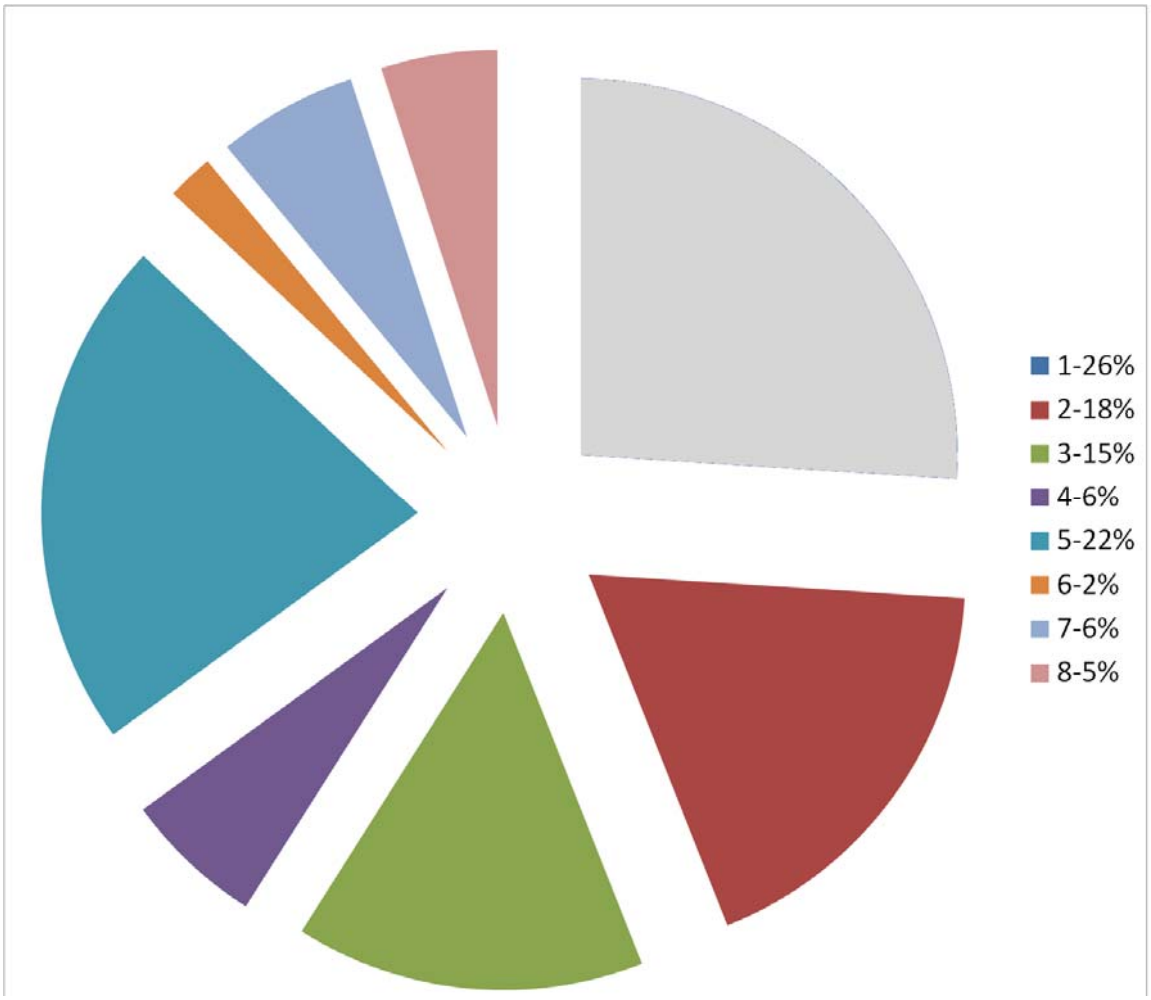
– the cost of excessive production time;

– in the case of product disposal – the cost of disposal;

– reimbursement of damages for claims, consideration of complaints, transportation of returned products, etc.

These costs were not allocated as additional, which led to an unjustified rise in the cost of the entire production process, which adversely affected the formation of the cost of production, and, ultimately, its competitiveness. An analysis of the nature of the inconsistencies and the reasons for their occurrence in most cases amounted to incriminating and punishing the perpetrators, this circumstance did not in any way stimulate the prevention of similar inconsistencies in the future by identifying them at the early stages of the process [9].

We have attempted to identify the patterns of distribution of the value of non-conforming products, depending on the causes of the inconsistencies. For inconsistencies in terms of indicators: "the volume of products, the discrepancies in which were revealed before the mandrel to the consumer" and "the volume of inconsistencies in the stages of the production process", the causes of their occurrence were found and analyzed [11]. The analysis data are shown in figure.



The emergence of inconsistencies, depending on the reasons:
(1) Negligence or lack of knowledge of working personnel
(2) Staff turnover (inadequate production experience)
(3) Non-observance of parameters and modes of production
(4) Insufficient technical equipment
(5) Raw materials, ingredients, auxiliary materials that are not appropriate to quality or not subjected to extended control,
(6) Absence or delay in transmission of necessary information, including changes in the technological process
(7) Inconsistency of actions
(8) Unexplained reasons

Outreach. Thus, the following conclusions can be drawn from the analyzed data:

1) There is no coherent and comprehensive quality management system for finished products.

2) The data indicate that there are no violations for the safety of the finished product.

3) There is a need to improve the production [12] process from a sanitary point of view (by regulating the Good Manufacturing Practices (GMP) programs).

4) The instability of the quality indicators of the finished product may be due to the lack of data analysis and the instability of individual operations and stages of the ongoing process, insufficient input data for effective correction of the technological process.

The lack of a system for identifying raw materials, materials, and finished products during the advancement of the production process and the imperfection of the monitoring and traceability system, including the collection of information on emerging inconsistencies, are established [13, 14]. Thus, the technological process was carried out by the working personnel according to the planned chain of actions with a number of different inconsistencies that were not fully analyzed and were limitedly prevented subsequently.

The application of the process approach in the formation of the flowchart allowed to maximally specify the production process, as well as to establish a more flexible regulatory system that establishes not stringent conditions for the implementation of certain actions, but the level of responsibility in making decisions and ways of informing in case of deviations from planned results [15, 16]. Thus, the response in the event of any inconsistencies will be more rapid (since in some cases the decision will be made by the masters directly on the sites) and more substantive, as the areas of competence of the individual structural divisions of the enterprise are divided [17, 18].

Dependence of the ongoing production process on the personnel (44% of the non-compliance was realized through the fault of the staff), assumes that the main directions of the transformations in the development and implementation of the system will be the regulation of areas of responsibility, documentation and monitoring of key (critical) operations and multi- including on the control of dangerous factors [19, 20].

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НАССР САПА БАҒАЛАУДЫҢ ҚОЛДАНЫЛУ ЖҮЙЕСІНІҢ ОРЫНДАУЫН БАҒАЛАУ

Аннотация. Экономикалық, әлеуметтік және экологиялық қауіпсіздіктің, өндірістің және өндірістегі өндеу үрдістерінің нәтижелерін талдау және негізгі мәселелерді көтеру нарықтағы маңызды фактор болып табылады. Зерттеулер мен технологиялық үрдістерді анализдеу барысында сүтті өңдеу арқылы сүтқышқылды өнімдердің ассортиментін шығаратын өндірісіне негізделген. Өндірістің қауіпсіздігін қамтамасыз ете отырып, сапалы өнімдер шығарылады. Нәтижесінде, сүт қышқылды өнімдерін өндіру үрдісінің талапқа сай дұрыс жүрмеуі анықталады. Өндіріс үрдісінің әрбір процесстерінің жұмыс істеу режимжері технологияға сай дұрыс қолданылуын қадағалау. Өндіріс үрдісімені мен жұмыс істейтін персоналдың арасындағы өзара іс-қимылдың бірліктігі. Құрыл-жабдықтар, әдістемелік нұсқауды бағалау мен сапасын басқару жүйесінің функционалды басқару мүмкіндіктерінің үйлестігі қарастыралады.

Түйін сөздер: НАССР, өнімділікті бағалау, сапаны бағалау жүйесі, бағдарламалық қамтамасыз ету.

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ОЦЕНКА РЕЗУЛЬТАТИВНОСТИ ДЕЙСТВУЮЩЕЙ СИСТЕМЫ ОЦЕНКИ КАЧЕСТВА ХАССП

Аннотация. В рыночной экономике проблема качества является важнейшим фактором повышения уровня жизни, экономической, социальной и экологической безопасности, в частности важны вопросы связанные с анализом результативности производственных процессов и готовой продукции. В работе описаны подходы в анализе процессов и продукции на отдельно взятом производстве кисломолочных изделий на основе верблюжьего молока после внедрения системы обеспечения качества НАССР. В результате были определены показатели результативности процесса производства кисломолочных изделий, произведен сбор и проделан анализ данных, полученных в результате испытаний готовой продукции. Показаны преимущества применения процессного подхода. Найдена зависимость между осуществляемым производственным процессом и рабочим персоналом. Разработанная методика оценки и критерии результативности внедрения и функционирования системы управления качеством могут быть применены для улучшения качества готовой продукции.

Ключевые слова: НАССР, оценка результативности, системы оценки качества, программное обеспечение.

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APPLICATION OF MASSIVE PARALLEL SEQUENCING FOR THE INVESTIGATION OF WILD BIRDS VIRUSES

Abstract. Identification of viral pathogens is of great importance for the diagnostics of infectious diseases in humans and animals. Almost all outbreaks of dangerous infections in the last two decades have been caused by new viruses, most of which originated from a natural reservoir.

Experimental studies on avian paramyxovirus (APMV) of serotype 1 have shown that wild birds can spread and introduce mild or non-pathogenic virus variants into the poultry population, which, after several passages in the organism of susceptible birds, often acquire highly pathogenic properties.

Using the new technology of massive parallel sequencing, information on the genetic structure of wild bird viruses belonging to the *Paramyxoviridae* family was obtained. The high efficiency of the method is shown, which allows simultaneous sequencing of the complete genomes of viruses without prior knowledge of their belonging to any family. The data obtained will allow us to expand our knowledge of the course of the natural evolution of migratory bird viruses.

Keywords: Virus, Massive Parallel Sequencing, Wild Birds, Complete Genome of the Virus, RNA, DNA, Bioinformatic Analysis.

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ПРИМЕНЕНИЕ МЕТОДА МАССОВОГО ПАРАЛЛЕЛЬНОГО СЕКВЕНИРОВАНИЯ ПРИ ИССЛЕДОВАНИИ ВИРУСОВ ДИКИХ ПТИЦ

Аннотация. Идентификация вирусных патогенов имеет огромное значение для диагностики инфекционных заболеваний человека и животных. Почти все вспышки опасных инфекций последних двух десятилетий были вызваны новыми вирусами, большинство из которых происходили из природного резервуара.

Экспериментальные исследования на примере парамиксовируса (ПМВ) серотипа 1 показали, что дикие птицы способны распространять и заносить слабо- или непатогенные варианты в популяцию домашних птиц, которые через несколько пассажей в организме восприимчивых птиц зачастую приобретают высокопатогенные свойства.

С использованием новой технологии массового параллельного секвенирования получены сведения о генетической структуре вирусов диких птиц, принадлежащим семейству парамиксовирусов. Показана высокая эффективность метода, который позволяет одновременно секвенировать полные геномы вирусов без предварительного знания об их принадлежности к какому-либо семейству.

Полученные данные позволят расширить наши знания о ходе естественной эволюции вирусов перелетных птиц.

Ключевые слова: вирус, массовое параллельное секвенирование, дикие птицы, полный геном вируса, РНК, ДНК, биоинформационный анализ.

Введение. Исследования последних лет подтверждают приоритетную роль диких птиц как природного резервуара и источника генетического материала для возникновения новых эпизоотических вариантов вирусов.

Эколого-эпизоотологическая оценка состояния вирусных популяций у птиц важна для практической ветеринарии при расшифровке вспышек заболеваемости и контроле возникающих чрезвычайных эпидемических ситуаций. Поскольку Казахстан расположен в центре Евразийского континента и через его территорию проходят важные миграционные пути перелетных птиц, которые могут служить фактором заноса новых патогенных вариантов вирусов, изучение генетического разнообразия вирусов, циркулирующих в организме диких птиц является актуальной задачей.

До настоящего времени генетические исследования вирусов с секвенированием их генов проводилось с использованием широко распространённого и хорошо зарекомендовавшего себя метода Сенгера. С развитием науки и технологий на арену вышли новые методы, которые постепенно становятся рутинными в научных лабораториях мира. Одним из таких новых методов является массовое параллельное секвенирование, именуемое также секвенированием нового (следующего) поколения (next generation sequencing – NGS), которое обеспечивает высокопроизводительный анализ огромных объемов данных о нуклеотидных последовательностях, содержащихся в исследуемом образце.

С целью изучения возможности применения данной технологии в расшифровке полного генома вирусов диких птиц исследованы выделенные на куриных эмбрионах неидентифицированные гемагглютинирующие агенты, без предварительного знания об их принадлежности к какому-либо семейству вирусов.

Материалы и методы. Биологические материалы в виде клоакальных и трахеальных смывов получены от диких птиц согласно требованиям Международного Эпизоотического Бюро (МЭБ) [1]. Пробы до проведения исследований хранили в жидком азоте (-196ºС).

Изоляцию вирусов и восстановительные пассажи проводили путем инокуляции каждой пробы вируса в 9-10 дневные развивающиеся куриные эмбрионы (РКЭ) и последующей инкубацией их при температуре +36ºС в течение 48 ч по сертифицированным методикам, рекомендованным ВОЗ [2].

Вирусные РНК выделены с использованием набора QIAamp Viral RNA Mini kit (Qiagen, Hilden, ФРГ) в соответствии с рекомендациями производителя.

Подготовка библиотек осуществлена с помощью набора NEBNext Ultra Directional RNA Library Prep Kit for Illumina (NEB, США). Комплементарные ДНК из РНК ПМВ синтезированы с использованием случайных гексамерных праймеров (random hexamers) методом обратной транскрипции. Массовое параллельное секвенирование – расшифровка последовательностей кДНК, осуществлена с использованием секвенатора нового поколения Illumina MiSeq (США).

Биоинформационный анализ полученных в результате секвенирования последовательностей проведен с использованием компьютерных программм UGENE 1.20 (Россия) [3] и Tablet (Великобритания) [4].

Выравнивание секвенированных последовательностей и филогенетический анализ с помощью метода максимального правдоподобия осуществлены в программе MEGA 6.0 [5].

Реультаты. Проведен вирусологический скрининг в РКЭ биологических образцов из архивных материалов, собранных в разные годы в Западном, Юго-Восточном и Центральном Казахстане от диких птиц водного и околоводного комплексов, относящихся к семействам Утиные (Anatidae), Чайковые (Laridae), Бекасовые (Scolopacidae) и Ржанковые (Charadriidae) из отрядов Гусеобразные (Anseriformes) и Ржанкообразные (Charadriiformes). В результате первичного заражения пробами 10-дневных РКЭ выделены гемагглютинирующие агенты, из которых выделили РНК и измерили их концентрацию (таблица 1).

Таблица 1 – Первоначальные концентрации РНК изолятов вирусов птиц для секвенирования

Гемагглютинирующий агент	Концентрация, ng/ul
курица/Алматы/36/2015	100,0
малый баклан/Кызылколь/7074/2016	>8,0
деревенская ласточка/Кызылколь/7079/2016	>8,0
кряква/Коргалжын/6769/2015	>8,0
черноголовый хохотун/Атырау/6452/2015	18,0
белолобый гусь/СКО/5751/2013	>8,0
белолобый гусь/СКО/5759/2013	26,3
белолобый гусь/Коргалжын/1791/2006	9,2
озерная чайка/Балхаш/5844/2013	>8,0
черноголовый хохотун /Атырау/5541/2013	>8,0
чайка/Актау/5976/2014	>8,0
околоводная птица/Алаколь/6952/2016	23,2

Как видно из таблицы 1, концентрации РНК варьировали от 8,0 до 26,3 ng/ul, что, согласно рекомендации производителя набора для секвенирования, является достаточным для производства библиотек.

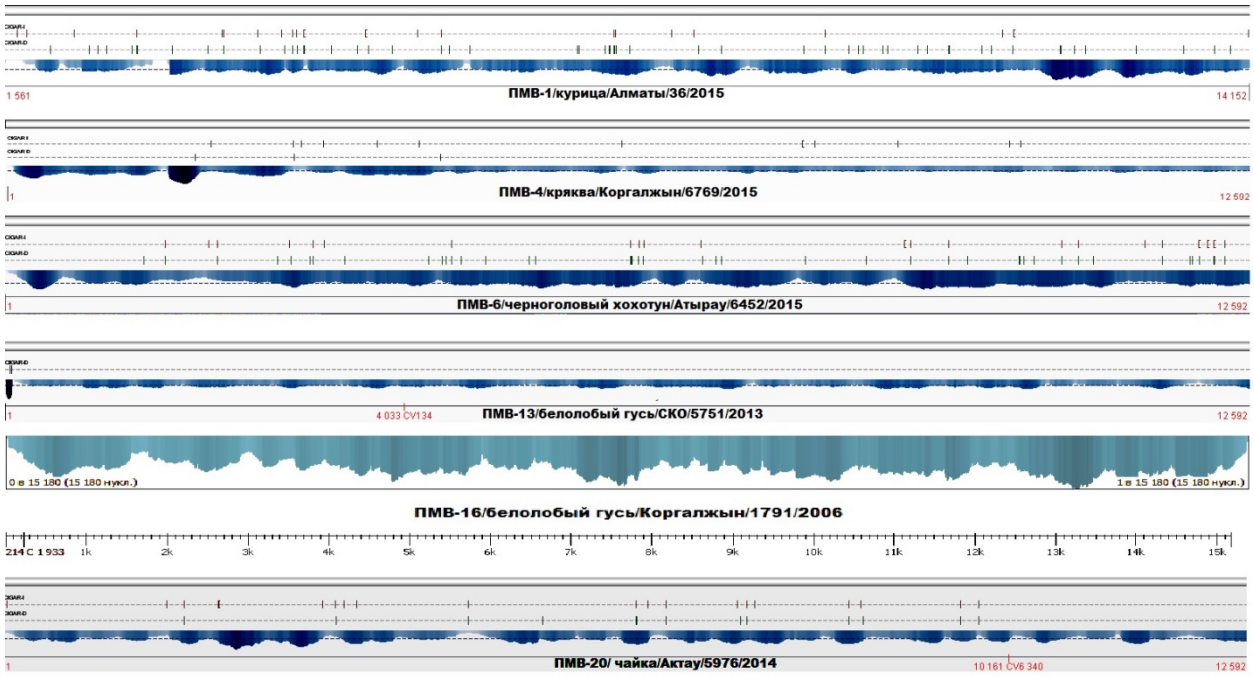
Далее, для дальнейшего секвенирования полных нуклеотидных последовательностей генов выделенных вирусов, удаляли цитоплазматические и митохондриальные рибосомальные РНК (рРНК) с использованием специфичных к ним олигонуклеотидов, в дополнение к используемому набору NEBNext Ultra Directional RNA Library Prep Kit for Illumina (NEB, США).

Проводили фрагментацию РНК до размеров около 300-400 п.о. с применением ферментативного метода при разных температурах, используя двухвалентные катионы в составе набора. Из расщепленных фрагментов РНК синтезировали первую цепь кДНК с использованием обратной транскриптазы и случайных праймеров, а затем вторую цепь с использованием ДНК-полимеразы I и РНКазы H.

К полученным фрагментам кДНК затем присоединяли молекулу аденина и в последующем лигировали адаптеры. При подготовке библиотеки фрагментированных кДНК использовали адаптеры Illumina. Продукты очищали и амплифицировали в ПЦР для создания библиотеки. Качество приготовленных библиотек проверяли на приборе Bioanalyzer 2100 (Agilent Technologies, США). Секвенирование осуществлено на секвенаторе нового поколения Illumina MiSeq (США), с применением набор реагентов v.3.

Для биоинформационного анализа полученные последовательности были собраны и обработаны в программе UGENE 1.20 (Россия). В результате порлучены полногеномные последовательности исследованных вирусов (рисунок).

Из рисунка 1 видно, что покрытие генома вирусов было практически равномерным и варьировало от 4521 до 5500 ридов в разных регионах. Получены последовательности целых геномов вирусов, принадлежащим семейству парамиксовирусов серотипов ПМВ-1. ПМВ-4, ПМВ-6, ПМВ-13, ПМВ-16, ПМВ-20. Полные названия изолятов с идентифицированными серотипами представлены в таблице 2.



Вид в программах Tablet и UGENE 1.20 полных геномов секвенированных вирусов

Таблица 2 – Идентифицированные серотипы парамиксовирусов

Вирусы	Длина генома
ПМВ-1/курица/Алматы/36/2015	15097
ПМВ-4/малый баклан/Кызылколь/7074/2016	15054
ПМВ-4/деревенская ласточка/Кызылколь/7079/2016	15054
ПМВ-4/кряква/Коргалжын/6769/2015	15054
ПМВ-6/черноголовый хохотун/Атырау/6452/2015	16236
ПМВ-13/белолобый гусь/СКО/5751/2013	15996
ПМВ-13/белолобый гусь/СКО/5759/2013	15996
ПМВ-16/белолобый гусь/Коргалжын/1791/2006	15180
ПМВ-20/озерная чайка/Балхаш/5844/2013	15786
ПМВ-20/ черноголовый хохотун /Атырау/5541/2013	15786
ПМВ-20/ чайка/Актау/5976/2014	15786
ПМВ-20/ околоводная птица/Алаколь/6952/2016	15786

Обсуждение. Идентификация новых патогенов имеет огромное значение для диагностики инфекционных заболеваний человека и животных. Почти все вспышки опасных инфекций последних двух десятилетий были вызваны новыми патогенами, такими как вирус тяжелого острого респираторного синдрома (SARS) [6], хантавирус Sin Nombre [7], вирус пандемического гриппа 2009 года H1N1 [8], а также недавно описанный коронавирус EMC [9], большинство из которых происходит из природного резервуара.

Современные технологии позволяют идентифицировать вирусы с помощью широкого набора методов. Традиционные методы включают в себя электронную микроскопию, культивирование на клетках и живых организмах, а также серологические исследования [10], но все они имеют свои ограничения. Например, многие вирусы не культивируются в лабораторных условиях и могут быть охарактеризованы только молекулярными методами [11], такими как использование гибридизационных микрочипов [12] и ПЦР [13].

Конечным результатом большинства методов гибридизации и ПЦР являются амплифицированные продукты, которые требуют окончательной идентификации путем секвенирования. Ограничением же данных методов является необходимость знания последовательности нуклеотидов до начала исследования, что не всегда возможно.

Массовое параллельное секвенирование позволяет без предварительного знания о содержимом пробы, выявить все присутствующие в ней нуклеиновые кислоты разных организмов, что значительно расширяет возможности генетических исследований.

Возможно, наиболее очевидным применением этих технологий является секвенирование генома. Хотя вирусные геномы относительно небольшие, но их научная ценность часто чрезвычайно важна, и данная технология может представлять собой высокоэффективный способ расшифровки полной последовательности вирусного генома.

Данное исследование позволило с помощью метода массового параллельного секвенирования одновременно расшифровать полные геномы парамиксовирусов различных серотипов. Известно, что дикая орнитофауна играет ключевую роль в поддержании ПМВ в биосфере и является потенциальным природным источником возникновения новых опасных вариантов вирусов.

Экспериментальные исследования на примере парамиксовируса серотипа 1 (ПМВ-1) показали, что дикие птицы способны распространять и заносить слабо- или непатогенные варианты в популяцию домашних птиц, которые через несколько пассажей in vivo зачастую приобретают высокопатогенные свойства [14]. По этой причине, непрерывное наблюдение за ПМВ в дикой природе является одной из важнейших задач при обеспечении безопасности птицеводства.

Полученные данные о полных геномах парамиксовирусов с использованием новых технологий позволят расширить наши знания о ходе естественной эволюции вирусов перелетных птиц.

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ТҮЗ ҚҰСТАРЫНЫҢ ВИРУСТАРЫН ЗЕРТТЕУДЕ ЖАППАЙ БІР МЕЗГІЛДЕ СЕКВЕНДЕУ ӘДІСІН ҚОЛДАНУ

Аннотация. Вирустық патогендерді идентификациялаудың адам мен жануарлардың инфекциялық ауыруларын балаудағы маңызы зор. Соңғы екі онжылдықтағы қауіпті инфекциялардың барлығын дерлік жаңа вирустар шақырды. Олардың басым бөлігі табиғи резервуарларда туындады**.**

Серотүрі 1 парамиксовирусы (ПМВ) негізінде сынақтық зерттеулер, түз құстарының үй құстары арасына вирустардың әлсіз немесе зардапсыз нұсқаларын енгізуге және таратуға қабілетті екенін, олардың жиі жағдайда бірнеше пассаждан кейін бейім құстардың ағзасында зардаптылығы жоғары қасиетке ие болатынын көрсетті.

Жаңа, жаппай бір мезгілде секвендеу технологиясын қолдану нәтижесінде парамиксовирустар туыстатығына жататын түз құстары вирустарының генетикалық құрылымдары жайында мәліметтер алынды. Бір уақытта вирустардың қай туыстастық өкілі екенін алдын-ала білмей ақ, олардың толық геномын секвендеуге мүмкіндік беретін аса тиімді әдіс екені анықталды.

Алынған мәліметтер жыл құстары вирустарының табиғи эволюциясы барысы жайында біздің білімімізді нығайтады.

Түйін сөздер: вирус, жаппай бір мезгілде секвендеу, жабайы құс, вирустың толық геномы, РНҚ, ДНҚ, биоинформатикалық талдау.

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SENSITIVITY OF 2015 KAZAKHSTAN INFLUENZA VIRUSES TO CHEMOTHERAPY DRUGS

Abstract. One of the most important characteristics of influenza viruses is resistance to specific medicines. Practice shows that it is impossible to select an etiotropic antiviral drug effective against the whole variety of circulating viruses.

The purpose of this work was to study the resistance of the Kazakhstan strains of influenza virus to commercial chemotherapy drugs with different mechanisms of action. Studies were conducted on new isolates of the influenza A/H1N1 viruses isolated in 2015. Sensitivity to influenza drugs was assessed by the level of inhibition of reproduction of 100 EID_{50} (50% embryo infectious dose) of the virus by different drug concentrations in chick embryos.

It was established that the 2015 Kazakhstan strains of the influenza A/H1N1 viruses are sensitive to tamiflu and resistant to arbidol and ingavirin. With respect to remantadine, both sensitive and resistant variants have been detected among the viruses studied which indicates the heterogeneity of the influenza virus strains circulating in Kazakhstan. The results obtained indicate the need to monitor the epidemiological surveillance and study drug resistance in viruses – infectious agents.

Key words: influenza virus, chemotherapy drugs, anti-influenza agents, sensitivity, resistance.

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ЧУВСТВИТЕЛЬНОСТЬ КАЗАХСТАНСКИХ ШТАММОВ ВИРУСОВ ГРИППА 2015 г. К ХИМИОПРЕПАРАТАМ

Аннотация. Одной из важнейших характеристик вирусов гриппа является резистентность к специфическим лекарственным средствам. Практика показывает, что невозможно подобрать этиотропный противовирусный препарат, эффективный против всего многообразия циркулирующих вирусов.

Цель настоящей работы состояла в изучении резистентности казахстанских штаммов вируса гриппа по отношению к коммерческим химиопрепаратам различного механизма действия. Исследования проводили на новых изолятах вируса гриппа A/H1N1, выделенных в 2015 г. Чувствительность к противогриппозным средствам оценивали по уровню подавления репродукции 100 $ЭИД_{50}$ вируса различными концентрациями препаратов в куриных эмбрионах.

Установлено, что казахстанские штаммы вируса гриппа 2015 г. A/H1N1 чувствительны к тамифлю и устойчивы к арбидолу и ингавирину. По отношению к ремантадину среди исследованных вирусов обнаружены как чувствительные, так и резистентные варианты, что свидетельствует о неоднородности цирку-

лирующих в Казахстане штаммов вирусов гриппа. Полученные результаты указывают на необходимость проведения мониторинга по эпидемическому надзору и изучения лекарственной устойчивости вирусов – возбудителей инфекционных болезней.

Ключевые слова: вирус гриппа, химиопрепараты, противогриппозные средства, чувствительность, резистентность.

Введение. Острые респираторные вирусные инфекции (ОРВИ) и грипп являются самыми массовыми инфекциями человечества и представляют серьезную проблему для здравоохранения. По социальной значимости, огромному ущербу наносимому здоровью населения и экономике, грипп находится на первом месте среди всех заболеваний человека [1]. На долю гриппа и ОРВИ приходится 10-30% временной нетрудоспособности населения. Гриппозная инфекция вызывает до 40% всех заболеваний взрослых, более 80% всей инфекционной патологии, более 60% заболеваний среди детей. Ежегодно сезонные эпидемии приводят примерно к 3–5 миллионам случаев тяжелой болезни и примерно к 250–500 тысячам случаев смерти [2].

Способность возбудителя гриппа постоянно изменяться в процессе репликации является серьезной проблемой для практической медицины и вирусологии. Вирусы гриппа даже из-за точечных мутаций генома могут приобретать новые свойства, что приводит к неэффективности лечения. Одной из важнейших характеристик вируса является резистентность к специфическим лекарственным средствам [3, 4].

Химиотерапия вирусных инфекций, как метод лечения, берет начало со случайного обнаружения противовирусных свойств производных адамантана в конце 1960-х гг. К настоящему времени накоплен большой опыт в разработке и использовании новых средств лечения и профилактики вирусных инфекций. В случае гриппа рекомендуют использовать медикаменты, оказывающие прямое ингибирующее действие на репродукцию вирусов, с различным механизмом действия. Наиболее широко применяемые этиотропные препараты представлены четырьмя группами [5]:

- блокаторы ионного канала (адамантаны, в т.ч. ремантадин);
- специфический шаперон гемагглютинина (HA) (арбидол);
- ингибиторы нейраминидазы (NA) (тамифлю (осельтамивир), реленза, перамивир);
- ингибиторы NP-белка (ингавирин).

Цель настоящего исследования состояла в изучении резистентности новых эпидемически актуальных для Казахстана вирусов гриппа к коммерческим химиопрепаратам, рекомендованным для лечения и профилактики гриппозной инфекции.

Материалы и методы. В работе использовали казахстанские вирусы гриппа A/H1N1, выделенные в 2015 г.: A/Актобе/02/15, A/Атырау/60/15, A/Атырау/64/15 и A/Костанай/353/15, а также референсные штаммы, хранящиеся в коллекции лаборатории: A/California/04/09 pdm, A/Solomon Islands/03/06, A/New Jersey/8/76. Вирусы культивировали в аллантоисной полости развивающихся 8-10-дневных куриных эмбрионов в течение 48 ч. при 36°С. Гемагглютинирующую активность определяли по общепринятой методике на 96-луночных планшетах с использованием 0,75%-ой взвеси куриных эритроцитов [6]. Инфекционность вычисляли по методу Л. Рида и Х. Менча [7].

Для определения лекарственной устойчивости вирусов изучали действие четырех коммерческих препаратов (ремантадина, тамифлю, арбидола и ингавирина) различных производителей в активной форме. Ремантадин («ОЛАЙНФАРМ», Латвия) использовали в виде гидрохлорида римантадина (альфа-метилтрицикло[3.3.1.1/.7]декан-1-метанамин); тамифлю (Ф. Хоффманн–Ля Рош, Швейцария) – фосфата осельтамивира (этил(3R,4R,5S)-5-амино-4-ацетамидо-3-(пентан-3-илокси)-циклогекс-1-ен-1-карбоксилат); арбидол («Фармстандарт–Лексредства», Россия) – гидрохлорида моногидрата умифеновира (этиловый эфир 6-бром-5-гидрокси-1-метил-4-диметиламинометил-2-фенилтиометилиндол-3-карбоновой кислоты); ингавирин («Валента Фармацевтика», Россия) – имидазолилэтанамида пентандиовой кислоты.

Чувствительность вирусов по отношению к противогриппозным средствам оценивали по уровню подавления репродукции 100 $ЭИД_{50}$ вируса различными концентрациями препаратов [8] в куриных эмбрионах. Дозу препарата, подавляющую титр вируса в реакции гемагглютинирующей

активности в два раза по сравнению с контролем, считали ингибирующей концентрацией ($ИК_{50}$). Для каждой комбинации концентрации препарата и вирусного материала проводили три независимых эксперимента по три куриных эмбриона в каждом из них.

Результаты. Для определения лекарственной устойчивости казахстанских вирусов гриппа 2015 г. использовали химиопрепараты с различным механизмом действия в нетоксичных для куриных эмбрионов концентрациях. В таблице представлены результаты изучения чувствительности вирусов гриппа: А/Актобе/02/15, А/Атырау/60/15, А/Атырау/64/15 и А/Костанай/353/15 – по отношению к противовирусным препаратам в сравнении с референсными штаммами вируса гриппа A/H1N1.

Изучение чувствительности казахстанских и референсных штаммов вирусов гриппа A/H1N1 2015 г. к противовирусным препаратам

Штамм	Ингибирующая концентрация*, мг/мл			
	Ремантадин	Тамифлю	Арбидол	Ингавирин
А/Актобе/02/15	6,3±0,4	3,1±0,3	не ингибирует	не ингибирует
А/Атырау/60/15	3,5±0,3	13,0±0,1	не ингибирует	не ингибирует
А/Атырау/64/15	3,9±0,7	7,2±0,2	не ингибирует	не ингибирует
А/Костанай/353/15	не ингибирует	3,4±0,3	не ингибирует	не ингибирует
A/California/04/09 pdm	не ингибирует	3,5±0,02	не ингибирует	не ингибирует
A/Solomon Islands/03/06	6,4±0,02	3,4±0,02	не ингибирует	не ингибирует
A/New Jersey/8/76	12,65±0,2	6,25±0,1	не ингибирует	не ингибирует

*Указана концентрация препарата, вызывающая снижение репродукции вируса в развивающихся куриных эмбрионах в два раза.

Как видно из таблицы, значения $ИК_{50}$ для западноказахстанских вирусов (А/Актобе/02/15, А/Атырау/60/15, А/Атырау/64/15), так же как для эталонного варианта A/Solomon Islands/03/06 по отношению к ремантадину составили от 3,50 до 6,4 мг/мл. Штамм А/Костанай/353/15, подобно референсному вирусу A/California/04/09 pdm, проявил устойчивость к ремантадину.

Репродукция штамма А/Атырау/60/15 ингибировалась препаратом тамифлю в концентрации 13,0 мг/мл. Три других казахстанских вируса гриппа 2015 г., как и референсные штаммы, взятые в эксперимент, проявили высокую степень чувствительности, поскольку их репродукция подавлялась препаратом в низких концентрациях 3,1-7,2 мг/мл.

К препаратам «Арбидол» и «Ингавирин» все исследованные вирусы показали абсолютную устойчивость.

Обсуждение. Практика показывает, что невозможно подобрать этиотропный противовирусный препарат, эффективный против всего многообразия циркулирующих вирусов. Как известно, наиболее широко используемым из препаратов адамантанового ряда является ремантадин, который блокирует белок М2 и таким образом останавливает регуляцию уровня pH и нарушает процесс декапсидации вируса. Ремантадин являлся основным препаратом для лечения гриппа в течение более 35 лет. В начале 1980-х гг. были опубликованы первые данные о вирусах, устойчивых к данному препарату [9]. К 2006 г. количество резистентных штаммов возросло до 70-100% в различных регионах мира, а затем начало снижаться [10]. Данные многочисленных исследований, описанные в литературе, свидетельствуют о резистентности вариантов пандемического штамма A/H1N1/2009 к препаратам адамантанового ряда [11].

Результаты изучения чувствительности казахстанских штаммов по отношению к ремантадину показали, что вирус А/Костанай/353/15 проявляет резистентность подобно эталонному варианту A/California/04/09 pdm, в отличие от него штаммы А/Актобе/02/15, А/Атырау/60/15 и А/Атырау/64/15 оказались чувствительными к данному препарату. Это может быть одним из основных признаков неоднородности популяции вирусов гриппа, циркулирующих в Республике.

Ингибиторы нейраминидазы вируса гриппа (тамифлю, осельтамивир) применяются в клинической практике с конца 1990-х гг., когда была показана более чем 80% эффективность препарата

[12, 13]. Они взаимодействуют с активным центром фермента и являются конкурентными ингибиторами, нарушая процессы проникновения вирусов в клетку и почкования зрелых вирионов от мембран инфицированных клеток. Применение осельтамивира приводит к сокращению средней продолжительности заболевания на 37%, уменьшает проявление симптомов болезни на 30-38%, на 67% снижает частоту осложнений гриппа и на 71% смертность от осложнений у больных из группы повышенного риска [10]. Вместе с тем вирус гриппа демонстрирует высокий потенциал для развития осельтамивир-резистентных штаммов. Так, к 2007-2009 гг. устойчивость к данному препарату достигла 95-100% [14]. Однако с марта 2009 г. резистентные штаммы были вытеснены пандемическим вирусом A(H1N1)pdm09, который оказался чувствительным к осельтамивиру.

В настоящее время тамифлю эффективно применяется при лечении гриппа, поскольку циркулирующие в настоящее время штаммы, родственные пандемическому вирусу 2009 г., устойчивые к ремантадину, сохраняют чувствительность к тамифлю. Хотя имеются сообщения об обнаружении осельтамивир-устойчивых пандемических вариантов вируса гриппа А [15]. В проведенных исследованиях тамифлю оказался эффективен в отношении всех взятых в эксперимент вирусов, как референсных, так и казахстанских.

В литературе имеется ряд упоминаний об эффективности арбидола по отношению к вирусам гриппа и отсутствии резистентных к нему штаммов [16]. Механизм действия данного препарата заключается в нарушении конформационных изменений во второй субъединице НА, необходимых для проникновения в мембрану эндосомы, что приводит к нарушениям репродукции вируса на этапе сборки вирионов [17]. В ходе выполнения работы с казахстанскими изолятами вируса гриппа, чувствительных к арбидолу и ингавирину среди них не обнаружено.

Лекарственная устойчивость вирусов является результатом изменений наследственных свойств [18] и развивается при многократном применении препаратов [19, 20]. Описаны случаи изоляции резистентных штаммов из проб, полученных у пациентов, которые ранее не принимали специфические противовирусные средства, что можно объяснить передачей таких штаммов от человека к человеку [16]. Устойчивость вирусов гриппа обусловлена мутациями в том вирусном белке, который является мишенью действия для препарата [21, 22].

Резистентность к лекарственным средствам создает угрозу для эффективного проведения профилактики и лечения гриппозной инфекции, так как устойчивые возбудители не поддаются стандартной терапии, что приводит к затяжному течению болезни, повышенным расходам на здравоохранение и риску смерти. Пациенты остаются инфекционными в течение более продолжительного времени, что увеличивает опасность распространения вирусов среди других людей.

Выводы. Изучение резистентности казахстанских штаммов вирусов гриппа 2015 г. к коммерческим химиопрепаратам показало их чувствительность к тамифлю, устойчивость – к арбидолу и ингавирину. По отношению к ремантадину среди исследованных вирусов обнаружены как чувствительные, так и резистентные варианты, что свидетельствует о гетерогенности популяции циркулирующих в Республике штаммов. Полученные результаты указывают на необходимость проведения мониторинга по эпидемическому надзору и изучения лекарственной устойчивости вирусов.

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2015 Ж. ҚАЗАҚСТАНДЫҚ ТҰМАУ ВИРУСТАРЫНЫҢ ХИМИЯЛЫҚ ПРЕПАРАТТАРҒА СЕЗІМТАЛДЫҒЫ

Аннотация. Тұмау вирусының маңызды сипаттамаларының бірі – препараттарға қарсы төзімділігі. Тәжірибеде көрсеткендей, айналымдағы барлық вирус түрлеріне этиотропты вирусқа қарсы дәрілік препараттарды тиімді таңдау мүмкін емес.

Жұмыстың мақсаты коммерциялық химиялық препараттарға қатысты Қазақстандағы тұмау вирус штаммдарының тұрақтылығын зерттеу. Зерттеулер 2015 жылы оқшауланған A/H1N1 тұмауының вирусының жаңа изоляттарына жүргізілді. Вирусқа қарсы дәрілерге сезімталдығын тауық эмбриондарында препарат-

тардың әртүрлі концентрацияларымен вирустардың 100 $ЭИД_{50}$ репродукциясын төмендету деңгейі арқылы бағаланды.

2015 ж. Қазақстандық A/H1N1 тұмау вирус штаммдары тамифлюге сезімталдығы және арбидолмен ингавиринге тұрақтылығы анықталды. Ремантадинге қатысты зерттелген вирустардың арасында сезімталды және төзімді нұсқалары анықталды, бұл дегеніміз Қазақстан айналымдағы тұмау вирус штаммдарының бірқелкі емес екеніндігін көрсетеді. Нәтижелер эпидемиологиялық қадағалауды бақылау және вирустық жұқпалы агенттердің дәрілік төзімділігін зерттеудің қажеттілігін көрсетеді.

Түйін сөздер: тұмау вирусы, химиопрепараттар, тұмауға қарсы дәрілер, сезімталдық, тұрақтылық.

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BODY CONDITION SCORING OF YOUNG BEEF CATTLE OF DIFFERENT GENOTYPES AND ITS RELATION WITH LIVE WEIGHT AND PRODUCTIVITY

Abstract. For the profitable production of beef, it is not enough to have the animals differing in high productivity and quality forages in sufficient quantity. The main task at the production of beef is the correct organization of their rational use. In production groups, animals have different live weight, and norms of feeding of the beef cattle are calculated generally only taking into account their live weight. It is the wrong approach as animals in group can have identical live weight and have various need for energy depending on a body condition. In other words, norms of animals feeding have to be corrected not only depending on live weight, but also taking into account their body conditions. The regrouping of animals depending on body condition becomes necessary reception in technological process of beef production. It will allow to save expensive forages as in the structure of prime cost of beef the big share of expenses is the share of forages (about 60%). The aim of the researches – to define interrelation of live weight with body condition scoring of young stock, to reveal to what extent the live weight changes when the body condition is corrected by 1 point, and to adjust the feeding norms, depending on the animals body conditions. Researches were conducted on young animals of Hereford and Kazakh whiteheaded breeds. For carrying out researches, the method of the correlation, regression and statistical analysis were used. During the researches, it is defined that between the live weight and body condition scoring of animals, the high positive correlation is established (r = 0.74-0.76 for Hereford and r = 0.81-0.79 for the Kazakh white-headed breed). It has allowed to define regression coefficients between signs. It is established that an increase in body condition scoring on 1 point increases the live mass of young stock of Hereford breed on 26.1-26.7 kg, and in calves of the Kazakh whiteheaded breed – on 28.9-32.2 kg which made it possible to determine the necessary changes in the feeding level towards the increase for the young stock of the Hereford breed with 1 point in body condition scoring on 2.45 and 2.67; 2 points on 1.84 and 2.00; 3 points on 1.22-1.33; 4 points on 0.61-0.67 EFU, respectively, for heifer calves and bull-calves. For young stock of the Kazakh whiteheaded breed, these values were: 2.56 and 2.84; 1.92 and 2.13; 1.28 and 1.42; 0.64 and 0.71 EFU. Thus, researches show that observation of body condition of young stock, division of animals into groups with various body conditions and the organization of feeding, depending on body conditions, are necessary receptions for the achievement of economic efficiency at growing of young stock.

Keywords: young beef cattle; Hereford and Kazakh whiteheaded breeds; body condition score; live weight; feeding level.

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БАЛЛЬНАЯ ОЦЕНКА УПИТАННОСТИ МОЛОДНЯКА МЯСНОГО СКОТА РАЗНЫХ ГЕНОТИПОВ И ЕЕ ВЗАИМОСВЯЗЬ С ЖИВОЙ МАССОЙ И ПРОДУКТИВНОСТЬЮ

Аннотация. Для рентабельного производства говядины недостаточно иметь животных, отличающихся высокой продуктивностью, и корма высокого качества в достаточном количестве. Главной задачей при производстве мяса является правильная организация их рационального использования. В производственных группах животные обладают разной живой массой, а нормы кормления мясного скота рассчитаны, в основном, только с учётом их живой массы. Это неправильный подход, так как в группе животные могут иметь одинаковую живую массу и иметь различную потребность в энергии в зависимости от состояния упитанности. Другими словами, нормы кормления животных должны корректироваться не только в зависимости от живой массы, но и с учётом состояния упитанности животных. Перегруппировка животных в зависимости от упитанности становится необходимым приёмом в технологическом процессе производства говядины. Это позволит сэкономить дорогостоящие корма, так как в структуре себестоимости говядины большая доля затрат приходится на корма (около 60%). Цель исследований – определить взаимосвязь живой массы с балльной оценкой упитанности молодняка, выявить насколько изменяется живая масса при изменении упитанности на 1 балл, и скорректировать нормы кормления в зависимости от состояния упитанности животных. Исследования проводили на молодняке герефордской и казахской белоголовой породы. Для проведения исследований использовался метод корреляционного, регрессионного и статистического анализа. В ходе исследований определено, что между живой массой и балльной оценкой упитанности животных установлена высокая положительная связь (r = 0,74-0,76 для герефордской и r = 0,81-0,79 для казахской белоголовой породы). Это позволило определить коэффициенты регрессии между признаками. Установлено, что повышение упитанности на 1 балл увеличивает живую массу молодняка герефордской породы на 26,1-26,7 кг, а у телят казахской белоголовой породы на 28,9-32,2 кг, что дало возможность определить необходимые изменения уровня кормления в сторону увеличения для молодняка герефордской породы с упитанностью 1 балл на 2,45 и 2,67; 2 балла на 1,84 и 2,00; 3 балла на 1,22 и – 1,33; 4 балла на 0,61 – 0,67 ЭКЕ соответственно тёлкам и бычкам. Для молодняка казахской белоголовой породы эти значения составили: 2,56 и 2,84; 1,92 и 2,13; 1,28 и 1,42; 0,64 и 0,71 ЭКЕ. Таким образом, исследования показывают, что наблюдение за состоянием упитанности молодняка, разделение животных на группы с различным состоянием упитанности и организация кормления, в зависимости от состояния упитанности, являются необходимыми приёмами для достижения экономической эффективности при выращивании молодняка.

Ключевые слова: молодняк мясного скота; герефордская и казахская белоголовая породы; балльная оценка упитанности; живая масса; уровень кормления.

Введение. Без знаний о природе развития и роста организма невозможно сознательно управлять ростом и развитием животных и извлекать максимальную пользу от их разведения.

Вопросами управления ростом и развитием организма занимается менеджмент стада. Менеджмент является объединяющим фактором организации производства, правильное и быстрое решение вопросов управления на ферме обеспечивает успешное производство и достижение высоких экономических показателей. В прошлом слабое развитие менеджмента стада стало основной причиной экономических неудач многих откормочных хозяйств. В России для определения

упитанности скота используют ГОСТ «Крупный рогатый скот для убоя. Определение упитанности». Им пользуются при определении упитанности скота при сдаче животных на мясокомбинат, когда уже предпринять что-либо для улучшения упитанности скота невозможно. Упитанность надо определять непосредственно в период откорма, и на её основе при необходимости принимать быстрое решение для улучшения кормления.

Для эффективного управления стадом необходимо иметь надёжный инструмент оценки упитанности мясного скота, который позволил бы быстро принимать решения по изменению программы кормления скота [1, 2]. Все нормы кормления молодняка мясного скота разработаны в зависимости от живой массы и продуктивности. Таким инструментом может быть балльная оценка упитанности молодняка мясного скота, которая тесно связана с живой массой и продуктивностью. Мы использовали для оценки упитанности молодняка 5-балльную систему оценки упитанности, хотя многие исследователи предлагают использовать 9-балльную [3-6].

На наш взгляд, для оценки упитанности мясных коров необходимо использовать 9-балльную систему оценок, а для оценки упитанности молодняка достаточно 5-балльной системы оценки. Для обоснования подхода к решению проблемы, мы определили коэффициенты корреляции между балльной оценкой упитанности молодняка, живой массой и продуктивностью молодняка. Обнаружив высокую положительную прямолинейную связь между этими признаками, определили коэффициенты регрессии между живой массой, продуктивностью и упитанностью молодняка.

Животные при неодинаковой наследственности и индивидуальных особенностях, строгом отборе по возрасту, живой массе и упитанности, по разному реагируют на условия кормления, содержания и эксплуатации. Это происходит из-за различного генетического потенциала, обусловленного различной наследственностью организма. Несмотря на тщательность отбора животных в группы по возрасту, живой массе и упитанности, каждая особь, в силу неодинаковой наследственности и индивидуальных особенностей, по разному будет реагировать на условия кормления и содержания. Как бы не старались животноводы создавать одинаковые условия для всех животных, они будут отличаться по скорости роста между собой. Наши исследования, проведённые ранее на мясных коровах, показали, что продолжительность стельности скороспелой ангусской породы составила 272-273 дня, а у лимузинской породы, как более долго растущей, период внутриутробного развития составил 278-280 дней, а в пределах групп разница в датах рождения телят достигала до 29 дней. Этот пример показывает, что даже в период внутриутробного развития животные отличаются по скорости роста [2].

Молодняк, обладающий низкой энергией роста, в возрасте 15-20 месяцев отстаёт от своих сверстников по живой массе на 28-31%. Таких животных в группе обычно бывает 4-8% от количества всех животных. Выращивание отстающих в росте животных приводит к перерасходу кормов, к снижению интенсивности роста остальных животных, к увеличению затрат кормов на единицу продукции и удорожанию себестоимости прироста и, как следствие, к снижению экономической эффективности производства. Животных, отстающих в росте, следует выбраковывать в ходе выращивания, не дожидаясь окончания технологического цикла откорма.

Животные в стаде, в силу этого, будут расти с различной интенсивностью, и иметь различную упитанность. Под упитанностью скота понимают запасы питательных веществ и энергетических резервов, отложенных в организме в виде жира. Она зависит от многих факторов: от уровня кормления животных, от возраста, физиологического состояния, породы и других факторов. Упитанность оказывает большое влияние на живую массу животного, количество мякоти в туше мясного скота, количество внутреннего жира и на важные функции организма (воспроизводящие способности, резистентность организма и другие). Многие исследователи отмечают, что с увеличением упитанности скота увеличивается масса туши мясного скота, выход туши, масса и выход внутреннего жира, убойная масса и убойный выход [2, 7, 8].

Дж. Уити, В Стивенс В., Вивер Д. утверждают, что масса коров, без содержимого преджелудков, при упитанности 3 балла имеет живую массу 382 кг. При увеличении упитанности до 9 баллов живая масса достигла 519 кг, то есть она увеличилась в 1,36 раза. Это происходило за счёт увеличения жира и его относительного процентного содержания [12].

Многие исследователи утверждают, что живая масса животных во многом зависит от состояния упитанности скота [9, 10, 12]. Но, следует отметить, что живая масса не может быть

единственным критерием оценки упитанности скота и энергетических запасов в организме животного, так как сама живая масса зависит от многих факторов. Например, от наполненности рубца, сроков стельности коровы. Животные с одинаковой живой массой могут иметь различную упитанность, в то время как, животные с одинаковой упитанностью могут иметь совершенно разную живую массу [16].

В своих исследованиях Парсонс С. Ф. показывает зависимость упитанности животного от толщины подкожного жира [12].

Критерием отнесения животного к той или иной категории упитанности скота служит уровень развития мышечной ткани и количество отложенного подкожного жира. У телят в возрасте до трёх месяцев обнаруживается небольшое число жировых клеток. С возрастом их количество увеличивается, и они образуют сплошные жировые скопления.

На самых ранних стадиях жир лишь входит в состав мышц и не откладывается виде обособленной ткани. Жировая ткань с возрастом откладывается на почках и в сальнике. В последующем липидная ткань начинает занимать место среди мышечных волокон. Откладывающийся между мышечными волокнами жир придаёт мясу «мраморность». У скороспелых специализированных пород мясного скота межмышечного жира откладывается больше, чем у молочных или комбинированных пород крупного рогатого скота.

Следующим этапом в зависимости от породной принадлежности является скопление жира под кожей в рыхлой соединительной ткани. Это придаёт хорошо откормленному скоту округлые формы. Отложение подкожного жира у крупного рогатого скота при откорме начинается с задней части туловища – с основания хвоста, седалищных бугров, коленных складок, таза, поясницы, подгрудка и т.д. [16].

Известно, что количество мышечных волокон закладывается в период эмбрионального развития, а в постэмбриональный период животного увеличение мускулатуры происходит только за счёт укрупнения мышечных волокон. Их количество после рождения не изменяется, они становятся толще и длиннее. Кроме того установлено, что диаметр мышечных волокон зависит от состояния упитанности скота. Хорошо откормленный годовалый телёнок может иметь одинаковую толщину мышечных волокон со старой истощённой коровой. При ухудшении условий кормления диаметр волокон уменьшается и у истощённых животных может восстанавливаться до нормальных размеров при условии улучшения кормления [20].

Так как жировая ткань играет многообразную роль в организме животных, состояние упитанности скота имеет огромное значение для сохранения здоровья, репродуктивных функций и продуктивности. В накоплении жира в теле наблюдаются известная очерёдность отложения на разных анатомических частях. У молодняка животных в начальный период откорма жировая ткань откладывается на внутренних органах и между мышечными пучками, затем накопление идёт в подкожной клетчатке, а в конце периода откорма у молодняка и у животных старшего возраста – жир откладывается в мышечной ткани.

При отложении жира в различных анатомических участках существует определённая пропорциональность. Накопление жира в одной части сопровождается увеличением его в других местах. Поэтому определение очерёдности отложения жировой ткани даёт представление лишь об изменениях соотношений в известных пропорциях.

Межмышечный жир локализуются в рыхлой соединительной клетчатке в виде накоплений между отдельными мускулами и группой мышц. Жировая ткань накапливается вокруг крупных кровеносных сосудов и нервов, выполняя для них защитную функцию. Внутримышечный жир откладывается в отдельных мышцах между волокнами и входит в структуру самих клеток. Внутримышечный жир разрыхляет пучки мышечной ткани, и этот жир определяет «мраморность» мяса.

Подкожная жировая ткань локализуется в большом количестве вокруг корня хвоста, на маклоках, седалищных буграх, пояснице, боках по рёбрам, за лопатками, в области паха, на грудине. Иногда отложение жира достигает толщины 4-6 см и более. Между сроками отложения липидной ткани и сроками развития тела имеется прямая связь. Знание таких закономерностей дало возможность разработать систему балльной оценки упитанности крупного рогатого скота. Жироотложение преобладает на тех участках, где идёт интенсивный рост в период после рождения [20].

Наши изыскания обосновывают необходимость использования коэффициентов корреляции и регрессии между живой массой, продуктивностью и системой балльной оценки упитанности молодняка мясного скота для корректировки уровня кормления с целью достижения желательной упитанности и экономии кормов.

Исследования выполнены по заказу Министерства сельского хозяйства России за счёт средств федерального бюджета в 2016 году в рамках научно-исследовательской работы ФГБОУ ВО «Самарская государственная сельскохозяйственная академия» «Разработка практического руководства по балльной оценке упитанности мясного скота и её применение в менеджменте стада».

Цель настоящей работы – определение взаимосвязи между балльной оценкой упитанности молодняка мясного скота с живой массой и коэффициента регрессии, с последующим использованием коэффициентов регрессии для расчёта изменений в программе кормления молодняка.

Научная новизна. В ходе исследований впервые выявлена взаимосвязь между балльной оценкой упитанности и живой массой молодняка разных пород, что позволило определить коэффициенты регрессии и рассчитать изменения уровня кормления молодняка для достижения желательной живой массы и упитанности при выращивании.

Материал и методы. Материалом для исследования служил молодняк в возрасте 7 месяцев. Исследования были проведены во время ежегодной комплексной оценки мясного скота (бонитировки) в 2016 году в ООО «К.Х. Полянское» Самарской области. Объектом исследования была взаимосвязь балльной оценки упитанности с живой массой и продуктивностью молодняка мясного скота [26].

Для обоснования использования балльной оценки упитанности для управления стадом, было проведено определение взаимосвязи (коэффициент корреляции и коэффициент регрессии) между живой массой, среднесуточным приростом и упитанностью молодняка. Коэффициент корреляции рассчитывали, как фенотипическую корреляцию для большой выборки. Коэффициент регрессии определяли, как произведение коэффициента корреляции на частное от деления среднеквадратического отклонения одного признака на среднеквадратическое отклонение другого признака. Для эксперимента были сформированы четыре группы животных из 66 тёлок и 44 бычков герефордской, 32 тёлок и 50 бычков казахской белоголовой пород. Упитанность скота определяли визуальным осмотром животных и прощупыванием, по 5 балльной шкале оценки упитанности молодняка мясного скота.

Биометрическая обработки данных проведена по общепринятой методике [27].

Результаты исследований и их обсуждение. В ходе экспериментов были определены коэффициенты корреляции и регрессии между живой массой молодняка, среднесуточным приростом и упитанностью молодняка, оценённой в баллах. Для определений коэффициента регрессии использовали коэффициент корреляции, определения корреляции – изменчивость каждого изучаемого признака.

Живую массу, балльную оценку упитанности, продуктивность молодняка и их изменчивость определяли с учётом пола животных.

По живой массе бычки казахской белоголовой породы превосходили своих сверстников герефордской породы на 16,7 кг, (7,96%) а тёлки – на 9,8 кг (4,85%). Наибольшая изменчивость живой массы наблюдалась в группе бычков герефордской породы – 12,0%, у бычков казахской белоголовой породы – 11,8% (таблица 1).

Среди тёлок казахской белоголовой породы коэффициент изменчивости был больше. Это свидетельствует о том, что казахская белоголовая порода менее консолидирована по изучаемым признакам.

Наибольшей упитанностью отличались бычки, они имели одинаковую упитанность в обеих породах – 4,5 балла, при одинаковом коэффициенте изменчивости, в то время, как упитанность тёлок была несколько ниже, 4,2 и 4,1 балла, соответственно. Изменчивость в группе казахской белоголовой породы была выше, чем у герефордов на 1,1%.

Изучение коэффициента корреляции и регрессии между упитанностью скота и живой массой молодняка показало на высокую степень прямолинейной взаимозависимости признаков (таблица 2).

Таблица 1 – Изменчивость живой массы и упитанности молодняка

Показатель	Порода			
	герефордская		казахская белоголовая	
	бычки	тёлки	бычки	тёлки
Живая масса (М), кг	210,0	202,0	226,7	211,8
Среднеквадратическое отклонение (σ), кг	25,2	20,2	27,1	22,8
Коэффициент изменчивости (C_v), %	12,0	10,0	11,8	10,8
Ошибка средней арифметической, кг	4,40	3,40	4,90	4,90
Балл упитанности	4,5	4,2	4,5	4,1
Среднеквадратическое отклонение (σ), балл	0,51	0,30	0,50	0,44
Коэффициент изменчивости (C_v), %	11,6	9,8	11,6	10,7
Ошибка среднеарифметической, балл	0,11	0,09	0,10	0,14

Таблица 2 – Коэффициенты корреляции и регрессии между упитанностью и живой массой молодняка

Показатель	Порода			
	герефордская		казахская белоголовая	
	бычки	тёлки	бычки	тёлки
Коэффициент корреляции (r)	0,74	0,76	0,81	0,79
Коэффициент регрессии (R)	26,7	26,1	32,2	28,9
Достоверность коэффициента корреляции (td)	0,999	0,999	0,999	0,999
Достоверность коэффициента регрессии (td)	0,999	0,999	0,999	0,999

Во всех случаях коэффициент корреляции был высоким, положительным и прямолинейным, находился в границах от 0,74 до 0,81. Это является основанием использовать их при определении коэффициента регрессии. Установлено, что при изменении упитанности животных на один балл изменяется их живая масса на 26,1-32,2 кг.

Зная, сколько требуется энергетических кормовых единиц на килограмм прироста живой массы, можно рассчитать и внести коррективы в программу кормления молодняка с учётом их упитанности.

Коэффициенты корреляции и регрессии, имели высокую степень (P>0,999) достоверности. В ходе исследований также был определён уровень продуктивности молодняка и коэффициент корреляции и регрессии между среднесуточным приростом и упитанностью скота.

Анализ показателей продуктивности молодняка (таблица 3) свидетельствует, что они были недостаточно высокие в обеих группах. Это можно объяснить тем, что молодняк выращивался в летний период без подкормки концентрированными кормами. Наивысшей продуктивностью среди молодняка отличались бычки казахской белоголовой породы – 858,5 г, что на 7,7 г больше, чем у бычков герефордов при недостоверной разности учитываемых показателей (P<0,95).

Среди тёлочек продуктивность была выше у представителей герефордской породы – 791,8 г, что больше, чем у их сверстниц казахской белоголовой породы на 24,1 (3,14%). Согласно величине признака, различны и среднеквадратические отклонения показателя в группах.

Таблица 3 – Среднесуточный прирост и их изменчивость

Показатель	Порода			
	герефордская		казахская белоголовая	
	бычки	тёлки	бычки	тёлки
Среднесуточный прирост, г	850,8	791,8	858,5	767,7
Среднеквадратическое отклонение (σ), г	112,3	83,9	117,6	96,7
Коэффициент изменчивости (C_v), %	13,2	10,6	13,7	12,6
Ошибка средней арифметической, г	17,7	16,1	17,1	20,0

Коэффициент изменчивости находился в пределах от 10,6 до 13,7%, с незначительными колебаниями с учётом породы и пола животных.

Коэффициент корреляции и регрессии между среднесуточным приростом и упитанностью молодняка, определённого по 5-балльной шкале представлен (таблица 4).

Коэффициент корреляции между продуктивностью молодняка и балльной оценкой упитанности был во всех группах высоким, носил положительный прямолинейный характер. Важно отметить, что среди герефордского молодняка, как у бычков, так и среди тёлок коэффициент корреляции составлял 0,86. Одинаковый коэффициент корреляции (0,78) был установлен также у молодняка казахской белоголовой породы.

Коэффициент регрессии позволил выявить, что изменение упитанности молодняка на 1 балл приводит к изменению живой массы бычков на 136,8 и 148,4 г в сутки.

Среди тёлок изменение упитанности скота на 1 балл приводит к изменению живой массы на 100,4 и 109,1 г в сутки (P>0,999).

Таблица 4 – Коэффициент корреляции и регрессии между среднесуточным приростом и упитанностью молодняка

Показатель	Порода			
	герефордская		казахская белоголовая	
	бычки	тёлки	бычки	тёлки
Коэффициент корреляции (r)	0,86	0,86	0,78	0,78
Коэффициент регрессии (R)	148,4	100,4	136,8	109,1
Достоверность коэффициента корреляции (td)	0,999	0,999	0,999	0,999
Достоверность коэффициента регрессии (td)	0,999	0,999	0,999	0,999

Зная на сколько килограммов необходимо изменить живую массу для достижения требуемой упитанности, можно определить, на сколько надо изменить уровень кормления животных (таблица 5).

Таблица 5 – Изменение уровня (нормы) кормления молодняка с живой массой 200 кг, ЭКЕ

Оценка упитанности, балл	Желательная упитанность, балл	Порода			
		герефордская		казахская белоголовая	
		бычки	тёлки	бычки	тёлки
1	5	норма+2,67	норма+2,45	норма+2,84	норма+2,56
2	5	норма+2,00	норма+1,84	норма+2,13	норма+1,92
3	5	норма+1,33	норма+1,22	норма+1,42	норма+1,28
4	5	норма+0,67	норма+0,61	норма+0,71	норма+0,64
5	5	норма (5,0)	норма (4,7)	норма (5,0)	норма (4,7)

Например, для достижения желательных 5 баллов, бычкам герефордской породы, имеющим упитанность 3 балла, необходимо повысить уровень кормления на 1,33 энергетических кормовых единиц, а тёлкам –1,22 ЭКЕ.

Заключение. Таким образом, между живой массой молодняка, среднесуточным приростом и балльной оценкой упитанности существует высокая прямолинейная положительная связь. Установленные коэффициенты регрессии позволяют определить изменение живой массы молодняка при изменении упитанности на 1 балл. Это является основанием для внесения коррективов в программу кормления молодняка, что обеспечит желательную упитанность к сроку окончания откорма и высокий экономический эффект выращивания молодняка.

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ӘРТҮРЛІ ГЕНОТИПТІ ЕТТІ ІРІ ҚАРА ЖАС МАЛДАРЫНЫҢ ҚОҢДЫЛЫҒЫН БАЛЛМЕН БАҒАЛАУ ЖӘНЕ ОНЫҢ ТІРІЛЕЙ САЛМАҒЫ ЖӘНЕ ӨНІМДІЛІГІМЕН ӨЗАРА БАЙЛАНЫСТЫҒЫ

Аннотация. Сиыр етін рентабельді өндіру үшін жоғары өнімділігімен ерекшеленетін малдардың, жоғары сапалы азықтардың көп мөлшерде болуы жеткілікті емес. Сиыр етін өндірудегі басты міндет – оларды ұтымды пайдалануды дұрыс ұйымдастыру болып табылады. Шаруашылық топтағы малдардың тірілей

салмағы әр қилы болып келеді, ал етті ірі қара малдардың азықтандыру нормасы есептелінген, бірақ та, негізінен олардың тірілей салмағын есепке ала отырып жасалған. Бұл дұрыс емес, өйткені топтағы малдардың тірілей салмақтары бірыңғай болып, қоңдылық күйіне байланысты энергияға деген мұқтаждығы әр түрлі болады. Басқаша айтқанда, малдарды азықтандыру нормасы тірілей салмағына байланысты ғана емес, сонымен бірге малдардың қоңдылық күйіне қарай нақтылануы тиіс. Қоңдылығына байланысты малдарды қайтадан топтастыру сиыр етін өндірудің технологиялық үрдісінде негізгі тәсіл болып саналады. Бұл қымбат азықтандыруды үнемдеуге мүмкіндік береді, өйткені сиыр етінің өзіндік құны құрлымында шығындардың үлкен үлесі (60%) азыққа тиесілі. Зерттеу мақсаты – жас малдардың қоңдылығын баллмен бағалағанда олардың тірілей салмақпен өзара байланыстылығын анықтау, қоңдылығы бір баллға өзгергенде тірілей салмағы қаншалықты ауытқитынын айқындау және малдардың қоңдылық күйіне байланысты азықтандыру нормасын нақтылау. Зерттеулер герефорд және қазақтың ақ бас тұқымдарының жас малдарына жүргізілді. Зерттеу жүргізу үшін коррелияциялық, регрессиялық және статистикалық талдау әдістері қолданылды. Зерттеу жүргізу барысында малдардың тірілей салмағы мен қоңдылығын баллдық бағалау арасында жоғарғы оң байланыс байқалды (герефорд үшін r= 0,74-0,76 және қазақтың ақ бас тұқымы үшін r=0,81-0,79). Бұл белгілер арасындағы регрессия коэффициентін анықтауға септігін тигізді. Зерттеу кезінде анықталғаны, малдың қоңдылығын 1 баллға арттыру герефорд тұқымының жас малының тірілей салмағын 26,1-26,7кг өсіреді, ал қазақтың ақ бас тұқымдарының бұзауларында бұл көрсеткіш 28,9-32,2кг, яғни азықтандыру деңгейіне қажетті өзгертулер енгізуге мүмкіндік берді, қоңдылығы 1 балл герефорд тұқымының жас малдары үшін 2,45-2,57; ал 2 баллға 1,84-2,00; 3 баллға 1,22-1,33; 4 баллға 0,61-0,67, тиісінше таналар мен бұқашықтарға да энергетикалық азық өлшемін арттыруға ықпалын тигізді. Қазақтың ақ бас тұқымының жас малдары үшін бұл көрсеткіштер 2,56 және 2,84; 1,92 және 2,13; 1,28 және 1,42; 0,64 және 0,71 энергетикалық азық өлшемін құрады. Сол себептен жас малдардың қоңдылығын қадағалау, қоңдылық күйіне байланысты азықтандыруды дұрыс ұйымдастыру және әр түрлі қоңдылық күйдегі малдарды топқа бөлу, жас малдарды өсіруде экономикалық тиімділікке жетудің маңызды жолдары болып табылады.

Түйін сөздер: етті ірі қара жас малы, герефорд және қазақтың ақ бас тұқымдары, қоңдылығын баллмен бағалау, тірілей салмағы, азықтандыру деңгейі.

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THE ELECTRODEPOSITION OF GALLIUM SELENIDE

Abstract. The electrochemical deposition of gallium selenide on a glassy carbon electrode from sulphate electrolytes at a constant potential was carried out. The cyclic voltammetric curves of the glassy carbon electrode in two different electrolytes were studied: sulfuric acid and citrate buffer solution containing gallium and selenium ions. The influence of change in the concentration of gallium ions and the deposition potential on the composition of the resulting precipitate is studied.Increasing of the gallium ions concentration from $6\cdot10^{-3}$ M to $1\cdot10^{-1}$ M at a constant concentration of selenium ions $2\cdot10^{-3}$ M in the electrolyte leads to an increase in the gallium content in the deposit composition. It is established that in order to obtain the stoichiometric composition of the film, the content of gallium (III) ions in the electrolyte must be many times higher than the content of selenium (IV) ions. The results of elemental analysis of the precipitate confirmed that a film of gallium selenide with a content of 26.7 at% gallium was obtained at a ratio of the concentration of gallium ions and selenium of 50: 1 in the sulphate electrolyte at a potential of -0.8 V. Investigation of the morphology of the surface showed that a uniform coating of the surface of the glassy carbon electrode is achieved at potentials of -0.8 and -0.9 V. X-ray phase analysis confirmed the presence of the Ga_2Se_3 phase in the resulting films.

Keywords: gallium selenide, electrodeposition, voltamperometry, thin films.

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ЭЛЕКТРООСАЖДЕНИЕ СЕЛЕНИДА ГАЛЛИЯ

Аннотация. Проведено электрохимическое осаждение селенида галлия на стеклоуглеродном электроде из сернокислых электролитов при постоянном потенциале. Исследованы циклические вольтамперные кривые стеклоуглеродного электрода в двух различных электролитах: сернокислом и цитратном буферном растворе, содержащих ионы галлия и селена. Исследовано вляние изменения концентрации ионов галлия и потенциала осаждения на состав получаемого осадка. Увелечение концентрации ионов галлия от $6\cdot10^{-3}$ М до $1\cdot10^{-1}$ М при постоянной концентрации ионов селена $2\cdot10^{-3}$ М в электролите приводит кувеличению содержания галлия в составе осадка. Установлено, что для получения стехиометрического состава пленкисодержание ионов галлия(III) в электролите должно во много раз превышать содержание ионов селена (IV). Результаты элементного анализаосадка подтвердили, что при соотношении концентраций ионов галлия и селена 50:1 в сернокислом электролите, при потенциале -0,8В получили ,пленку селенида галлия с содержанием 26,7 ат% галлия. Исследование морфологии поверхности показало, что однородное покрытие поверхности стеклоуглеродного электрода достигается при потенциалах -0,8 и -0,9В. Рентгенофазовый анализ подтвердил наличие фазы Ga_2Se_3в полученных пленках.

Ключевые слова: селенид галлия, электроосаждение, вольтапмерметрия, тонкие пленки.

Введение. Полупроводниковые соединения III-VI группы привлекают большое внимание исследователей благодаря подходящим структурным и оптическим свойствам для применения в фотоэлектронных преобразователях [1]. К этой группе относятся моноселенид галлия GaSe, который имеет гексагональную структуру с оптической шириной запрещенной зоны 2,1 эВ, и содержит слои Se-Ga-Ga-Se и диселенид галлия Ga_2Se_3, который имеет кубическую структуру с шириной запрещенной зоны 1,8-2,6 эВ [2, 3] и кристаллизуется в α-и β-структурных модификациях. В структуре Ga_2Se_3 одна треть катионных центров свободна, поэтому структура соединения является дефектной. В свою очередь дефектные соединение используются в оптоэлектронных устройствах для пассивации гетерогенных соединений, для переключения памяти светоизлучающих диодов [4], в сочетании с подложкой GaP [5]. Существует множество методов получения селенида галлия. К таким методам относится химическое осаждение из паровой фазы(CVD) [6], химический перенос пара в вакууме [7], парофазная эпитаксия [8], гетеровалентная реакция обмена V-VI [9], термическое испарение [10], молекулярно-пучковая эпитаксия [11, 12]. Самый известный метод Стокбаргер-Бриджмена [13] получения монокристаллов селенида галлия Ga_2Se_3 представляет собой синтез при направленной кристаллизации, когда в специальной печи протягивается кварцевая ампула с материалом и нагревается до 1473 К с последующим медленным снижением температуры. Этот метод требует высокий чистоты материалов, высоких вакуума и температуры. Тонкие пленки Ga_2Se_3 могут быть получены золь-гель методом при темепературе образования кристаллов [14]. По сравнению с выше описанными, метод электроосаждения из водных растворов для получения тонких пленок на проводящих подложках обладает рядом преимуществ и относится к недорогим методам, позволяя контролировать толщину, морфологию и состав пленки в процессе осаждения [15-17].

В настоящей работе рассмотрены условия электроосаждения селенида галлия на стеклоуглеродном электроде при постоянном потенциале.

Методы исследования. Вольтамперные измерения на дисковом стеклоуглеродном электроде с поверхностью 0,07 $см^2$ и электроосаждение селенида галлия на плоских стеклоуглеродных пластинах, площадью 1,0 $см^2$. выполнялись в трехэлектродной термостатированной стеклянной ячейке с использованием хлорсеребряного электрода сравнения и платинового противоэлектрода. Перед экспериментом электроды обрабатывали тонкой абразивной бумагой 2000, промывали дистиллированной водой и сушили на воздухе. В качестве фоновых электролитов использовали сернокислый электролит с pH=2,2 (0,45M Na_2SO_4 + 0,05M H_2SO_4) и цитратный буферный электролит с pH=2,92. Последний готовили из 39,3 мл 0,1М цитрата натрия и 60,7 мл 0,1н HCl. Использовали растворы солей галлия и селена марки (ч.д.а) 0,1M $Ga_2(SO_4)_3$, 0,1M $NaHSeO_3$ и 1M $GaCl_3$. В исследованных электролитах изменяли концентрацию ионов галлия от $6\cdot10^{-3}$ до $1{,}2\cdot10^{-1}$ М и поддерживали постоянную концентрацию ионов селена ($2\cdot10^{-3}$ М).

Электроосаждение селенида галлия проводилась при постоянном потенциале, который поддерживался с помощью потенциостата GillAC с программным обеспечением ACM Instruments Version 5 и при температуре 70°C, которая поддерживалась с помощью термостата LOIP, перемешивание электролита осуществляли магнитной мешалкой ММ3М. После осаждения пленки промывали в дистиллированной воде и сушили на воздухе. Элементный анализ на содержание компонентов и микрофотографии поверхности пленок селенида галлия были получены с помощью электронного сканирующего микроскопа с возможностями микроанализа «JSM6610 LV» фирмы JEOL (Япония). Фазовый состав пленок определяли с помощью прибора ДРОН-4/07 с Со-трубкой.

Результаты и обсуждение. ***Вольтамперные измерения на дисковом стеклоуглеродном электроде.*** Для определения влияния концентрации компонентов в электролите на процесс электрохимического восстановления ионов были записаны циклические вольтамперные зависимости (ЦВА) стеклоуглеродного электрода в сернокислом электролите и в цитратном буферном растворе. Скорость сканирования потенциала составляла 20 мВ/с в интервале от 0 до −1.0В, и при обратной развертке потенциала от -1.0 до +1.2В. Исследовали электролиты с различной концентрацией ионов галлия ($6\cdot10^{-3}$ М, $1{,}2\cdot10^{-2}$ М, $6\cdot10^{-2}$ М, $8\cdot10^{-2}$ М,$1\cdot10^{-1}$ М и $1{,}2\cdot10^{-1}$ М) при постоянной концентрации ионов селена ($2\cdot10^{-3}$ М).

На рисунке 1 приведены ЦВА стеклоуглеродного электрода при восстановлении ионов Se(IV) и Ga(III), снятые в сернокислом электролите. Из рисунка видно, что катодный ток возрастает уже

при 0В потенциала, что свидетельствует о восстановлении Se(IV), которое начинается при более положительных потенциалах. На врезке рисунка 1 приведена ЦВА восстановления Se(IV) (2.10^{-3}М) на фоне сернокислого электролита, снятая при катодной развертке потенциала от +0,3 до -1,0 В. Восстановление Se(IV) сопровождается также появлением двух пиков тока при потенциалах около нуля В и при потенциале -0,5 В. Процессы восстановления и стандартные потенциалы описываются уравнениями:

$$H_2SeO_3+4\bar{e}+4H^+=Se+3H_2O \qquad E^o=+0{,}740В \qquad (1)$$

$$Se+2\bar{e}+2H^+=H_2Se \qquad E^o=-0{,}400\ В \qquad (2)$$

$$H_2SeO_3+6\bar{e}+6H^+=H_2Se+3H_2O \qquad E^o=+0{,}360В \qquad (3)$$

В области потенциалов -0,5В возможно восстановление Se(IV) по уравнениям (2 и 3) с образованием селенид ионов.

Ионы галлия не восстанавливаются на стеклоуглеродном электроде в изученном интервале потенциалов (рисунок 2). ЦВА стеклоуглеродного электрода в сернокислом электролите демонстрируют отсутствие пиков тока при изменении концентарции ионов галлия от 5.10^{-4} до 1.10^{-2} М.

При добавлении ионов галлия в электролит (рисунок 1, кривые 3-6) меняется ток первого пика, форма пика тока при -0,5В становится сглаженной, ток восстановления продолжается до -0,85 В и достигает области восстановления водорода.

Анализ анодной части ЦВА свидетельствует, что при максимальном содержании галлия в электролите, равном 1.10^{-3}М на электроде осаждается максимальное количество селена в составе соединения с галлием. Селен из соединения окисляется при потенциалах, близких к +1,0 В.

$$Se + 3H_2O \rightarrow H_2SeO_3 + 4H^+ + 4e^- \qquad (4)$$

Полученные результаты свидетельствуют, что образование соединения протекает при потенциалах -0,8 и -0,9В с участием ионов селенида за счет химической реакции положительно заряженных ионов галлия с отрицательно заряженными ионами селена.

ЦВА в цитратном буферном растворе показали, что при совместном присутствии ионов селена и галлия в электролите токи восстановления увеличиваются при увеличении концентрации галлия. При содержании Ga(III) $6\cdot10^{-3}$ $1{,}2\cdot10^{-2}$ профиль кривых совпадает с приведенными на рисунок 1 для сернокислого электролита. При увеличении концентрации галлия (рисунок 3, кривые 3,4) до $8\cdot10^{-2}$ М токи восстановления при Е= -0,5В увеличиваются, и при Е= -0,85В появляется дополнительный четко выраженный пик тока, который может характеризовать восстановление ионов галлия на стеклоуглеродном электроде, покрытом селеном. Анализ анодной ветви ЦВА также показывает, что на электроде а процессе восстановления формируется осадок соединения селена с галлием, потенциал окисления которого лежит в области потенциала +1,0 В (рисунок 3).

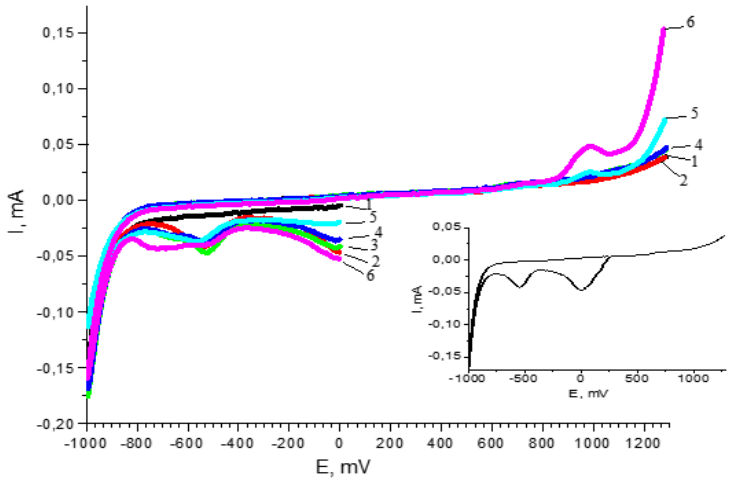


Рисунок 1 – ЦВА стеклоуглеродного электрода в сернокислом электролите при различных концентрациях ионов селена и галлия. *1)*-фон; *2-6)* Se(IV)-$2\cdot10^{-3}$М; Ga(III): *3)*$6\cdot10^{-3}$; *4)* $1{,}2\cdot10^{-2}$;*5)*$8\cdot10^{-2}$;*6)*$1{,}0\cdot10^{-1}$М. Врезка: Se(IV)-$2\cdot10^{-3}$М

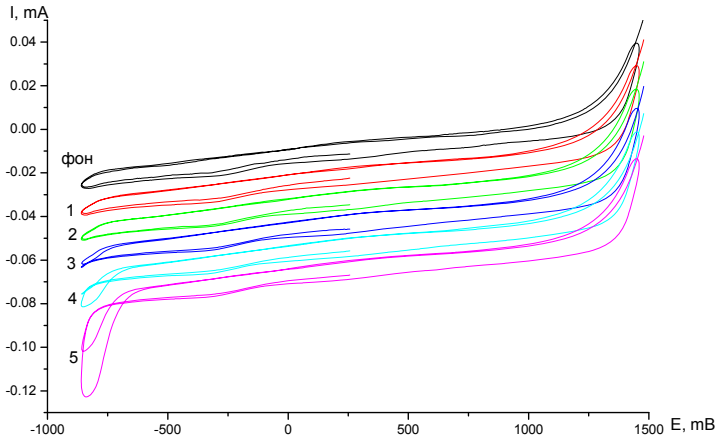


Рисунок 2 – ЦВА стеклоуглеродного электрода в сернокислом электролите при различном содержании ионов галлия Ga(III) *1*-5·10^{-4}; *2*-1·10^{-3}; *3*-2·10^{-3}; *4*-5·10^{-3}; *5*-1·10^{-2} М

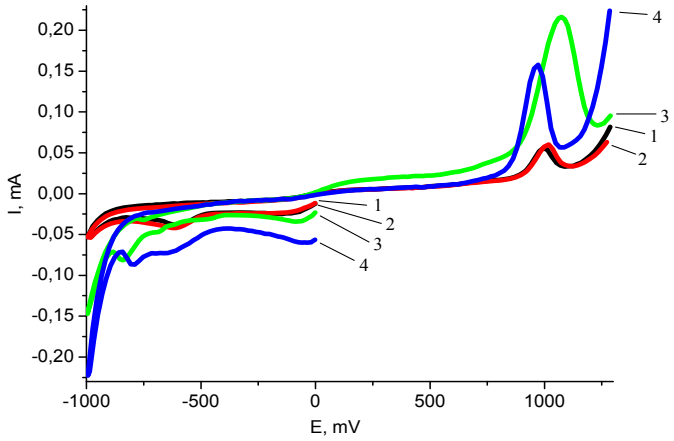


Рисунок 3 – ЦВА стеклоуглеродного электрода в цитратном буферном растворе при постоянной концентрации ионов селена и различных концентрациях галлия. *1-4)* Se(IV)=2·10^{-3}М; Ga(III): *1)*6·10^{-3}; *4)* 1,2·10^{-2};*5)*6·10^{-2};*6)*8·10^{-2}М

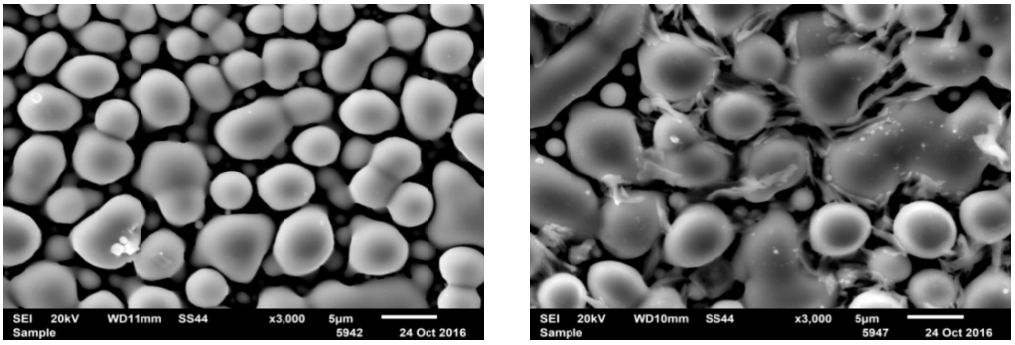
На основе полученных результатов выбрана область потенциалов -0,8 -0,9В для проведения потенциостатического осаждения соединения галлия с селеном на стеклоуглеродном электроде.

Электроосаждение селенида галлия в сернокислом электролите. Электроосаждение проводили при концентрации ионов галлия 6·10^{-3}М и 2·10^{-3}М ионов селена, при потенциале -0,8В и температуре 70°С. Полученную пленку исследовали с помощью электронного сканирующего микроскопа с возможностями микроанализа, который показал 0,03ат% содержание галлия. В дальнейшем увеличили концентрацию ионов галлия от до 1,2·10^{-2}М и выполнили электроосаждение при потенциалах -0,8 и -1,2В. Исследованы элементный состав и сделаны микрофотографии поверхности полученных пленок (таблица 1).

Таблица 1 – Элементный состав свежеосажденной пленки селенида галлия на стеклоуглероде при различных потенциалах

Подложка	Условия электроосаждения	Состав электролита
СУ-93	E=-0,8В T=70°С t = 30 минут	Ga - 0,51% Se - 99,49%
СУ-94	E=-1,2В T=70°С t = 30 минут	Ga - 0,54% Se - 99,41%

Из таблицы 1 видно, что содержание галлия увеличилось в осадке до ~ 0,5 ат%, сдвиг потенциала восстановления в отрицательную сторону слабо влияет на увеличение содержания галлия.



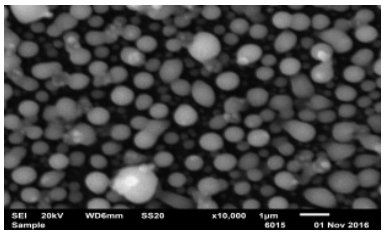
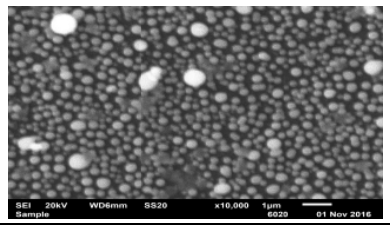
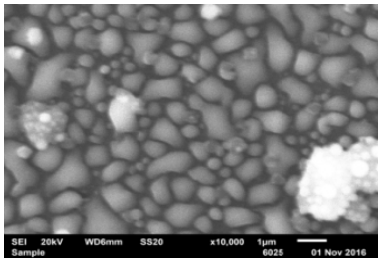
а б

Рисунок 4 – Микрофотография поверхности пленок (при увеличение в 3000 раз):
а – при потенциале -0,8В; б – при потенциале -1,2В

Микрофотография поверхности полученного образца, представленные на рисунке 4а, свидетельствует, что наблюдается образование отдельных, крупных зерен с диаметром 4,2-3,3 мкм. Восстановление при потенциале -1,2 В, когда начинается параллельное восстановление водорода, приводит к нарушению однородности осадка за счет образования нитевидных волокон (рисунок 4б).

В последующих экспериментах увеличивали содержание ионов галлия в электролите, при сохранении постоянной концентрации ионов селена, равной $2 \cdot 10^{-3}$ М. В таблице 2 приведены результаты анализа состава осажденных пленок при потенциалах -0,8В, -0,9В, -1,0В. Лучший результат по содержанию галлия 7,2% показал эксперимент, проведенный при потенциале -0,8В.

Таблица 2 – Элементный состав свежеосажденной пленки селенида галлия на стеклоуглероде при различных потенциалах и микрофотографии поверхности

Подложка	Условия электроосаждения	Состав электролита	Содержание в осадке, ат%	Микрофотографии
СУ-95	E=-1,0В T=70°C t=30минут	$6 \cdot 10^{-2}$ М $Ga_2(SO_4)_3$ $2 \cdot 10^{-3}$М $NaHSeO_3$	Ga-6,7; Se-93,3	
СУ-96	E=-0,9В T=70°C t=30минут	$6 \cdot 10^{-2}$ М $Ga_2(SO_4)_3$ $2 \cdot 10^{-3}$М $NaHSeO_3$	Ga-4,5 Se-95,5	
СУ-97	E=-0,8В T=70°C t=30минут	$6 \cdot 10^{-2}$ М $Ga_2(SO_4)_3$ $2 \cdot 10^{-3}$М $NaHSeO_3$	Ga - 7,2 Se - 92,8	

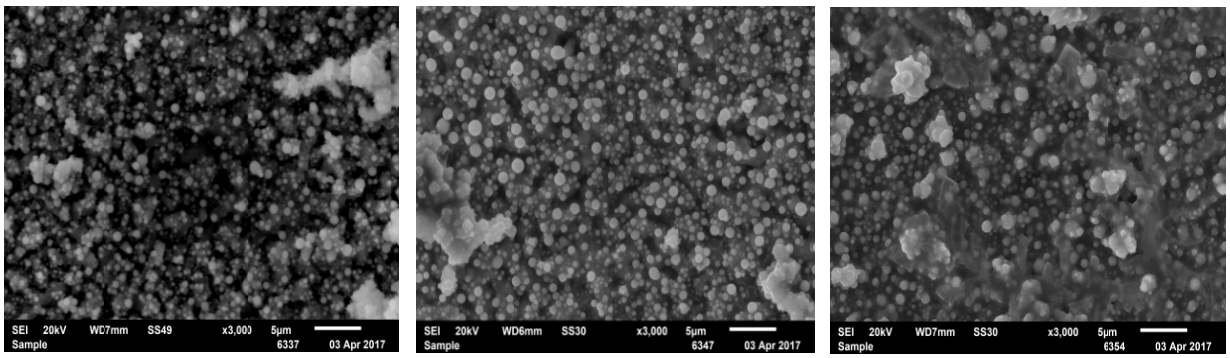
Микрофотографии, приведенные в таблице 2, свидетельствуют, что величина зерна полученного осадка зависит от потенциала осаждения и от содержания галлия в осажденной пленке селенида галлия.

В дальнейших экспериментах использовали раствор 1М $GaCl_3$ в качестве источника ионов галлия, и увеличили их концентрацию в электролите до $1{,}0\cdot10^{-1}$ М при постоянной концентрации ионов селена $2\cdot10^{-3}$М. Электрохимическое осаждение селенида галлия было выполнено при потенциалах -0,8 и -0,9В. Использовали очищенные, отполированные стеклоуглеродные подложки. После электрооосаждения получили однородные, плотные пленки красно-коричневого цвета и исследовали их состав и поверхность методом сканирующей элекронной микроскопии.

Таблица 3 – Элементный состав свежеосажденной пленки селенида галлия на стеклоуглероде при потенциалах Е=-0,8В, Е=-0,9В в течение 30 минут

Подложка	Условия электроосаждения	Состав электролита	Содержание компонентов в пленке, ат%
СУ - 110	Е=-0,9В Т=70°С	$1\cdot10^{-1}$ М $GaCl_3$ $2\cdot10^{-3}$ М $NaHSeO_3$	Ga 15,1 Se 84,9
СУ - 111	Е=-0,9В Т=70°С	$1\cdot10^{-1}$ М $GaCl_3$ $2\cdot10^{-3}$ М $NaHSeO_3$	Ga 15,9 Se 84,1
СУ - 112	Е=-0,8В Т=70°С	$1\cdot10^{-1}$ М $GaCl_3$ $2\cdot10^{-3}$ М $NaHSeO_3$	Ga 26,7 Se 73,3

Из таблицы 3 видно, что при потенциале -0,8В в течение 30минут при концентрации $1{,}0\cdot10^{-1}$ М $GaCl_3$ и $2\cdot10^{-3}$ М $NaHSeO_3$ на стеклоуглеродном электроде получена пленка с максимальным содержанием галлия (26,7ат%). На рисунке 5 приведены микрофотографии поверхности пленок селенида галлия, осажденных по условиям таблицы 3. Из рисунка видно, что равномерное распределение глобул нарушается скоплениями крупных крсталлов, состоящих из более мелких частиц. На рисунке 5в отмечено появление дендридов в виде цветков, что характерно для осажденных пленок галлия с селеном



а б в

Рисунок 5 – Микрофотографии поверхности пленок:
а) $E_{ос}$= -0,9В на СУ – 110; б) $E_{ос}$= -0,9В на СУ – 111; в) $E_{ос}$= -0,8В на СУ – 112

Однородное образование сфер с диаметром от 0,5 – 1,1 мкм, наиболее характерно для осадков, полученных при электроосаждении при $E_{ос}$ = -0,9В.

На рисунке 6 можно увидеть возрастание содержания галлия в составе пленки Ga_2Se_3, при концентрации1.10^{-1}М $GaCl_3$ в фоновом электролите.

Температурная обработка пленок. Для подтверждения фазового состава и выполнения рентгенофазового анализа осажденные пленки селенида галлия отжигали в муфельной печи в воздушной атмосфере двухступенчатым способом: первый раз отжигали при 200°С 10 минут, а второй раз при 500°С 15 минут. После отжига пленка приобрела серый цвет, адгезия к подложке плотная, поверхность однородная.

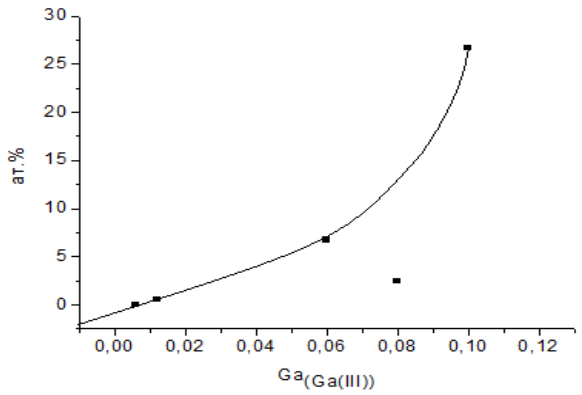


Рисунок 6 – Зависимость содержания галлия в осажденной пленке от концентрации ионов галлия в электролите при постоянном потенциале =-0,8 и концентрации Se= $2 \cdot 10^{-3}$ М

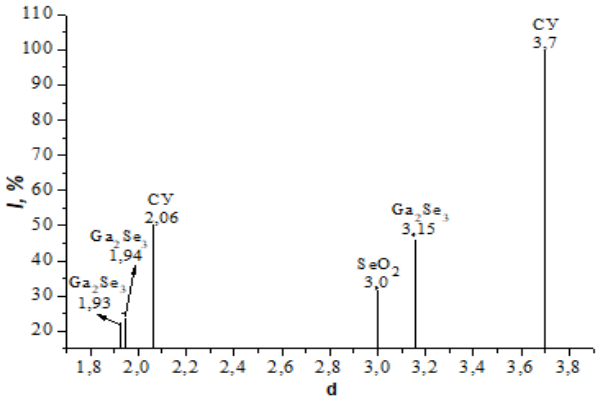


Рисунок 7 – Зависимость интенсивности от межплоскостного расстояния для образца СУ-112

Был выполнен рентгенофазовый анализ тонких пленок селенида галлия, электроосажденных на стеклоуглеродных пластинах по условиям таблицы 3. На рисунке 7 приведена штрих рентгенограмма, отражающая зависимость интенсивности рентгеновских рефлексов от межплоскостных расстояний. Видно, что на графике 7 присутствуют рефлексы фазы Ga_2Se_3, отвечающие межплоскостным расстояниям 1,93; 1,94; 3,15 согласно таблицам ASTM. Отмечено, что интенсивность рефлексов возрастает с ростом содержания галлия в осадке. На рентгенограммах также отмечены сильные рефлексы от подложки стеклоуглерода (СУ), поскольку полученные пленки не превышают толщину 1,5 мкм. Примесь оксида селена может свидетельствовать об окислении части селена на поверхности в процессе отжига.

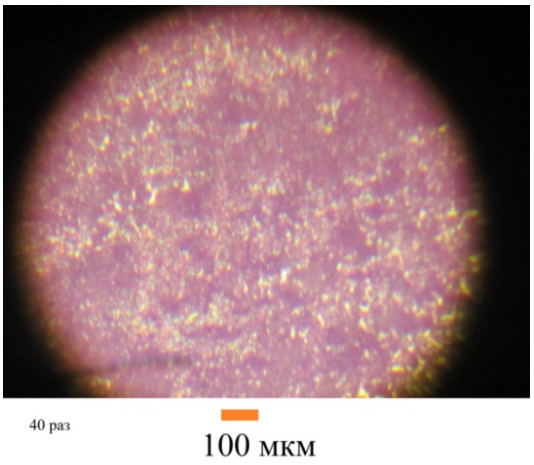


Рисунок 7 – Изображение поверхности пленки селенида галлия (образец СУ-112)

Исследование морфологии поверхности пленок после термической обработки было выполнено с помощью оптического микроскопа и атомного силового микроскопа JSPM 5200 (JEOL Japan).

Изображение, полученное с помощью оптического микроскопа, представляет равномерно покрытую поверхность образца (рисунок 8). Результаты атомной силовой микроскопии (АСМ) свидетельствуют, что высота покрытия достигает 5 мкм после отжига. Поверхность пленки растет в одном направлении и представляет собой на отрезке 25х25 мкм плоскости, растущие параллельно.

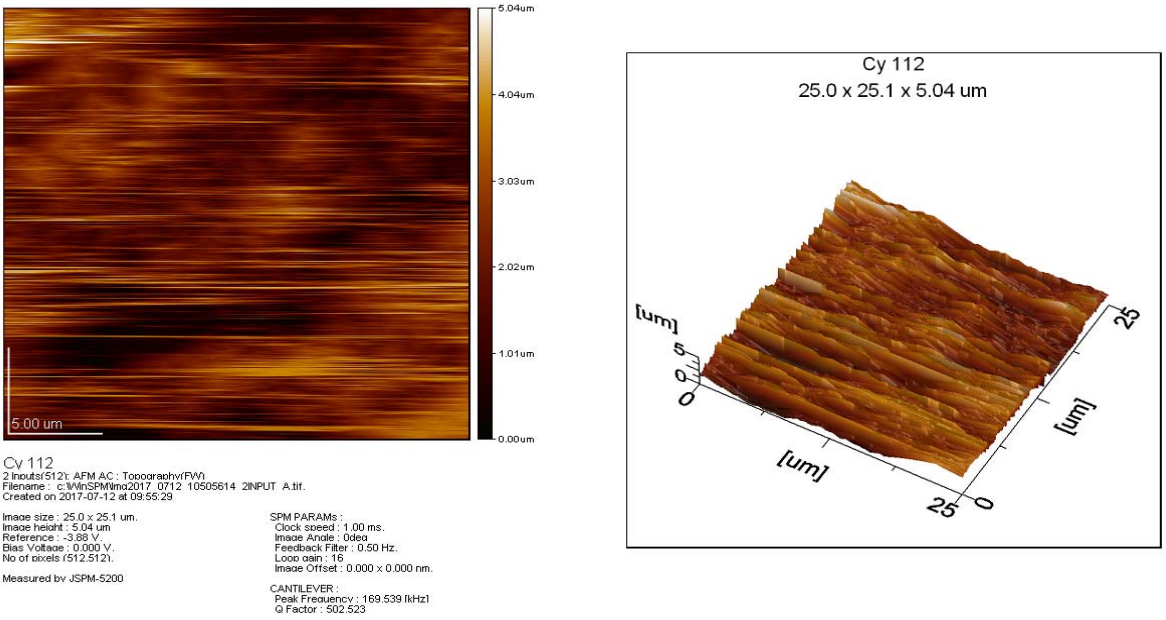


Рисунок 8 – Изображение поверхности образца СУ-112, полученное с помощью атомной силовой микроскопии

Выводы. Выполнено электрохимическое осаждение селенида галлия на стеклоуглеродном электроде из сернокислых электролитов при постоянном потенциале. Выбраны оптимальные условия электроосаждения при постоянном потенциале -0,8 В(Ag/AgCl) и соотношении концентраций ионов галлия и селена 50:1 в электролите, температура 70^{o}C. Получены пленки селенида галлия толщиной до 1,5 мкм, с содержанием 26,7 ат% галлия и 73,3 ат% селена. Состав близок к стехиометрическому составу соединения Ga_2Se_3. Рентгенофазовый анализ подтвердил наличие фазы Ga_2Se_3 в полученных пленках. Исследование морфологии поверхности показало, что однородное покрытие поверхности стеклоуглеродного электрода достигается при потенциалах -0,8 и -0,9 В.

Работа выполнена по гранту МОН РК AP05130392 *по теме:* «*Повышение энергоэффективности фотоэлектрохимических солнечных элементов за счет применения новых полупроводниковых материалов*».

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ГАЛИЙ СЕЛЕНИДІН ЭЛЕКТРОТҰНДЫРУ

Аннотация. Тұрақты потенциалда күкірт қышқылды электролиттен галий селенидін шыны көміртекті электродта электрохимиялық тұндыру жүргізілді. Шыны көміртекті электродтың циклдік вольтамперлі қисықтары галий және селен иондары бар екі түрлі электролитте: күкірт қышқылды және цитратты буферлі ертінді де зерттелді. Қабат құрамына галлий ионының концентрациясының өзгерісі мен тұныру потенциалының әсері зерттелді. Галлий ионының концентрациясын $6\cdot10^{-3}$М -ден $1\cdot10^{-1}$ М-ге дейін үлкейткенде тұнба құрамында галлийдың максимальды құрамына алып келеді, өз кезегінде селен ионының концентрациясы тұрақты $2\cdot10^{-3}$М болып қалады. Стехиометриялыққа құрамдағы қабат алу үшін электролитте галлий ионы (III) селен ионына(IV) қарағанда артығырақ болуы керек. Тұнбаның элементтік анализ нәтижесі күкірт қышқылды электролитте галлий ионының селен ионына қарағанда концентрациясының қатынасы 50:1 болғанда, -0,8В потенциалында құрамында 26,7 ат% галлий бар алынатындығын анықтады. Беттің морфологиясының зерттеулері шыны көміртегі электроды бетінде -0,8 және -0,9 В потенциалдарында біркелкі жабынды түзілетіндігін көрсетті. Рентгенофазалық анализ нәтижесі алынған қабаттарда Ga_2Se_3 фазасының бар екендігін растады.

Түйін сөздер: галлий селениді, электротұндыру, вольтапмерметрия, жұқа қабаттар.

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MEAT PRODUCTIVITY OF THE YOUNG STOCK OF THE KAZAKH JABE HORSES AFTER THE AUTUMN FATTENING

Abstract. In the article, some zootechnical measures that allow to significantly increase the quantity and quality of horse meat in the conditions of autumn fattening are considered. Proceeds from the sale of young animals are doubled for each colt, both due to the increase in live weight (41.6-48.5 kg), and due to higher prices for horse meat of higher fatness (1000-1200 tenge per 1 kg of meat).

During a relatively short period of fattening (76 days), the young stock, released from the summer heat in a state of lower average fatness, reached the highest condition. Studies have shown that during the first 20 days of feeding, the average daily gain of colts reached 1160-1400 g per day. Then on the 30th day of feeding, the average daily gain decreases and reaches 750-840 g, and at the end of the fattening on the 70th day of feeding - 20-100 g.

When slaughtering young horses after autumn fattening, carcasses were obtained with a high slaughter yield (53.8-56.5%), a large content of pulp (78.3-82.5%) with a relatively low bone content (17.5-21.7 %). The highest yield of pulp in all groups of young animals was in the first grade (47.5-50.6%), then in the second grade (32.7-34.8%). The yield of pulp outside the grade (kazy + zhal) reached 14.3% in 6-month-old colts, 17.5% in 18-month-old colts and 18.7% in 18-month-old colts. Offal products are of great importance in the future use of horse breeding reserves.From the colts of different ages, a mass of the tongue was obtained from 0.48 to 0.83 kg, the liver from 2.51 to 4.68 kg, the kidney from 0.91 to 1.41 kg, the heart from 1.07 to 2.64 kg. From the small colon, a delicacy product like karta is made, the length of which reaches 0.7-1.9 m. The thin intestine is used as a shell for kazy and chuzhuk, its length is from 14.7 to 16.9 m.

Net profit from the sale of colts of different ages for meat ranges from 46.2 to 112.2 thousand tenge. The profitability is high from 59.8 to 76.4%.

Keywords: young stock, growth, carcass, slaughter yield, pulp, bones, offal, profit, profitability.

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МЯСНАЯ ПРОДУКТИВНОСТЬ МОЛОДНЯКА КАЗАХСКИХ ЛОШАДЕЙ ЖАБЕ ПОСЛЕ ОСЕННЕГО НАГУЛА

Аннотация. В статье рассмотрены некоторые зоотехнические мероприятия, позволяющие значительно увеличить количество и качество конины в условиях осеннего нагула. Выручка от реализации молодняка увеличивается в два раза за каждого жеребчика, как за счет прибавки живой массы (41,6-48,5 кг), так и за счет более высоких цен на конину высшей упитанности (1000-1200 тенге за 1 кг мяса).

За сравнительно короткий промежуток нагула (76 дней) молодняк, вышедший из летней жары в состоянии нижнесредней упитанности, достигли высшей кондиции. Исследования показали, что за первые 20 дней

нагула среднесуточный прирост жеребчиков достигал 1160-1400 г в сутки. Затем на 30 день нагула среднесуточные приросты снижаются и достигают 750-840 г, а в конце нагула на 70 день нагула – 20-100 г.

При убое молодняка лошадей после осеннего нагула получены туши с высоким убойным выходом (53,8-56,5%), большим содержанием мякоти (78,3-82,5%) при относительно невысоком содержании костей (17,5-21,7%). Наибольший выход мякоти во всех группах молодняка был в первом сорте (47,5-50,6%), затем во втором сорте (32,7-34,8%). Выход мякоти в отрубе вне сорта (казы+жал) достигал у 6 месячных жеребят 14,3%, у 18 месячных – 17,5% и у 30 месячных жеребчиков 18,7. Большое значение в перспективе использования резервов коневодства имеют субпродукты. От жеребчиков разных возрастов получена масса языка от 0,48 до 0,83 кг, печени от 2,51 до 4,68 кг, почек от 0,91 до 1,41 кг, сердца от 1,07 до 2,64 кг. Из малой ободочной кишки изготовляется деликатесное изделие карта, длина которой достигает 0,7-1,9 м. Тонкий отдел кишечника используется в качестве оболочки для казы и чужука, длина ее составляет от 14,7 до 16,9 м.

Чистая прибыль от реализации жеребчиков разных возрастов на мясо составляет от 46,2 до 112,2 тысячи тенге. Рентабельность при этом высокая от 59,8 до 76,4%.

Ключевые слова: молодняк, прирост, туша, убойный выход, мякоть, кости, субпродукты, прибыль, рентабельность.

Введение. Продуктивное коневодство в Казахстане является перспективной, развивающейся и высокоэффективной отраслью животноводства. По мясной продуктивности лошади не уступают специализированным породам крупного рогатого скота. Убойный выход у лошадей достигает 52-60%, а выход мяса в тушах до 81% [1]. Мясо обладает высокой пищевой ценностью благодаря полному набору незаменимых аминокислот и благоприятному соотношению между ними, а также наличию в нем биологически ценного жира. Конское мясо признано диетическим продуктом питания [2].

Благоприятные возможности для многоотраслевого животноводства, в том числе и коневодства имеются во всех регионах Казахстана. Наличие больших территорий естественных кормовых угодий [3], где можно круглый год содержать лошадей на подножном корме, в сочетании с обилием сочной пастбищной травы, хорошей обеспеченностью водопоями и отсутствием кровососущих насекомых на отгонных пастбищах (жайляу) способствует развитию продуктивного коневодства и получению дешевой продукции.

Однако эффективность мясного коневодства в районах табунного содержания лошадей сдерживается тем, что местные казахские лошади этих районов имеют недостаточно высокую живую массу, мелкорослы и позднеспелы, так как заканчивают свой рост к 6-7 годам. В то же время местные казахские лошади хорошо приспособлены к суровым условиям пастбищно-тебеневочного содержания. Поэтому развитие мясного коневодства в районах табунного содержания лошадей связано с проблемой повышения мясных качеств местных казахских лошадей [4].

Одним из методов наиболее быстрого увеличения живой массы, крупности и скороспелости является скрещивание местных казахских кобыл с жеребцами кушумской, мугалжарской пород и казахской типа жабе.

В современных условиях жизненной необходимостью стало изыскание новых методов работы в коневодстве, которые обеспечили бы получение лошадей, отвечающих современным требованиям продуктивного коневодства применительно к местным условиям.

Практика показала, что этим требованиям отвечают вновь созданные эмбенский и кожамбердинский внутрипородные типы мугалжарской породы [5], жангалинский заводской тип кушумской породы [6] и селетинский заводской тип казахских лошадей типа жабе [7] выращенные при пастбищно-тебеновочном содержании и стойко передающие свои хозяйственно-полезные качества потомству.

Основная цель разведения лошадей вновь созданных внутрипородных и заводских типов отечественных пород производство мяса на базе круглогодового использования естественных пастбищ. В настоящее время они используются как улучшатели местных казахских лошадей в различных природно-климатических зон Казахстана.

Объектом исследования является молодняк селетинского заводского типа казахских лошадей жабе конного завода «Алтай Карпык Сайдалы Сарытока» Иртышского района Павлодарской области.

Цель работы – изучение мясной продуктивности молодняка казахских лошадей типа жабе различных возрастов после осеннего нагула.

Метод или методология проведения работы. Для проведения опытов выделены три группы жеребчиков в возрасте 6,18 и 30 месяцев для проведения осеннего нагула. Технология содержания молодняка в конном заводе «Алтай Карпык Сайдалы Сарытока» Павлодарской области являлась типичной для зоны разведения табунных лошадей. Содержание молодняка лошадей при нагуле было пастбищное без подкормки. Осенний нагул проводился с начала октября до середины декабря на ковыльно-типчаково-полыных пастбищах [8].

При постановке и в конце нагула все подопытные жеребчики взвешивались. Определяли прирост живой массы за период нагула и способность к нажировке путем взвешивания через каждые 10 дней [9].

Перед постановкой опытов по нагулу было проведено индивидуальное взвешивание жеребчиков на электронных весах, записи номеров тавра, определение возраста и упитанности жеребчиков. Упитанность определялась в соответствии с требованиями ГОСТ 32225-2013 [10].

С целью изучения мясных качеств жеребчиков различных возрастов проводили контрольной убой на убойном пункте конного завода по методике ВНИИКоневодства [11] и в соответствии с технологическими инструкциями [12], принятыми в мясной промышленности.

Для более объективной оценки товарности мяса была проведена разделка конских туш по схеме, принятой для государственной торговой сети Республики Казахстан по СТ РК 1303-2004 [13]. Каждый из отрубов, полученных при разделке конских туш, имеет определенное назначение. Для изготовления жала использовали жировой гребень шеи. Заднереберная часть (с 7 по 12 ребро) с мякотью служила для выработки казы. Верхний слой мышечной ткани с жировым поливом из тазобедренной части шло на изготовление изделия жая. Вырезка из наружной спино-поясничной части использовалась для изготовления изделия сур-ет. Мышечная ткань шейной и плечелопаточной части с добавлением внутреннего жира шло для производства колбасных изделий чужука. Из малой ободочной кишки готовили карта.

Экономическая эффективность нагула жеребчиков разных возрастов устанавливалась исходя из следующих показателей:

- выход продукции в кг на голову;
- затраты на нагул;
- себестоимость 1 ц прироста;
- прибыль, полученная от нагула;
- рентабельность.

Полученные в опытах данные обработаны биометрическим способом [14].

Результаты работы. Нагульные качества молодняка казахских лошадей типа жабе. Нагул лошадей является одним из важнейших хозяйственных мероприятий, позволяющих увеличить производство конины и улучшить его качество путем пастьбы на естественных пастбищах [15, 16]. Используя биологические особенности табунных лошадей и ковыльно-типчаково-полынные пастбища степной зоны Иртышского района, нами увеличено производство конского мяса, повышена упитанность и рентабельность. В летний период из-за жары и большого количества кровососущих насекомых лошади теряют свою упитанность. В осенний период с выпадением осадков происходит вторичная вегетация злаковых и полынных ассоциаций. В этот период нами проводился осенний нагул, результаты которых приведены в таблице 1.

Таблица 1 – Результаты осеннего нагула молодняка лошадей (n по 10)

Показатели	Возраст в месяцах		
	6	18	30
Продолжительность нагула, дней	76	76	76
Живая масса в начале нагула, кг	171,2±1,38	288,7±2,09	342,4±2,96
Живая масса в конце нагула, кг	215,6±2,17	330,3±2,53	390,9±3,04
Прирост живой массы, кг	44,4±0,79	41,6±0,98	48,5±1,02
Среднесуточный прирост, г	584,2±11,76	547,4±10,95	638,1±12,06

Как видно из данных таблицы 1, в осенний период молодняк лошадей всех групп имели высокий прирост живой массы. У 6 и 18 месячных жеребчиков приросты увеличивались в основном за счет роста мышечной ткани, а у 30 месячных за счет мышечной, а также за счет большого отложения жировой ткани [17,18]. Наиболее высокие среднесуточные приросты у жеребчиков наблюдались у 30 месячного молодняка (638,1 г) в сравнении с 6 и 18 месячными жеребчиками, разница составила 9,2 и 16,6%.

Таким образом, при осеннем нагуле жеребчики после летней жары, имея нижесреднюю упитанность за сравнительно короткий промежуток времени достигли вышесредней упитанности.

Установлено, что жеребчики всех трех возрастных групп за первые 20 дней нагула (с 1 по 20 октября), когда начинается вторичная вегетация растительности быстро прибавляют в живой массе. Характер кривой среднесуточных приростов живой массы у всех трех групп молодняка была почти одинаковой. Несколько высокие среднесуточные приросты за первые 20 дней нагула наблюдаются у 30 месячных жеребчиков 1400 г и 18 месячного молодняка 1200 г. У 6 месячных жеребят этот показатель равнялся 1160 г. Затем на 30 день нагула среднесуточные приросты во всех группах молодняка снижаются. К концу нагула среднесуточные приросты достигали 20-50 г в сутки.

Высокие среднесуточные приросты молодняка лошадей за первые 20 дней нагула объяснятся способностью лошадей быстрее компенсировать в относительно короткий срок потерю в массе в период летней жары, к тому же в осенний период травостой обладает повышенной питательностью [19]. В начале нагула в организме лошадей происходит быстрый рост мышечных тканей, а в конце нагула-отложение жировых тканей [20]. При достижении лошадьми вышесредней упитанности среднесуточные приросты у опытных жеребчиков снизились до 50-20 г в сутки.

Мясная продуктивность молодняка после осеннего нагула. Прижизненная оценка лошадей по величине живой массы, интенсивности роста и типу телосложения не в полной мере характеризует их мясную продуктивность. Поэтому в зоотехнии приняты следующие основные показатели для характеристики мясной продуктивности и качества мяса: выход туши, убойный выход, масса мышечной и жировой тканей, содержание съедобных частей туши, химический состав и калорийность мяса [21].

Наиболее ценными и по мясным качествам считаются лошади, способные при убое дававать большой выход туши и мякоти при относительно невысоком содержании костей.

Количественные и качественные показатели мясной продуктивности обуславливаются наследственными, породными и индивидуальными особенностями лошадей, технологией содержания, а также другими ненаследственными факторами [22].

С целью изучения мясных качеств жеребчиков разных возрастов на убойном пункте конного завода проведен их убой после осеннего нагула (таблица 2).

Таблица 2 – Мясная продуктивность жеребчиков разных возрастов (n по 2)

Показатели	Возраст в месяцах		
	6	18	30
Предубойная живая масса, кг	214	331	389
Масса туши, кг	121	178	216
Убойный выход, %	56,5	53,8	55,5

Как видно из данных таблицы 2, по массе туши 30 месячные жеребчики превосходят молодняк 6 и 18 месяцев на 75,5 и 21,3%. Самый большой убойный выход (56,5%) имели жеребята 6 месячного возраста, с постепенным уменьшением его с возрастом. Величина убойного выхода в первую очередь зависит от величины и объема желудучно-кишечного тракта, особенно у лошадей содержащихся круглый год на подножном корме.

Все туши жеребчиков изучаемых групп подвергались визуальной оценке. Так как, все жеребчики имели вышесреднюю упитанность, то в пределах одного возраста заметной разницы в жировом поливе туш не обнаружено, у туш жеребчиков 6 и 18 месячного возраста цвет сала был белым, а у туш жеребчиков 30 месячного возраста – бледно-желтоватым.

На тушах жеребят 6 месячного возраста жировой полив равномерно покрывал всю спинную часть, с увеличением толщины жира до 1 см на поясничной части. На верхней части туши незначительно проявлялся жировой гребень.

В тушах жеребчиков 18 месячного возраста жировой гребень был толщиной до 1,5-2,0 см. В тушах этого возраста заметны отложения жировой ткани на брюшной стенке и особенно в паху.

В тушах жеребчиков 30 месячного возраста жировой гребень был выражен хорошо, его толщина достигала 3 см. Хорошо выражена жировая прослойка на реберной части груди, спине, пояснице и брюшной части.

В процессе онтогенеза лошадей различные части тела растут неравномерно. Наиболее интенсивно увеличивается осевая часть скелета и соответствующая мускулатура, нежели периферические отделы [23]. Исходя из этого нами изучено изменение массы различных частей туши жеребчиков различных возрастов (таблица 3).

Таблица 3 – Соотношение массы различных частей туши жеребчиков различных возрастов (в кг)

Части туши	Возраст в месяцах		
	6	18	30
Зарез	0,8	1,9	2,1
Жал	0,5	1,6	2,9
Плечелопаточная	40,9	58,1	68,9
Рулька	1,9	2,4	3,0
Спинная	7,6	13,8	18,7
Казы	14,0	26,0	32,9
Задняя	49,2	66,7	79,6
Подбедерок	3,6	3,9	4,1
Голяшка	2,5	3,6	3,8
Вся туша	121	178	216

Из данных таблицы 3 видно, что наибольшая масса приходится на заднюю часть во всех трех группах жеребчиков (от 49,2 до 79,6 кг), затем идет плечелопаточная часть (40,9-68,9 кг), отруб казы (14,0-32,9 кг) и спинная часть (7,6-18,7 кг).

Наименьшее количество приходится на части туши как подбедерок (3,6-4,1 кг), голяшка (2,5-3,8 кг), рулька (1,9-3,0 кг) и зарез (0,8-2,1 кг).

При излучении морфологического состава по сортам и в целом по туше жеребчиков определялось соотношение жилованного мяса и костей (таблица 4).

Таблица 4 – Морфологический состав туши жеребчиков разных возрастов

Возраст в месяцах	Масса туши, кг	Состав туши			
		Мякоти		кости	
		кг	%	кг	%
6	121	94,8	78,3	26,2	21,7
18	178	146,8	82,5	31,2	17,5
30	216	177,6	82,2	38,4	17,8

Из данных таблицы 4 видно, что морфологический состав туш жеребчиков разных возрастов был не одинаковым. Выход мякоти в тушах 18 и 30 месячных жеребчиков на 52,0 кг (54,8%) и на 82,6 кг (87,1%) выше в сравнении с 6 месячными жеребятами. По абсолютному содержанию костей в тушах 18 и 30 месячных жеребчиков было больше, однако по относительному содержанию костей у 6 месячных жеребят эти показатели были выше на 4,2 и 3,9%. По выходу мякоти на 1 кг костей у жеребчиков больших различий не наблюдается, так у 6 месячных жеребят они равнялись 4,4 кг, 18 месячных – 4,7 и 30 месячных жеребчиков 4,6 кг.

Отдельные сорта туши характеризуются различным соотношением мускульной ткани с другими тканями. Это обуславливается особенностями анатомического строения и характером работы, выполняемой той или иной частью тела.

Лучшими в питательном отношении являются те сорта туши, которые содержат наибольшее количество мышечной и жировой ткани, при незначительном содержании костей (таблица 5).

Таблица 5 – Соотношение тканей в туше по сортам у жеребчиков разных возрастов

Части туши по сортам	Ткани	Возраст в месяцах					
		6		18		30	
		кг	%	кг	%	кг	%
Жал	мякоть	0,5	0,53	1,6	1,1	2,9	1,6
	кости	–	–	–	–	–	–
Казы	мякоть	13,1	13,82	24,1	16,4	30,3	17,1
	кости	0,9	3,4	1,9	6,1	2,6	6,8
I сорт	мякоть	48,0	50,63	69,8	47,5	84,8	47,7
	кости	8,8	33,6	10,7	34,3	13,5	35,1
II сорт	мякоть	33,0	34,81	49,4	33,7	58,0	32,7
	кости	11,5	43,9	12,6	40,4	15,0	39,1
III сорт	мякоть	0,2	0,21	1,9	1,3	1,6	0,9
	кости	5,0	19,1	6,0	19,2	7,3	19,0
Вся туша	мякоть	94,8	100	146,8	100	177,6	100
	кости	26,2	100	31,2	100	38,4	100

Из данных таблицы 5 видно, что выход мякоти в различных сортах туш у жеребчиков разных возрастов не одинаков. Наибольший выход мякоти во всех группах молодняка наблюдается в I сорте (47,5-50,6%) и во II сорте (32,7-34,8%). Наименьшее количество мякоти содержится в III сорте (0,21-1,3%).

Большое содержание костей во всех группах лошадей содержится во II сорте от 39,1 до 43,9%, затем в I сорте от 33,6 до 35,1% и в II сорте от 19,0 до 19,2%. Части туши жал и казы относятся к вне сорту, здесь содержание костей было от 3,4 до 6,8%.

В мясе 6 месячных жеребят жира содержится 9,0%, белка 20,3%, у 18 месячных соответственно 14,2 и 19,4%. В мясе 30 месячных жеребчиков содержание жира более высокое 21,4%, но белка содержится меньше 17,6%. Эти данные согласуются с работами других исследователей [24], которые отмечают, что количество белка в конском мясе колеблется в пределах 16,9-22,6%, а жира 11,8-24,5%.

Как известно, отдельные национальные изделия, изготовленные из конины, пользуются среди местного населения большим спросом (рисунок 1–3).

Такие блюда, как жал, жая, казы по праву считаются деликатесными. Они отличаются высокой питательностью и хорошими вкусовыми качествами.

Выход субпродуктов. Рост внутренних органов характеризует общее развитие и состояние обменных процессов в организме. Большое влияние на их развитие оказывает скороспелость животных и кормление.

У более скороспелых животных внутренние органы закачивают свой рост раньше, чем у позднеспелых.

При полноценном кормлении быстрее заканчивается рост и формируется взрослое животное, в связи с чем завершение формирования внутренних органов происходит раньше [25].

Согласно методики [11] все органы подразделяли на субпродукты первой и второй категории. К субпродуктам I категории относили печень, почки, сердце, язык и мясную обрезь.

Рисунок 1 – Жал (жировой гребень шеи)

Рисунок 2 – Отруб жая

Рисунок 3 – Казы

К субпродуктам II категории относили желудок, кишечник, легкие, диафрагму с трахеей. На убойном пункте конного завода малая ободочная кишка идут для переработки изделия карта, а из тонкого отдела кишечника изготовляется оболочка для казы и чужука. Данные по выходов субпродуктов приведены в таблице 6.

Таблица 6 – Абсолютный и относительный выход субпродуктов I и II категории

Наименование субпродуктов	Возраст в месяцах					
	6		18		30	
	масса, кг	в % к туше	масса, кг	в % к туше	масса, кг	в % к туше
Язык	0,48	0,40	0,72	0,40	0,83	0,38
Печень	2,51	2,07	3,80	2,13	4,68	2,17
Почки	0,91	0,75	1,05	0,59	1,41	0,65
Сердце	1,07	0,88	1,79	1,00	2,64	1,22
Мясная обрезь	2,27	1,87	3,50	1,97	4,28	1,98
Итого субпродукты I категории	7,24	5,98	10,86	6,10	13,84	6,41
Легкие	1,92	1,59	2,88	1,62	3,32	1,54
Селезенка	0,47	0,39	0,90	0,50	1,19	0,55
Диафрагма и трахея	1,65	1,36	3,40	1,91	5,28	2,44
Итого субпродукты II категории	4,04	3,34	7,18	4,03	9,79	4,53

Из приведенных данных таблицы 6 видно, что абсолютная масса внутренних органов с возрастом жеребчиков увеличивается, а относительный их вес уменьшается или остаются без существенных изменений. Эти данные свидетельствуют о том, что развитие мышечной ткани и костяка – процесс более длительный, чем развитие внутренних органов.

При анализе данных взвешивания внутренних органов выявлено увеличение их с возрастом. Так абсолютный вес печени у 30 и 18 месячных жеребчиков больше, соответственно, на 2,17 и 1,29 кг, почек на 0,50 и 0,14 кг, сердца на 1,57 и 0,72 кг, селезенки на 0,72 и 0,43 кг.

Установлено, что длина тонкого отдела кишечника у 6 месячных жеребят равнялась 14,7 м, 18 месячных жеребчиков 16,2 м и 30 месячных – 16,9 м. Длина малой ободочной кишки соответственно 0,7, 1,2 и 1,9 м.

Экономическая эффективность нагула лошадей разных возрастов. Технология табунного коневодства предусматривает круглогодовое содержание лошадей на пастбище.

Производство продукции при этом основывается на организации нагула лошадей на естественных пастбищах, как наиболее дешевого способа его производства. За основу расчета экономической эффективности были взяты затраты на проведение нагула молодняка в 6,18 и 30 месячных возрастах, себестоимость их и доход от реализации жеребчиков на мясо (таблица 7).

Таблица 7 – Экономическая эффективность нагула казахских лошадей типа жабе разных возрастов

Показатели	Возраст в месяцах		
	6	18	30
Живая масса после нагула, кг	215,6	330,3	390,9
Прирост живой массы, кг	44,4	41,6	48,5
Масса туши, кг	121	178	216
Затраты на нагул, тенге	23000	36000	48000
Себестоимость 1 ц прироста, тенге	51802	86538	98960
Закупочная цена 1 кг мяса, тенге	1000	1100	1200
Выручка от реализации, тенге	121000	195800	259200
Прибыль, тенге	46198	73262	112240
Рентабельность, %	61,8	59,8	76,4

Из данных таблицы 7 видно, что более высокие прибыли получены от 30 и 18 месячных жеребчиков (112240 и 73262 тенге) в сравнении с 6 месячными жеребятами (46198 тенге). Однако рентабельность выше у 6 месячных и 30 месячных жеребчиков на 2,0 и 16,6% в сравнении с 18 месячными жеребчиками.

Таким образом, в осенний период проведение нагула молодняка казахских лошадей типа жабе разных возрастов дает высокий экономический эффект и позволяют не только окупать все затраты за счет увеличения живой массы и упитанности, но и приносят достаточную чистую прибыль.

Обсуждение результатов. Показатели роста и развития молодняка казахских лошадей типа жабе выражается в интенсивном росте при благоприятных и снижении темпов роста в неблагоприятные сезоны года. При осеннем нагуле жеребчики разных возрастов хорошо прибавляли живую массу. Так, за 76 дней нагула 6 месячные жеребята дали 44,4 кг прироста живой массы, а 18 и 30 месячные жеребчики 41,6 и 48,5 кг. Среднесуточный прирост при этом составлял соответственно 584, 547 и 638 г в сутки. При анализе динамики среднесуточных приростов живой массы видно, что наиболее высокие приросты у жеребчиков всех возрастов наблюдается в первые 20 дней нагула от 1160 до 1400 г, в последующие 20 дней приросты несколько снижаются и составляли от 580 до 700 г в сутки. В конце нагула среднесуточные приросты были низкими и равнялись от 20 до 100 г.

Выводы. Мясная продуктивность молодняка казахских лошадей типа жабе разных возрастов после осеннего нагула характеризовались высокими величинами. Так, при убое масса туши у 6 месячных жеребят достигла 121 кг, у 18 месячных жеребчиков – 178 и 30 месячных – 216 кг. Убойный выход равнялся соответственно 56,5; 53,8 и 55,5%.

При изучении морфологического состава туш у жеребчиков разных возрастов установлено, что у 6 месячных жеребят относительное содержание костей (21,7%) выше чем у 18 и 30 месячных жеребчиков (17,5 и 17,8%). По содержанию же мякоти в туше преимущество было у 18 и 30 месячных жеребчиков (82,5 и 82,2%), тогда как этот показатель у 6 месячных жеребят составлял 78,3%.

Экономическая эффективность нагула молодняка казахских лошадей жабе высокая. Чистая прибыль в расчете на 1 голову от 6 месячных жеребят составляет 46,2 тысячи тенге, 18 месячных – 73,3 и 30 месячных – 112,2 тысячи тенге. Рентабельность при этом равняется от 59,9 до 76,4%.

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КҮЗГІ ЖАЙЛЫМНАН КЕЙІНГІ ҚАЗАҚТЫҢ ЖАБЫ ЖЫЛҚЫСЫНЫҢ ЖАС ТӨЛДЕРІНІҢ ЕТ ӨНІМДІЛІГІ

Аннотация. Мақалада күзгі жайлым кезінде жылқы етінің мөлшері мен сапасын айтарлықтай көтеруге мүмкіндік беретін зоотехниялық іс-шаралар қарастырылған.

Жобаны іске асыруда жас төлдердің тірі салмағы екі есеге ұлғаяды, әр жеке бас ереке құнандар да (41,6-48,5 кг), жоғары қонымдылықтағы жылқы етінің бағасы (1 кг ет 1000-1200 теңге).

Жас төлдер жайлым аралығын (76 күнде) салыстырғанда, жаз ыстығынан шыққан орташадан төмен қонымдылық-тағылар, жо,ары деңгейге жетті.

Зерттеулер көрсеткендей, бағудың алғашқы 20 күнінде құнандар орташа тәуліктік салмақ қосу тәулігіне 1160-1400 г болды. Кейін бағудың 30 тәулігіне орташа тәуліктік өсім төмендеп, 750-840 г көрсетті, бағудың 70 тәулігіне – 20-100 г аралығында болды.

Жас жылқы төлдерін күзгі семіртуден кейін сойғанда ет шығымы жоғары болды (53,8-56,5%), сүйек мөлшері (17,5-21,7%), таза еті (78,3-82,5%). Барлық жас төл топтарында таза ет шығымының жоғарғы көрсеткіші (47,5-50,6%) бірінші сұрыпта, кейін екінші сұрыпта (32,7-34,8%). Сұрыптан тыс жағдайда еттің шығымы (казы+жал) 6 айлық төлдерде 14,3 %, 18 айлықтарда – 17,5% және 30 айлық төлдерде 18,7 % құрады. Жылқы шаруашылығында қосалқы өнімдерді дамытудың маңызы зор. Түрлі жас мөлшердегі айғырлардан алынған тілдер салмағы 0,48 тен 0,83 кг, бауыр 2,51 ден 4,68 дейін кг, бүйрек 0,91 ден 1,41 дейін кг, жүрек 1,07 ден 2,64 кг дейін. Тоқ ішектен қарта дайындалады, оның ұзындығы 0,7-1,9 м. Ащы ішектен қазы және шұжық үшін қолданылады. Ұзындығы 14,7 до 16,9 м.

Түрлі жастағы айғырларды етке өткізгенде таза пайда 46,2 ден 112,2 мың теңгеге дейін. Рентабельділік жоғары 59,8 ден 76,4%.

Түйін сөздер: жас төл, өсім, ұша, сойыс шығымы, таза ет, сүйектер, қосалқы өнімдер, түсім, рентабельділік.

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СУЛТАНОВУ Ахметжану Акиевичу – 60 лет

18 августа 2018 года доктору ветеринарных наук, профессору, почетному академику НАН РК, генеральному директору Казахского научно-исследовательского института А. А. Султанову исполняется 60 лет со дня рождения и 36 лет научной деятельности.

После окончания в 1981 году с отличием ветеринарного факультета Алма-Атинского зооветеринарного института, А. А. Султанов некоторое время работал старшим ветеринарным врачом колхоза «Уч-Арал» Панфиловского района Талды-Курганской области.

В 1985 году окончил аспирантуру в отделе по изучению бруцеллеза Казахского НИВИ, затем в 1987 году в г. Москве во Всесоюзном институте экспериментальной ветеринарии им. Я.Р.Коваленко успешно защитил диссертацию на соискание ученой степени кандидата ветеринарных наук на тему: «Оптимизация дозы вакцины из штамма Brucella melitensis Rev-1 для повторной иммунизации овец против бруцеллеза». Затем в 1992 году в институте экспериментальной ветеринарии Сибири и Дальнего Востока в г. Новосибирске защитил диссертацию на соискание ученой степени доктора ветеринарных наук на тему: «Оптимизация специальных противобруцеллезных мероприятий в овцеводстве».

Его профессиональная деятельность во многих областях ветеринарии, в том числе научных изысканиях, эпизоотологии, бактериологии, вирусологии, иммунологии снискали ему заслуженный авторитет и уважение в ветеринарном научном сообществе. Являясь руководителем крупного ветеринарного НИИ в Казахстане, он вносит огромный вклад в развитие отечественной ветеринарной науки. Под его руководством институтом получено 320 охранных документов, издано 27 томов научных трудов КазНИВИ.

Профессор А. А. Султанов является одним из крупных изобретателей в области ветеринарии в Казахстане. Начиная с 1999 года, им разработано более 90 охранных документов, что отражено на сайте базы патентов Казахстана.Разработанные им диагностические препараты пользуются спросом не только в Казахстане, но за рубежом.

Научная деятельность профессора А. А. Султанова отмечена высокими государственными наградами: грамотами, медалями и орденом «Құрмет». От имени ученыхи всей ветеринарной общественностижелаем профессору А.А.Султанову крепкого здоровья, семейного благополучия, творческих успехов и неиссякаемой энергии в научной и производственной деятельности.

От имени коллектива Казахского НИВИ
Зам. генерального директора, профессор ***А. М. Абдыбекова***

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