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NATURAL SCIENCES	
Muratov A.S., Кamalov A.B., Tursinbaev S.A. Installations for studying the strain properties of silicon with nanoclusters of impurity atoms……	4
Abdikalikov F.A., Saliev I.B., Seytakhov R.P. Estimation of the conditional quantile function in the regression model under random censorship on the right……	8
Daliev Kh. S., Zainolobidinova S. M., Onarkulov M. K. Study of temperature dependence of potential barrier transparency……	12
Jaksibaev R.N., Gabbarov S.N., Sultashova O.G. Study on the usage of sandy lands around the aral sea as pastures using geoinformational analysis……	16
Allamuratov M., Xojasov A., Oteuliev J., Genjemuratov K. Agrotechnical affairs for the production of local corn sorts in the case of salted soils of the Republic of Karakalpakstan……	23
Reymova F.N. Ways to use biofertilizers to increase crop yields……	26
Fayzullayev O.B., Kudaybergenov K.K. An inequality for the Commutators of hermitian Matrices……	29
Bekbergenov S.E., Bazarbayeva F.M., Bekniyazova G.R., Saparniyazov A., Kudaibergenov A.A. Influence of Low-Power Laser Processing on the VFC and CVC of schottky Diodes Pt-n-n + GaAs……	31
TECHNICAL SCIENCES	
Rakhimberdiyev Q.B., Jorabekov T.K. Mathematical modeling of logic blockchain technology based on rsa algorithm……	34
Daujanov A.Sh., Turganbaeva A.K., Rakhimboev M., Khiyasova A. On linear substitution of variables and on simplification of expressions in the space of generalized functions……	39
Pakhratdinova R.U. Goals and objectives of teaching methods of construction disciplines……	49
SOCIAL SCIENCES	
Masharipov R.R., Qurbanbaev A.D. The concept of a healthy lifestyle..	52
Aspetullaev A.O., Quchnov A.Y. Work-rest regime……	55
Qanatova A.Q. Study of the khorezm expedition of the material culture of the apasiaks……	59
Shaniyazova.Z.O Factors influencing the contribution of agriculture to gross domestic product (gdp) in central asian countries……	63
Isakov J.Ya., Ibodullaeva M.T. Topical issues of ensuring the revenue of currency operations of commercial banks……	67
Madenova E.N. The importance of developing strategic plan scenarios for sustainable development of regions……	71
Seilbekov B.B., Abishov M.S., Nuranov I.B. Issues of improving the audit of freight forwarding activities……	74
Mahmudov M.M. Swot analysis of tourism services in andizhan region and ways to expand them……	80
Tursinov A.J. Evaluation of economic efficiency of agricultural enterprises……	89
Bekturdiev M.B., Jumanazarov O.S State regulation of innovation processes in the region……	93
Jubanova B. Factors affecting the innovative development of entrepreneurs in the cis country member countries……	98
Tleumuratova N.M. The importance of literature in studying the history of the karakalpak nation……	103
HUMANITIES SCIENCES	
Ismailova A., Menlimuratova E.A. Development of intercultural relations in the field of physical culture……	106
Zharimbetov E. Coverage of literary issues in the daily press in the work of literary critics……	110

O‘zbekiston Respublikasi Вазирлар Махкамаси хузуридаги ОАК Tartib-qoida komissiyasi qarori 24.05.2017 y., №5/2.
Постановление комиссия по регулированию ВАК Республики Узбекистан при Кабинете Министров от 24.05.2017 г. №5/2.
Resolution of the Regulation Commission of the Supreme Attestation Commission of the Republic of Uzbekistan from 24.05.2017 y. №5/2.

Esemuratova S.A. Typological characteristics of podcasting in Karakalpakstan………………………………..	114
Sarsenbaeva Z.J. Didactic peculiarities of forming linguocultural competence ………………………………..	118
Kaljanov A. Linguistic features of the sources of homonyms in the modern karakalpak language …………….	123
Kubeysinova D.T. The paremiological picture of the world in linguistics ………………………………………	127
Jumanov A.O., Qarabaev M.J., Alniyazov D.A. Environmental requirements to ensure the right of the population to clean drinking water..	130
Usenova K.U. Differences of ethnographisms in karakalpak folklore on the functional and semantical point of view..…………..………………………………………	134
Allekov B.E., Kadyrov A.M. Judicial power in the system of separation of authorities………………………...	139
Nizamatdinov K., Jarekeev B., Otepbergenov M., Uzakbergenov A. Issues of civil liability for violation of the legislation on Family business..	142
Menlimuratova E.A. Culture of peace, dialogue and tolerance………………………………………………..	146
Matirzaev U.S. The supreme legislative body of the Republic of Karakalpakstan...	149

NATURAL SCIENCES

INSTALLATIONS FOR STUDYING THE STRAIN PROPERTIES OF SILICON WITH NANOCLUSTERS OF IMPURITY ATOMS

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Summary: *A universal device has been developed that allows applying pressure in the local region of the sample to study its electrical, photovoltaic, and galvanomagnetic properties and current instabilities in silicon containing nanoclusters of impurity atoms under the influence of pressure in a wide range of temperature, illumination, and electric field.*
Key words: *Semiconductor, silicon, pressure, nanocluster, load cell, temperature.*

Currently, the problem of increasing the sensitivity of load cells is very urgent, the solution of which requires the study of new materials. n this regard, the most promising materials include silicon containing nanoclusters of impurity atoms. The new physical effects found in silicon containing nanoclusters of impurity atoms can be the basis for the development of a new generation of load cell converters of mechanical values exceeding the tenzosensitivity by several orders of magnitude of the existing industrial load cells made on the basis of traditional materials [1-2].

In this regard, the development of a universal installation that allows us to study the electrical, photovoltaic, galvanomagnetic properties and current instabilities in silicon containing nanoclusters of impurity atoms under the influence of pressure in a wide range of temperatures, electric fields and illumination is now a very urgent task. Here, on the one hand, it is necessary to find out the possibility of using the existing theory of kinetic phenomena in such materials. On the other hand, it is necessary to determine the possibilities of using this type of semiconductor material in the development and creation of fundamentally new electronic strain gauges. A comprehensive study of the strain-electric properties of silicon containing nanoclusters of impurity atoms is of great scientific and practical interest from the point of view of determining changes in the structure of energy zones and the value of effective masses, identifying the mechanism of the tenzo effect and the possibility of using silicon containing nanoclusters of impurity atoms for the development of fundamentally new, highly sensitive, superminiature sensors and converters of mechanical quantities[3-4].

The analysis of the experimental results on the effect of deformation on the parameters of semiconductor devices made to date allows us to conclude that the main factors that cause changes in the characteristics of semiconductors with fine impurities under pressure are changes in the band gap of the semiconductor, as well as changes in the effective mass and mobility of charge carriers. The lifetime of non-basic charge carriers can be considered independent of deformation, since the fine impurity levels are completely ionized up to the temperature of liquid helium and their charge state does not change during deformation.

The displacement of the energy levels and the change in the band gap of the semiconductor under pressure leads to a change in the concentration of the non-basic charge carriers pn and np, and consequently to a change in the saturation current under pressure. The concentration of the main charge carriers at a sufficiently high temperature is usually determined by the number of ionized impurity atoms and is therefore weakly sensitive to pressure [5].

To study the simultaneous effect of temperature and pressure on the silicon sample, a special installation was developed that allows the sample to be heated evenly from room temperature to 150 ° C and create a local deformation of up to $5{\cdot}10^8$ Pa. The design of the developed universal setup for studying the strain properties of silicon with nanoclusters of impurity atoms is shown in Fig. 1. The appearance of the developed universal setup for studying the strain properties of silicon with nanoclusters of impurity atoms is shown in Figure 2.

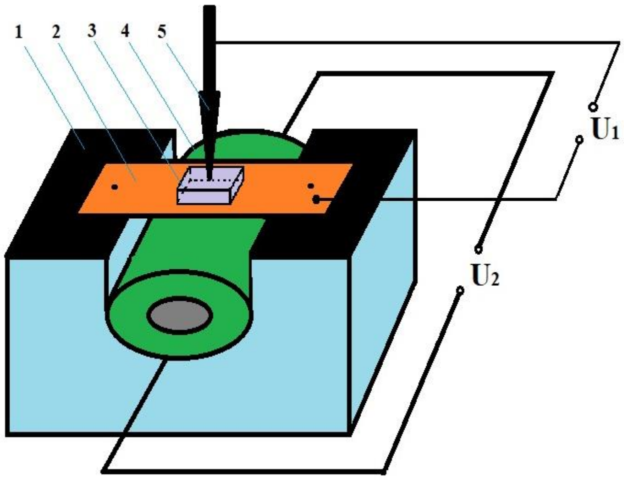

Fig. 1. The design of the developed universal installation for studying the strain properties of silicon with nanoclusters of impurity atoms (1-strong heat-resistant material, 2-copper, 3-sample, 4-heating element, 5-pressure transfer device).

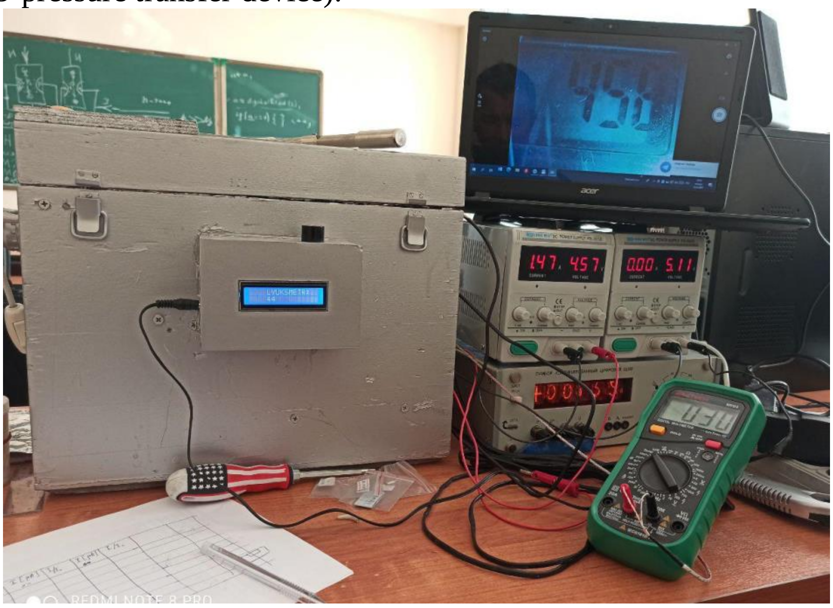

Fig. 2. Appearance of the developed universal setup for studying the strain properties of silicon with nanoclusters of impurity atoms.

The influence of pressure from 10^6 Pa to $7{,}74\cdot10^7$ Pa at a temperature of 30 ^{0}C, 50 ^{0}C, 70 ^{0}C on the electrophysical properties of silicon with nanoclusters of manganese atoms was studied. The investigation of the effect of mechanical pressure on the electrophysical properties of silicon with nanoclusters of manganese atoms provides valuable information about the inhomogeneities formed in the volume of silicon during the technological process of forming nanoclusters, and also allows us to find new ways to create highly sensitive load cells based on semiconductor materials with nanoclusters of impurity atoms. As a starting material for the formation of nanoclusters of manganese atoms, a single-crystal silicon of p-type conductivity with a specific resistance of ρ = 3 ohms•cm was chosen. The formation of nanoclusters was carried out by diffusion technology in sealed ampoules in the temperature range T = 1050 ÷ 1100 ^{0}C for t = 5 ÷ 20 minutes. During the measurements, the voltage drop on the samples was U_1 = 5 V [6-7]. It was determined that the external pressure increases the value of the current flowing through the sample. The temperature dependence of the strain sensitivity of silicon with nanoclusters of manganese atoms at different pressures is shown in Figure 3.

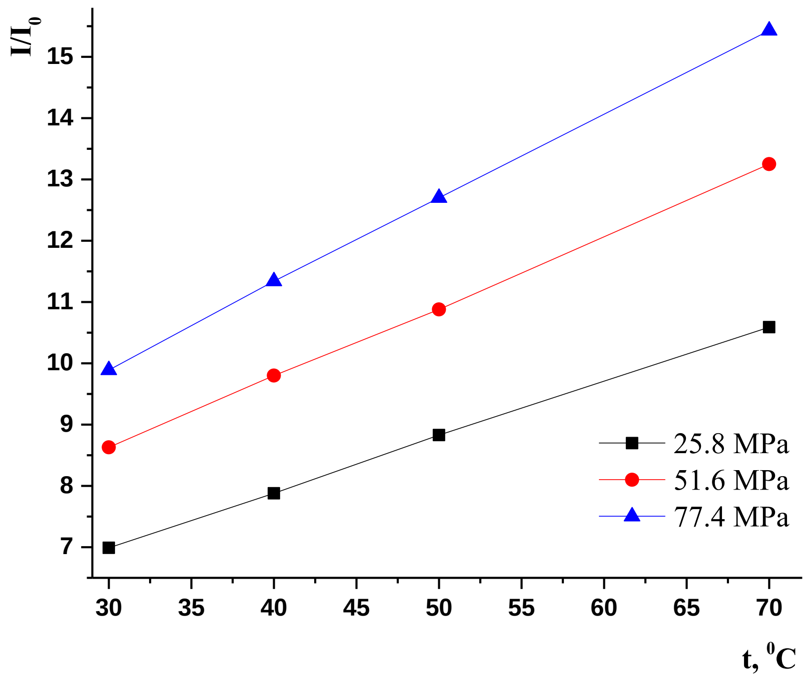

Fig. 3. Temperature dependence of the strain sensitivity of silicon with nanoclusters of manganese atoms at different pressures.

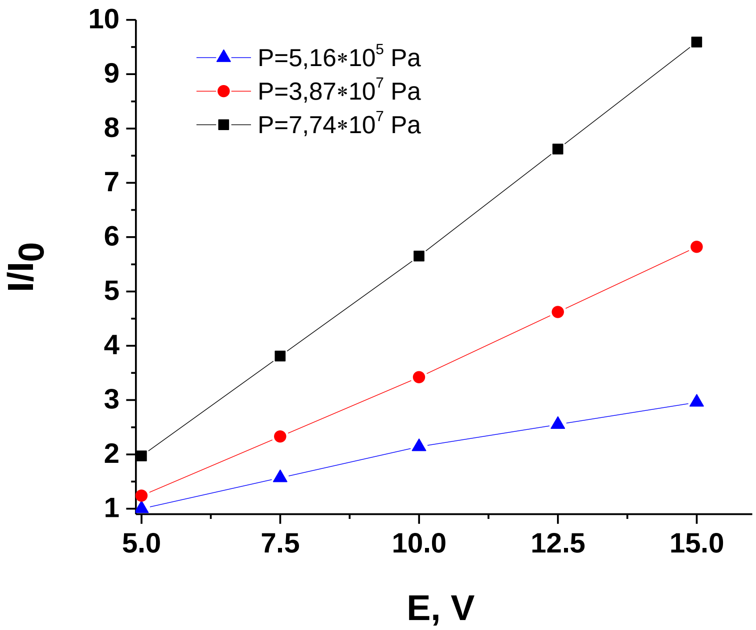

Fig. 4. The relative change in current under the action of pressure at various electric fields.

Figure 4 shows the patterns of changes in the current flowing in the area of local deformation with different pressures from $5{,}16 \cdot 10^5 - 7{,}74 \cdot 10^7$ Pa at different values of the applied voltage to the probe. The figure shows that the strain sensitivity increases with an increase in the applied voltage to the probe. When the electric field changes from 5 V to 15 V, the strain sensitivity increases from

1.97 times to 3.24 times. It should be noted that in all cases, the change in the strain sensitivity occurs linearly.

Interesting results were obtained at various pressures, as it was found that, in contrast to conventional semiconductor materials, silicon with nanoclusters of manganese atoms has a fairly high strain sensitivity at room temperature. The obtained data suggest that such a high strain sensitivity in the resulting material is associated with a change in the state of nanoclusters of manganese atoms in the presence of pressure. These data show that silicon with nanoclusters of manganese atoms can serve as a promising material for creating a new class of load cells. Controlling the concentration and charge state of nanoclusters of manganese atoms can significantly increase the strain sensitivity of such materials.

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Rezyume: ***N****amunaning nuqtaviy qismiga bosim o'tkazib, uning elektr, fotoelektrik, galvanomagnit xususiyatlarini va tok noturg‘unliklarini kirishma atomlari nanoklasterlari mavjud kremniyda bosim tasirini keng harorat oralig‘ida tadqiq etish imkoniyatini beruvchi universal qurilma yaratildi.*

Резюме: *Разработана универсальная установка позволяющая осуществлять давление в локальной области образца для исследования его электрических, фотоэлектрических, гальваномагнитных свойств и токовых неустойчивостей в кремнии содержащем нанокластеры примесных атомов при воздействии давления в широком интервале температуры, освещенности и электрического поля.*

Kalit so’zlar: *Yarimo'tkazgich, kremniy, bosim, nanoklaster, bosim o'lchagich, harorat.*

Ключевые слова: *Полупроводник, кремний, давление, нанокластер, тензодатчик, температура.*

ESTIMATION OF THE CONDITIONAL QUANTILE FUNCTION IN THE REGRESSION MODEL UNDER RANDOM CENSORSHIP ON THE RIGHT

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Summary: *In this paper we investigate estimation of the quantile function in a fixed design regression model, when lifetimes are randomly censored on the right. Received that the estimation is expressed in terms of the normalized sum of random functions and the asymptotic normality is established.*
Key words: *Random censoring, conditional distribution, subdistribution, power estimator, regression, kernel, quantile function.*

Let the random variable (r.v.) Z depend on the realizations of r.v. X. For example, r.v. Z may correspond to the patient's life time, X the dose of medication and Z corresponds to the uptime of some technical device, which may be subjected to pressure, voltage, temperature or some other factors and can be taken as realizations X. However, as a rule, in such cases, r.v. Z is completely unobservable and may be subject to random censoring by some other r.v. Y. Let $\left\{\left(Z_i, Y_i\right), i=\overline{1,n}\right\}$ be independent realizations of the random vector $\left(Z, Y\right)$ in n experiments and $0 = x_0 \le x_1 \le ... \le x_n \le 1$ be fixed points of design covariates X. The following sample of volume n is observed:

$$S^{(n)} = \left\{\left(\xi_1, \delta_1, X_1\right), ..., \left(\xi_n, \delta_n, X_n\right)\right\},$$

where $\xi_i = \min\left(Z_i, Y_i\right)$ and $\delta_i = I\left(Z_i \le Y_i\right)$ are indicators of events specified in brackets. In sample $S^{(n)}$ the r.v.-s of interest Z_i are censored on the right by r.v.-s Y_i and observable partially only in case of $\delta_i = 1$. Let F_{x_i}, G_{x_i} and H_{x_i} denote the conditional distribution functions (d.f.) r.v.-s Z_i, Y_i and ξ_i given, $X = x_i$ respectively. Further, for any point $x \in [0,1]$, we denote F_x, G_x and H_x respectively d.f. r.v.-s Z_x, Y_x $\xi_x = \min\left(Z_x, Y_x\right)$ and let it be $\delta_x = I\left(Z_x \le Y_x\right)$. In this case, Z_x and Y_x are conditionally independent for a given $X = x$. Then easy to see that $H_x(t) = 1 - \left(1 - F_x(t)\right)\left(1 - G_x(t)\right),\ t \ge 0$. In this regression model, the problem is conisist on estimation the conditional d.f. F_x from the samples $S^{(n)}$ under nuisance d.r. G_x, as well as the conditional quantile function

$$Q_x(p) = F_x^{-1}(p) = \inf\left\{t:\ F_x(t) \ge p\right\},\ 0 < p < 1.$$

We use the estimate for F_x constructed and investigated in [1,2]. In this connection, we define the Gasser- Müllers weights [3] by the formulas

$$\omega_{ni}\left(x; h_n\right) = \frac{1}{C_n\left(x; h_n\right)} \int_{x_{i-1}}^{x_i} \frac{1}{h_n} \pi\left(\frac{x-y}{h_n}\right) dy,\ i = 1, ..., n,$$

where

$$C_n\left(x; h_n\right) = \int_0^{x_n} \frac{1}{h_n} \pi\left(\frac{x-y}{h_n}\right) dy.$$

Here $\pi(\cdot)$ is a given probability density function (kernel) and $\{h_n, n \ge 1\}$ is a sequence of positive integers "window width" tending to zero as $n \to \infty$. The estimation F_{xh} for F_x is defined as [1]:

$$F_{xh}(t) = 1 - \left[1 - H_{xh}(t)\right]^{R_{xh}(t)}, t \ge 0, \tag{1}$$

$$R_{xh}(t) = \frac{\tilde{\Lambda}_{xh}(t)}{\Lambda_{xh}(t)}, \ \tilde{\Lambda}_{xh}(t) = \int_0^t \frac{d\tilde{H}_{xh}(u)}{1 - H_{xh}(u-)}, \ \Lambda_{xh}(t) = \int_0^t \frac{dH_{xh}(u)}{1 - H_{xh}(u-)},$$

where $\tilde{H}_{xh}$ and H_{xh} Stone's statistics [4]:

$$H_{xh}(t) = \sum_{i=1}^{n} \omega_{ni}(x; h_n) I(\xi_i \le t), \ \tilde{H}_{xh}(t) = \sum_{i=1}^{n} \omega_{ni}(x; h_n) I(\xi_i \le t, \delta_i = 1).$$

The estimate for the conditional quantile function $Q_x(p)$ is obtained by substituting the estimate (1):

$$Q_{xh}(p) = F_{xh}^{-1}(p) = \inf\{t : F_{xh}(t) \ge p\}, \ 0 < p < 1. \tag{2}$$

Some notations will be used later:

(I) $\underline{\Delta}_n = \min\{(x_i - x_{i-1}), 1 \le i \le n\}, \ \overline{\Delta}_n = \max\{(x_i - x_{i-1}), 1 \le i \le n\}$;

(II) $\|\pi\|_2^2 = \int_{-\infty}^{\infty} \pi^2(y) dy$, $m_1(\pi) = \int_{-\infty}^{\infty} y\pi(y) dy$, $m_2(\pi) = \int_{-\infty}^{\infty} y^2 \pi(y) dy$.

In order to investigate the asymptotic properties of estimators (2) we need the following:

(C1) As $n \to \infty$, $x_n \to 1$, $\overline{\Delta}_n = O\left(\frac{1}{n}\right)$, $\overline{\Delta}_n - \underline{\Delta}_n = o\left(\frac{1}{n}\right)$;

(C2) π is a probability density function with compact support $[-M, M]$ for some $M > 0$ with $m_1(\pi) = 0$ and $|\pi(y) - \pi(y')| \le C_\pi |y - y'|$, where C_π is some constant;

The following results require typical smoothness conditions from the conditional d.f. $H_x(t) = P(\xi_x \le t)$ and the subdistribution $\tilde{H}_x(t) = P(\xi_x \le t, \delta_x = 1)$.

(У3) Second-order derivatives

$$\ddot{H}_x(t) = \frac{\partial^2}{\partial x^2} H_x(t), \ \ddot{\tilde{H}}_x(t) = \frac{\partial^2}{\partial x^2} \tilde{H}_x(t),$$

$$H_x''(t) = \frac{\partial^2}{\partial t^2} H_x(t), \ \tilde{H}_x''(t) = \frac{\partial^2}{\partial t^2} \tilde{H}_x(t),$$

$$\dot{H}_x'(t)) = \frac{\partial^2}{\partial x \partial t} H_x(t), \ \dot{\tilde{H}}_x'(t) = \frac{\partial^2}{\partial x \partial t} \tilde{H}_x(t)$$

exist and are continuous for $(x,t) \in [0,1] \times [\tau, T]$, where

$$\sup\{t \ge 0 : H_x(t) = 0\} = \tau_{H_x} < \tau < T < T_{H_x} = \inf\{t \ge 0 : H_x(t) = 1\}.$$

Note that existence of all these derivatives follows from condition (C3). Now we state some asymptotic results for estimation (1), which have proved in [1,2].

Theorem 1. [1]. Assume that conditions (C1), (C2) are met and H_x, $\tilde{H}_x$ satisfies (C3). If $h_n \to 0,\ \frac{\log n}{nh_n} = o(1),\ \frac{nh_n^5}{\log n} = O(1)$, as $n \to \infty$, then for $\tau \le t \le T$:

$$F_{xh}(t) - F_x(t) = \sum_{i=1}^{n} \omega_{ni}(x;h_n)\Psi_{tx}\left(\xi_i, \delta_i\right) + r_n(t,x),$$

where

$$\Psi_{tx}\left(\xi_i, \delta_i\right) = \left(1 - F_x(t)\right)\left\{\int_0^t \frac{I(\xi_i \le u) - H_x(u)}{(1 - H_x(u))^2} d\tilde{H}_x(u) + \right.$$

$$\left. + \frac{I(\xi_i \le t, \delta_i = 1) - \tilde{H}_x(t)}{1 - H_x(t)} - \int_0^t \frac{I(\xi_i \le u, \delta_i = 1) - \tilde{H}_x(u)}{(1 - H_x(u))^2} dH_x(u)\right\},$$

and as $n \to \infty$,

$$\sup_{\tau \le t \le T} \left|r_n(t,x)\right| \overset{\text{a.s.}}{=} O\left(\left(nh_n\right)^{-3/4}\left(\log n\right)^{3/4}\right).$$

Theorem 2. [2]. Under the conditions of Theorem 1, and as $n \to \infty$, for $\tau \le t \le T$:

$$\sup_{\tau \le t \le T} \left|F_{xh}(t) - F_x(t)\right| \overset{\text{a.s.}}{=} O\left((nh_n)^{-1/2}(\log n)^{1/2}\right).$$

Theorem 3. [2]. Assume that conditions (C1), (C2), and the functions H_x and $\tilde{H}_x$ satisfies the condition (C3) for $\tau \le t \le T$. Then

(*a*) if $nh_n^5 = o(1)$ and $\left(nh_n\right)^{-1}\left(\log n\right)^3 = o(1)$ as $n \to \infty$, then

$$\left(nh_n\right)^{1/2}\left(F_{xh}(t) - F_x(t)\right) \overset{D}{\Rightarrow} N\left(0; \sigma_x^2(t)\right);$$

(*b*) if $h_n = Cn^{-1/5}$ for some $C > 0$, then for $n \to \infty$

$$\left(nh_n\right)^{1/2}\left(F_{xh}(t) - F_x(t)\right) \overset{D}{\Rightarrow} N\left(a_x(t); \sigma_x^2(t)\right),$$

where

$$a_x(t) = \frac{1}{2}\left(1 - F_x(t)\right)\left\{\int_0^t \frac{\ddot{H}_x(u) d\tilde{H}_x(u)}{(1 - H_x(u))^2} + \int_0^t \frac{d\ddot{\tilde{H}}_x(u)}{1 - H_x(u)}\right\} m_2(\pi) C^{5/2},$$

$$\sigma_x^2(t) = \left\|\pi\right\|_2^2 (1 - F_x(t))^2 \int_0^t \frac{d\tilde{H}_x(u)}{(1 - H_x(u))^2}.$$

It should be noted that Theorem 1 gives an asymptotic representation and Theorems 2 and 3 show the properties of uniform strong consistency and asymptotic normality of the estimate (1).

The following theorem establishes an asymptotic representation for estimating (2).

Theorem 4. Let the conditions of (C1)-(C3) are satisfied, $\frac{\log n}{nh_n} = o(1),\ \frac{nh_n^5}{\log n} = O(1)$ for $n \to \infty$. Assume that $\tau < Q_x\left(p\right) < T$ and $f_x\left(Q_x\left(p\right)\right) > 0,$ where $f_x = F_x'$. If $\left\{p_n\right\}$ is a sequence of random variables such that $0 < p_n < 1$ and $\left|p_n - p\right| = O_p\left(\left(nh_n\right)^{-1/2}\right)$. Then as $n \to \infty$

$$Q_{xh}\left(p_n\right) - Q_x\left(p\right) = \frac{1}{f_x\left(Q_x\left(p\right)\right)}\left(p_n - F_{xh}\left(Q_x\left(p\right)\right)\right) + o_p\left(\left(nh_n\right)^{-1/2}\right). \qquad (3)$$

To prove the representation of (3), it is sufficient to use the 1-order Taylor's decomposition. The following statement is a corollary of Theorem 3 and representation (3).

Theorem 5. Let the conditions of Theorem 3 be satisfied. Then

(c) if $nh_n^5 = o(1)$ and $\left(nh_n\right)^{-1}\left(\log n\right)^3 = o(1)$, as $n \to \infty$, then

$$\left(nh_n\right)^{1/2}\left(Q_{xh}(p_n) - Q_x(p)\right) \overset{D}{\Rightarrow} N\left(0; \tilde{\sigma}_x^2(t)\right);$$

(d) if $h_n = Cn^{-1/5}$ for some $C > 0$, then as $n \to \infty$

$$\left(nh_n\right)^{1/2}\left(Q_{xh}(p_n) - Q_x(p)\right) \overset{D}{\Rightarrow} N\left(\tilde{a}_x(t); \tilde{\sigma}_x^2(t)\right),$$

where

$$\tilde{a}_x(t) = \left(1 - p\right)a_x(t) - a_x\left(t + Q_x(t)\right),$$

$$\tilde{\sigma}_x^2(t) = \frac{\|\pi\|_2^2\left(1-p\right)^2\left(1 - F_x(t)\right)^2}{f_x^2\left(t + Q_x\left(t\right)\right)}\int_0^{Q_x(t)}\frac{d\tilde{H}_x(u)}{(1 - H_x(u))^2}.$$

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Rezyume. *Ushbu maqolada biz umr davomiyligi vaqti o'ng tomondan tasodifiy senzurlanganda, fiksirlangan dizaynlik regressiya modelida kvantil funksiyasini baholashni o'rganamiz. Bahoning tasodifiy funksiyalarning normallangan yig'indi bilan ifodalanishi va asimptotik normalligi o'rnatildi.*

Резюме. *В этой статье мы исследуем оценку функции квантиля в регрессионной модели с фиксированным дизайном, когда время жизни подвергается случайного цензурирования справа. Получено, что оценка выражается через нормированную сумму случайных функций и устанавливается асимптотическая нормальность.*

Kalit so'zlar. *Tasodifiy senzurlanish, shartli taqsimot, subtaqsimot, darajali baho, regressiya, yadro, kvantil funksiya.*

Ключевые слова. *Случайное цензурирование, условное распределение, субраспределение, степенная оценка, регрессия, ядро, квантильная функция.*

STUDY OF TEMPERATURE DEPENDENCE OF POTENTIAL BARRIER TRANSPARENCY

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Summary: *This paper presents the results of a study of the effect of structural features on the transport of charge carriers in polycrystalline semiconductor films.The transparency of intercrystalline potential barriers is calculated as a function of temperature.*
Keywords: *policrystal, grain boundary, surface states, trancparency of potential barrier, effective mass, concentration.*

Until now, the physical mechanisms responsible for the mechanical, electrical, optical and other properties of solids with a polycrystalline structure have not been fully established. As noted, the problem lies in the complexity of identifying the nature of grain boundaries (GBs) and their real structure [1], although, for example, it has long been known that many physical phenomena are caused precisely by the presence of GBs and their properties.

It can also be pointed out that the optical anisotropy of metal films [2] and polycrystalline semiconductor films [3], in our opinion, are also related to the structural features of GBs.

When solving such a problem, we are interested in the case of nondegenerate statistics of charge carriers (Boltzmann statistics).

In ratios $E = \left(\frac{2C}{C^2+1}\right)^2 \varphi(0), \quad C = \exp\frac{1}{4}\sqrt{\frac{e^2\hbar^2 N_d}{\varepsilon\varepsilon_0 m_{dn} k^2 T^2}}$ (1) and

$$D(E) = A\cdot B\exp\left(-\frac{C^2-1}{C^2+1}\,\frac{\varphi(0)}{kT\ln C}\right) \qquad (2)$$

includes parameters N_d and T the first of them characterizes the concentration of electrons in the material of the base of the polycrystal, and the second characterizes the state of the external environment. Let's see how these parameters can affect the transparency of the potential barrier.

Let the grains of the polycrystal be doped with only one donor impurity to a concentration from 10^{16} to $5\cdot10^{18}$ см$^{-3}$. We will consider the temperature range from nitrogen (77K) to room (300K). In this temperature range, the impurity (for example, in germanium) can be considered fully ionized [4], ie. in this case, each impurity atom supplies one electron $n=N_d$ to the conduction band. Boltzmann statistics "works" in the indicated interval n. We will assume that there are surface states (SSs) on the GB with the energy $E_s=E_c$ – 0,1 - 0,15 eV. Calculation shows to satisfy the

condition $N_S < \sqrt{\frac{8\varepsilon\varepsilon_0 N_d (E_F - E_S)}{e^2 g^2}} = N_S^*$ (3)

in the entire range of charge carrier concentrations adopted above, the concentration of SS is required $N_s>3\cdot10^{12}$ sm^{-2}. In the calculations, the values ε =16, $m_{dn}\approx0{,}25m_0$ (m_0 -is the mass of a free electron), borrowed from [4; 5].

The calculated N_S value corresponds to g = 2; if we assume that g = 1, due to the Coulomb repulsion of the second electron by the occupied SS level, then it is necessary to take $N_S>4{,}5\cdot10^{12}$sm^{-2}. Such a concentration of SSs on GBs in Ge polycrystals is quite real. According to [5], the lattice constant in Ge is a$\approx$0,56575 nm; therefore, for N_S to be the same as assumed above, the angles of misorientation of grains $\geq 13^0$.

If condition (3) is satisfied, then the Fermi level is “tied” to the SS level and is determined by the relation

$$\varphi(0) \approx E_F - E_S + kT \ln\left(\frac{N_S}{N_S^*} - 1\right) \qquad (4)$$

Since all the relations obtained in the results "work" in energy up to kT, without losing their meaning for the results obtained in the future, instead of (4) we put

$\varphi(0) \approx |E_s - E_F| \approx 0.1$эВ (5)

Fig. 1 shows the calculated concentration dependences of the transparency of the potential barrier at GBs in a Ge polycrystal under the conditions introduced above. Transparency curves calculated according to

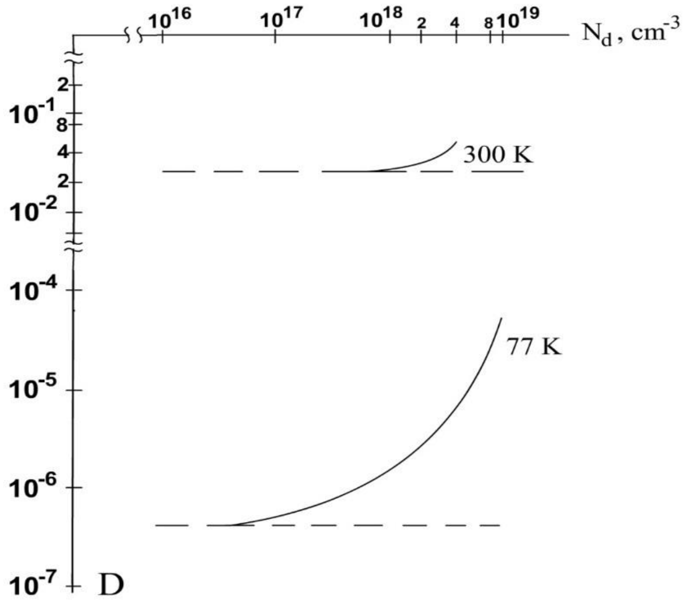

Fig. 1. Concentration dependences of the transparency of the potential barrier on grain boundaries at different temperatures.

(2) are compared with the transparencies of the same barriers without taking into account tunneling. They are in Fig. 1.the dashed lines correspond.

To give a more complete characterization of the $D(N_d)$ dependences in Fig. 1, let us estimate the thickness of potential barriers at their bases for several values of the N_d doping levels. The estimation will be carried out according to the formula

$$\varphi(x) = \frac{e^2 Nd}{2\varepsilon\varepsilon_0}\left(\frac{l}{2} - x\right)^2 \qquad (6),$$

where $l = gfN_s/Nd$ – barrier thickness (radius of screening of the excess charge near the GB). For all values of N_d, the value $|E_s\text{-}E_F|$ will be considered equal to 0.1 eV, as was done in the calculation of D. Using the given Ge parameters, we obtain the following calculated values of l: 370 nm (10^{16} sm^{-3}), 53 nm ($5{\cdot}10^{17}$ sm^{-3}) and 17 nm ($5{\cdot}10^{18}$sm^{-3}). As can be seen from the calculations, an increase in the level of grain doping leads to a significant decrease in the width of the potential barrier. In this case, the thermoactivation

$$P_a(\varphi(0)) \approx \exp\left(-\frac{\varphi(0)}{kT}\right) \qquad (7)$$

does not depend on the barrier thickness at all (dashed lines in Fig. 1). Thus, the mechanism for the passage of a charge carrier through the barrier substantially depends on the doping level of the grains.

Let us see how the transparency of the barrier depends on temperature at different levels of grain doping. Figure 2 shows the calculated dependences of the transparency of the barrier when the temperature changes from 77 to 300 K. If we take into account only the thermal activation of charge carriers through the potential barrier, then the calculated dependence of the transparency of the barrier, regardless of the level of grain doping, will be displayed by curve 1.

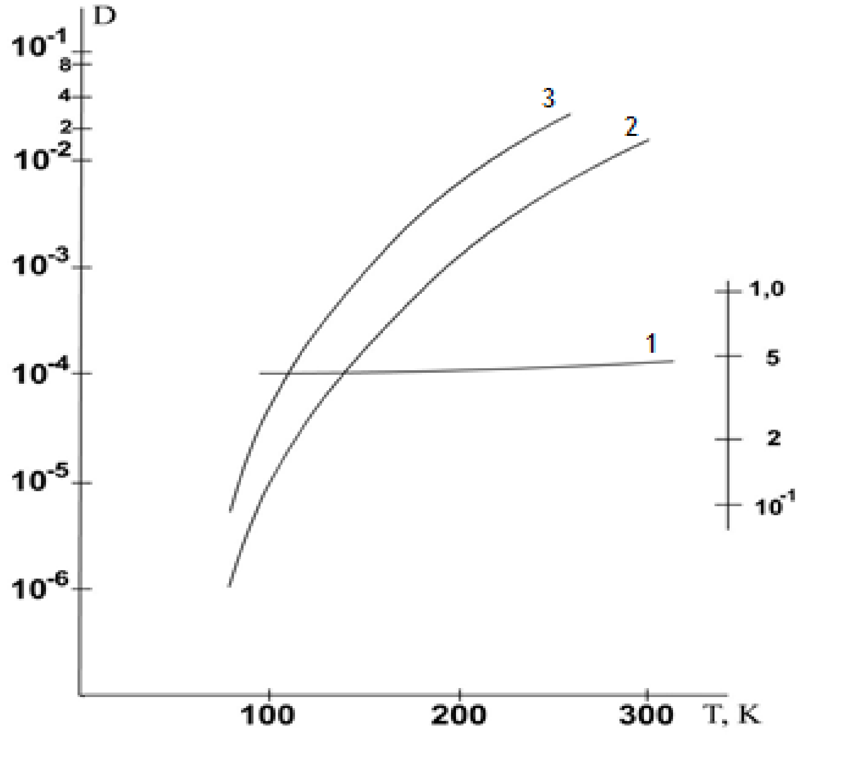

Fig. 2. Temperature dependence of the transparency of the potential barrier at GBs in Ge without taking into account tunneling (1) and taking it into account (2,3).

Impurity concentration N_d, sm^{-3}:10^{16} (1,2) и $5 \cdot 10^{18}$(3). The right ordinate axis refers to curve 3.

If we use the general approach (2), then we can see an increase in the transparency of the barrier (curve 2). Comparing dependences 2 and 3, we can state that an increase in the doping level strongly changes, as we noted above, the contribution of tunneling through the barrier to the transparency value. Moreover, at sufficiently high doping levels, charge carriers overcome the potential barrier mainly due to the tunneling effect (curve 3 in Fig. 2).

Thus, analyzing the calculated data in Figs. 1 and 2, it can be argued that in many cases, the discrepancy or significant difference between the experimental results and theoretical calculations for polycrystalline barrier structures is associated with ignoring the tunneling component of the barrier transparency. In other words, tunneling can, in fact, be a mandatory attribute of even non-quantum effects.

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Rezyume. *Ushbu maqolada strukturaviy xususiyatlarning zaryad tashuvchilarni polikristalli yarimo'tkazgichli plyonkalarda tashishiga ta'sirini o'rganish natijalari keltirilgan.*

Резюме. *В данной работе представлены результаты исследования влияния структурных особенностей на транспорт носителей заряда в поликристаллических полупроводниковых пленках. Рассчитана прозрачность межкристаллических потенциальных барьеров в зависимости от температуры.*

Kalit so'zlar. *poli kristal, don chegarasi, sirt holati, potentsial to'siqning shaffofligi, samarali massa, konsentratsiya.*

Ключевые слова. *поликристалл, граница зерен, поверхностные состояния, прозрачность потенциального барьера, эффективная масса, концентрация.*

STUDY ON THE USAGE OF SANDY LANDS AROUND THE ARAL SEA AS PASTURES USING GEOINFORMATIONAL ANALYSIS

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Summary: *Republican and foreign scientists have conducted research on the drying up of the Aral Sea over the years and its negative consequences. This article examines the processes taking place in the dry part of the Aral Sea and its negative impact on the Aral Sea region. The study identifies ways to effectively use the Aral Sea region as a pasture, mainly to identify environmental impacts and changes in precipitation, the level of natural vegetation in the dry parts of the Aral Sea, the level of water supply in the region paying special attention to temperature changes in the region. The data were obtained mainly by remote sensing methods in the chamber and processed on the basis of geographic information systems. Statistical data were obtained from foreign sources on the issue. The study of sandy soils with the help of this data allows obtaining accurate and reliable information to conduct research quickly and to use the soil efficiently.*

Key words*: Normalized Difference Vegetation Index (NDVI), Modiffied Normalized Difference Water Index (MNDWI), temperature, precipitation, Remote sensing (RS), Geoinformation system (GIS).*

Introduction: In all countries of the world, including the Republic of Uzbekistan, the state of natural resources and their rational use in the XXI century remains relevant at the national and global levels. About 50% of the total land area of the Republic of Uzbekistan consists of pastures and hayfields, as well as the largest number of available plant resources, 1,700 species are used as fodder [21]. Pastures and hayfields play an important role in providing livestock with nutritious fodder and growing high-quality, low-cost products from them [5,15]. The productivity of free-range livestock on pastures is 20-25% higher than the productivity of stable-fed cattle. The cost of the product is reduced by 30-40% [21]. Therefore, it is important to have quick and accurate data on improving the soil conditions of pastures and hayfields, maintaining the completeness of the existing vegetation cover by species, increasing productivity.

The methods of research: In the Aral Sea region, which is now on the verge of extinction, the construction process has been going on for years (Figure I), [2,4,8,10,11]. As a result, land areas are emerging and have little negative impact on the Aral Sea region (Figure II) [8]. Occurring events lead to large-scale salinization of soils [3,11,16,18]. Therefore, it is important to scientifically study the condition of these lands and develop recommendations for the regions. In the emerging old areas, the amount of humus in the soil is very low [20], the amount of precipitation varies over many years, precipitation falls mainly in winter and early spring (Figure I), in summer and autumn there is almost no precipitation (Figure II), the air is extremely dry. Given that very little snow falls and is stored for a very short time, we can see the need to study the level of land use in this area as pasture [21]. The dry part of the Aral Sea and the coastal areas are mainly flat (Figure III). In the plains, plant species also vary according to topography, soil moisture depth, and salinity patterns (Figure IV) [21]. Given the high incidence of ephemeral and ephemeroids in sandy steppes, determining the rate of growth and precipitation of ephemeral vegetation in the coastal regions may be a solution to the assumptions about the use of this area as pasture. Because the chemical and biochemical processes that take place in soil and plants take place in an aqueous environment. Only when the plant is adequately supplied with water its growth, development and all physiological processes can take place normally. The seeds of any cultivated plant absorb a certain amount of water before germination. Plants contain 80-90% water. During the growing season, plants evaporate most of this water [20].

Figure I

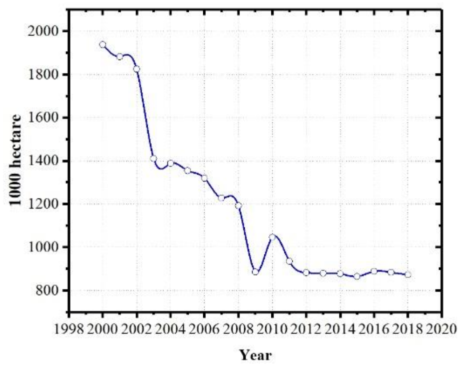


Figure I. Inland water bodies in the lands of Uzbekistan (per 1000 hectares) (2000-2018)

Figure II

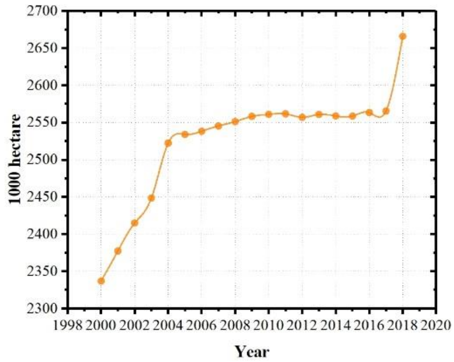
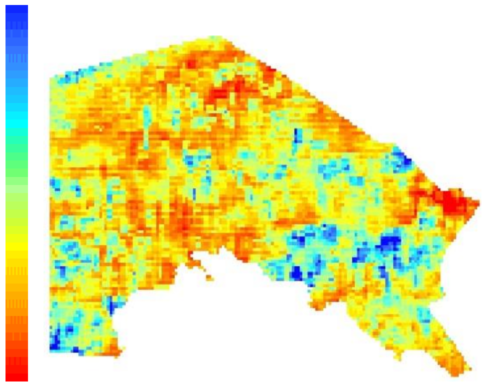


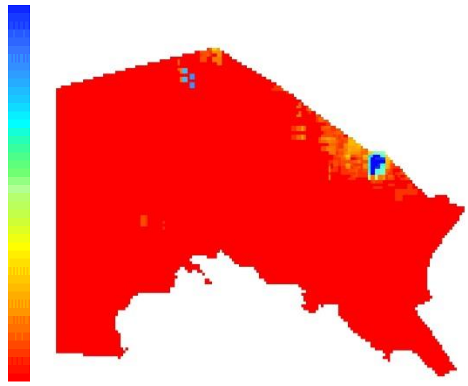
Figure II. Sparsely natural vegetaed areas in the lands of Uzbekistan (per 1000 hectares) (2000-2018)

Picture I



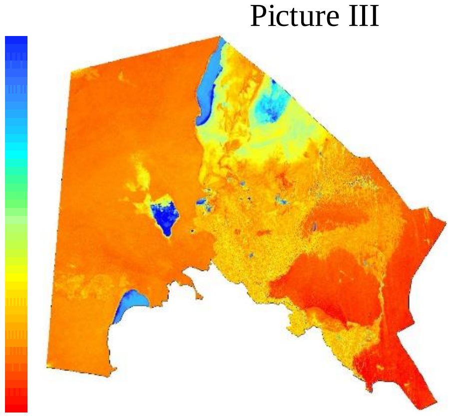
Picture I. Precipitation level in the Aral Sea region (March, 2011) (in the example of Karakalpakstan)

Picture II



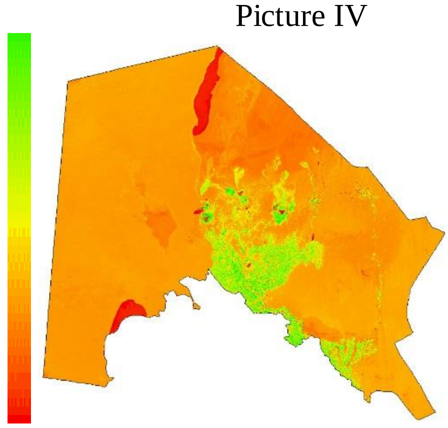
Picture II. Precipitation level in the Aral Sea region (July, 2011) (in the example of Karakalpakstan)

Picture III



Picture III. Water cover of the Aral Sea region (2020) (in the example of Karakalpakstan)

Picture IV



Picture IV. Plant cover of the Aral Sea region (2020) (in the example of Karakalpakstan)

The germination of plants from seed, normal growth, development and life of various microorganisms in the soil are also directly related to the heat in the soil. While soil temperature is crucial in the early stages of plant life, air temperature is critical after grass emergence [20]. Therefore, when using sandy steppe lands in the coastal areas as pastures and assessing the quality of pastures, we need to determine soil temperature, air temperature, precipitation and water content of small horned herds as the main factors for good plant development. And we use Landsat 8 data to identify them and calculate as follows:

Normalized Difference Vegetation Index: (NDVI) quantifies vegetation by measuring the difference between near-infrared and red light. NDVI always ranges from -1 to +1. As shown below, Normalized Difference Vegetation Index uses the NIR and red channels in its formula:

$$NDVI = (NIR-RED) / (NIR+RED); \quad (1)$$

Healthy vegetation (chlorophyll) reflects more near-infrared (NIR) and green light compared to other wavelengths. But it absorbs more red and blue light. Overall, NDVI is a standardized way to measure healthy vegetation. When you have high NDVI values, you have healthier vegetation [6,9,11,17].

The Modified Normalized Difference Water Index: MNDWI uses green and SWIR bands for the enhancement of open water features. It also diminishes built-up area features that are often correlated with open water in other indices.

MNDWI is calculated [11,14]:

$$MNDWI = (Green – SWIR) / (Green + SWIR); \quad (2)$$

Land Surface Temperature: (LST) is the radiative skin temperature of the land derived from solar radiation. A simplified definition would be how hot the "surface" of the Earth would feel to the touch in a particular location. Land surface temperature is not the same as the air temperature that is included in the daily weather report.

Calculation of LST: The first step of the algorithm is the input of Band 10. After inputting band 10, in the background, the tool uses formulas taken from the USGS web page for retrieving the top of atmospheric (TOA) spectral radiance ($L\lambda$):

$$L\lambda = ML*Q\text{cal} + AL, \quad (3)$$

Where ML represents the band-specific multiplicative rescaling factor, Qcal is the Band 10 image, AL is the band-specific additive rescaling factor.

After the digital numbers (DNs) are converted to reflection, the TIRS band data should be converted from spectral radiance to brightness temperature (BT) using the thermal constants provided in the metadata file. The following equation is used in the tool's algorithm to convert reflectance to BT:

$$BT = (K2/\ln[(K1/L\lambda)+1]) - 273.15, \quad (4)$$

where, $K1$ and $K2$ stand for the band-specific thermal conversion constants from the metadata.

Next step of the algorithm is NDVI Method for Emissivity Correction. NDVI is calculated from the first equation above. Then we calculate the Proportion of Vegetation. It is calculated as follows:

$$PV = ((NDVI-NDVI_L)/(NDVI_H- NDVI_L))^2, \quad (5)$$

Then land surface emissivity is calculated:

$$\varepsilon = 0.004* PV+0.986, \quad (6)$$

The last step of retrieving the LST or the emissivity corrected land surface temperature T_s is computed as follows [1,9,11],

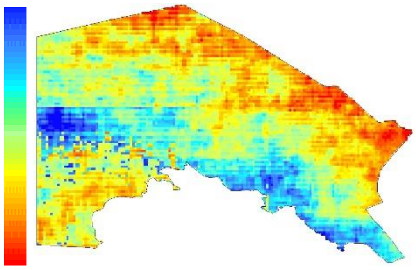
$$T_s = BT/\{1+[(\lambda BT/\rho)*\ln\varepsilon]\} \quad (7)$$

Precipitation data from existing PERSIANN (Artificial Neural Network Networks) data estimates developed by the Center for Hydrometeorology and Remote Sensing (CHRS) at the University of California, Berkeley and data on temperature changes were obtained from the Food and Agriculture Organization (FAO), a specialized agency of the United Nations.

Results and Discussion: Using the above data, formulas and algorithms, the following data were obtained. The Aral Sea, which has been leading the construction process for decades, is having a negative impact on the environment. Rainfall has declined slightly over the last decade (Figure III) [7], with annual precipitation near the maximum in the dry part of the Aral Sea observed only once in 2015 (Figure VI). In the Aral Sea region, the highest precipitation in recent years was observed in 2010, and close to the maximum precipitation was observed only in the Amudarya delta and part of the Ustyurt Plateau (Figure V). In the Aral Sea region, the decrease in the level of land cover of water surfaces has an impact on air temperature. Although the air temperature has fluctuated over the years and decreased slightly in 2020 compared to 2019, it still has a higher rate than in 2018 (Figure IV) [8]. For the last twenty years, the main changes in air temperature have occurred mainly in December-January-February, while the changes in air temperature in June-July-August show almost no significant difference (Figure V) [8].

Studies show that the use of these lands as natural pastures is inefficient due to the low level of vegetation in the dry part of the Aral Sea (Figure IV). However, in the selected area of the Amudarya delta, the vegetation index is higher than in the selected part of the Ustyurt Plateau (Figure VI) and the water supply is higher in spring (Figure VII), precipitation is close to the maximum annual level in this area and soil temperature higher than in other regions (Figure VIII), the temperature difference in the northern and southern parts of Karakalpakstan is 28 days [19], which leads to the early development of ephemeral plants and provides quality fodder for small ruminants in natural pastures from early spring [12,13].

Picture V



Picture V. Annual precipitation level in the Aral Sea region as of 2010

Figure III

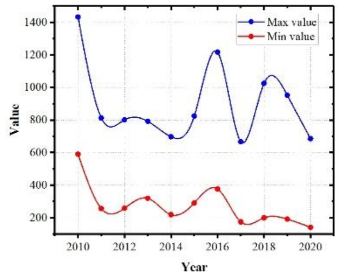
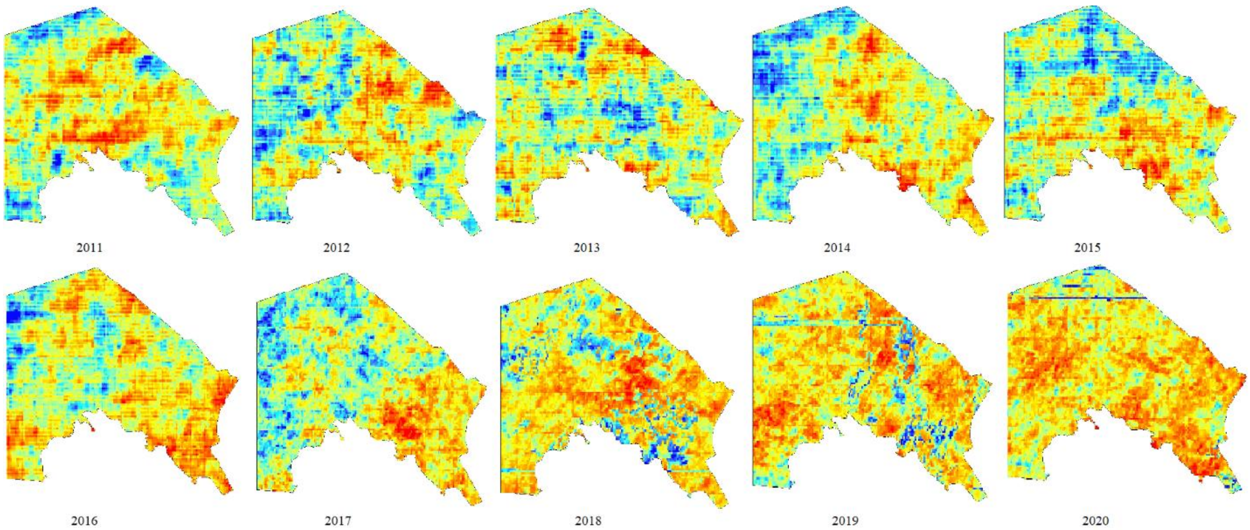


Figure III. Precipitation level in the Aral Sea region between 2010-2020

Picture VI



Picture VI. Precipitation areas in the Aral Sea region between 2011-2020 (in the example of Karakalpakstan)

Figure IV

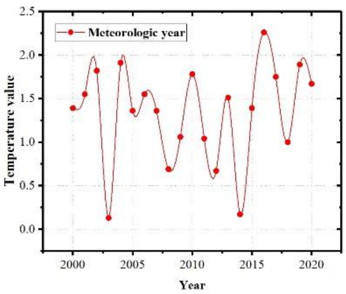


Figure IV. Temperature changes in Uzbekistan between 2000-2020

Figure V

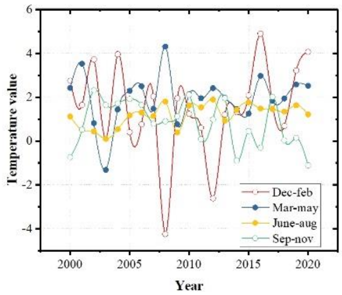
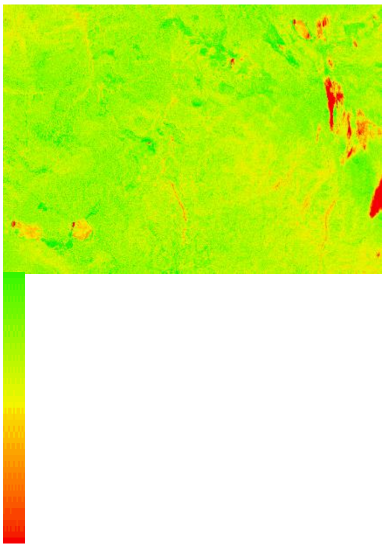


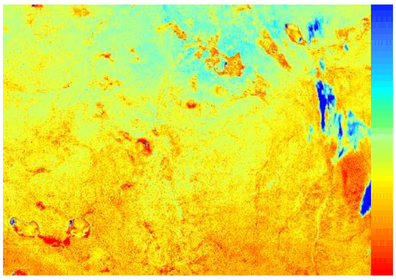
Figure V. Temperature changes in Uzbekistan between 2000-2020

Picture VII rasm



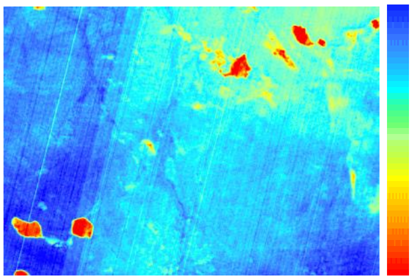
VII rasm. NDVI Selected area from the Ustyurt plateau

Picture VIII



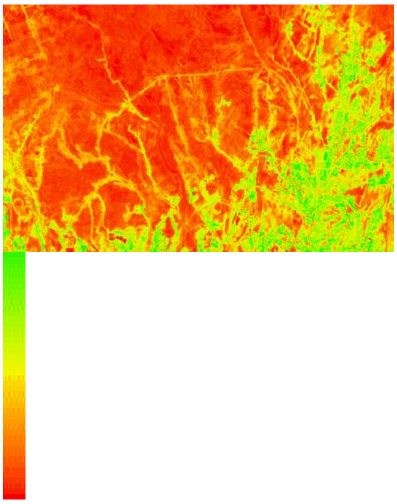
VIII rasm. MNDWI Selected area from the Ustyurt plateau

Picture IX



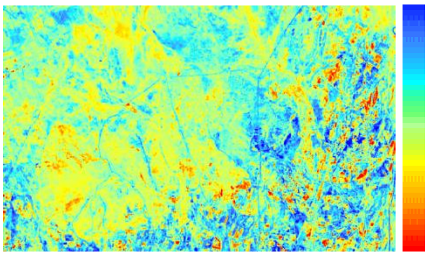
IX rasm. LST Selected area from the Ustyurt plateau

Picture X



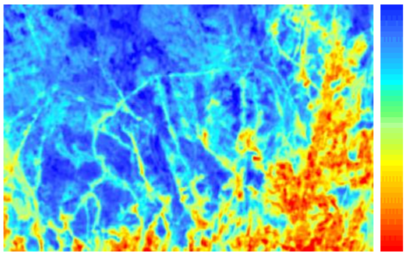
X rasm. NDVI Selected area from the Amu darya delta

Picture XI



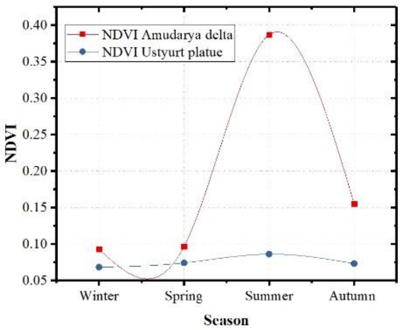
XI rasm. MNDWI Selected area from the Amu darya delta

Picture XII



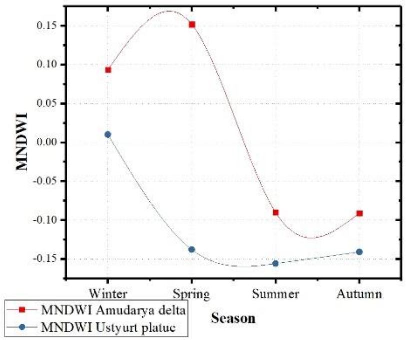
XII rasm. LST Selected area from the Amu darya delta

Figure VI



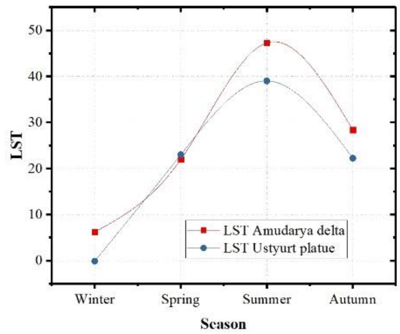
VI shakl. Normalized difference vegetation index in the Amudarya delta and Ustyurt plateau (2020)

Figure VII



VII shakl. Modiffied normalized difference water index in the Amudarya delta and Ustyurt plateau (2020)

Figure VIII



VIII shakl. Land surface temperature in the Amudary delta and Ustyurt plateau (2020)

Decreasing rainfall and fluctuating air temperatures over the years to some extent reduce the efficiency of using dry old areas as pastures. This shows the need for scientifically perfect organization of natural pastures, taking into account these natural conditions. The study of any area selected for pasture, taking into account the normalized vegetation index, improved normalized water index and soil surface temperature, will be of great importance in determining the quality of pastures (Figures VII, VIII, IX, X, XI, XII) [11].

CONCLUSION.

- The use of the proposed methods allows us to get information about the object in the camera, without going to the place, to carry out research work efficiently and quickly.
- The use of the dried part of the Aral Sea as natural pastures is currently inefficient.
- Given that the amount of precipitation around the Amudarya delta is close to the maximum annual precipitation, soil temperature in early spring is higher than the soil temperature of the Ustyurt plateau and early recovery of ephemeral vegetation, it is more efficient to use this area as natural pasture.

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Rezyume. *Orol dengizining qurishi va uning salbiy oqibatlari to'g'risida respublika va xorijiy olimlar yillar davomida tadqiqotlar o'tkazdilar. Ushbu maqola Orol dengizining quruq qismida sodir bo'layotgan jarayonlar va uning Orol dengizi mintaqasiga salbiy ta'sirini o'rganib chiqadi. Tadqiqotda Orol dengizi yaylovi sifatida samarali foydalanish yo'llari, asosan atrof-muhitga ta'sirini va yog'ingarchilikning o'zgarishini, Orol dengizining quruq qismlarida tabiiy o'simliklarning darajasi, mintaqadagi suv ta'minoti darajasi mintaqadagi harorat o'zgarishiga. Ma'lumotlar asosan kamerada masofadan turib zondlash usullari yordamida olingan va geografik axborot tizimlari asosida qayta ishlangan. Statistik ma'lumotlar ushbu masala bo'yicha xorijiy manbalardan olingan. Ushbu ma'lumotlar yordamida qumli tuproqlarni o'rganish tezkor izlanishlar olib borish va tuproqdan unumli foydalanish uchun aniq va ishonchli ma'lumotlarni olish imkonini beradi.*

Резюме. *Республиканские и зарубежные ученые на протяжении многих лет проводили исследования высыхания Аральского моря и его негативных последствий. В данной статье исследуются процессы, происходящие в засушливой части Аральского моря, и их негативное влияние на регион Аральского моря. В исследовании определены способы эффективного использования региона Аральского моря в качестве пастбищ, в основном для определения воздействия на окружающую среду и изменений в количестве осадков, уровне естественной растительности в засушливых частях Аральского моря, уровне водоснабжения в регионе с уделением особого внимания. к перепадам температур в регионе. Данные были получены в основном методами дистанционного зондирования в камере и обработаны на основе геоинформационных систем. Статистические данные по данному вопросу получены из зарубежных источников. Изучение песчаных почв с помощью этих данных позволяет получать точную и достоверную информацию, быстро проводить исследования и эффективно использовать почву.*

Kalit so'zlar. *Normalizatsiya qilingan o'simliklarning o'simlik indekslari (NDVI), modifikatsiyalangan normalizatsiya qilingan farq suv indekslari (MNDWI), harorat, yog'ingarchilik, masofadan turib zondlash (RS), geoinformatsion tizim (GIS)..*

Ключевые слова. *Нормализованный разностный растительный индекс (NDVI), модифицированный нормализованный разностный водный индекс (MNDWI), температура, осадки, дистанционное зондирование (RS), геоинформационная система (GIS).*

AGROTECHNICAL AFFAIRS FOR THE PRODUCTION OF LOCAL CORN SORTS IN THE CASE OF SALTED SOILS OF THE REPUBLIC OF KARAKALPAKSTAN

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Summary: *This article provides information on the fact that under saline soils, corn is more resistant to salinity and less water-requiring than other agricultural crops under the condition of Karakalpakstan, as well as for fodder.*
Keywords: *Corn, grain, fodder, silage, salinity, Uzbekistan 18, Uzbekistan pakene(sort) for grain, Uzbekistan 4.*

Introduction.

The vast territory of Karakalpakstan is 167 thousand square kilometers, located in the western part of the Republic of Uzbekistan. These lands are located at an altitude of 50-100 meters above sea level and consist of the upper and lower reaches of the river. These lands are grassland soils of the steppe zone, which are very suitable for agriculture, with varying degrees of salinity, heavy swamps, light soils and loamy soils. The soil of Karakalpakstan differs from the soils of other parts of Uzbekistan in its agrochemical properties. Everywhere the carbonate structure is low, and the raw materials prone to salinity are very low.

In order to obtain high yields from crops, it is important to select the most intensive varieties of crops in accordance with the soil and climatic conditions of the land, and to implement the technology in accordance with them.

At the same time, due to the recent increase in water scarcity and soil salinity, the cultivation of saline and drought-tolerant crops and varieties in arable lands, the implementation of agro-technical measures in accordance with the soil conditions have increased the productivity of lands[1]. Along with the use of corn as a food product in the national economy, the full and proper use of soil and climatic resources of the republic for the creation of a quality fodder base in the production of agricultural products. Corn – is a salt and drought tolerant plant. It requires 1.5-2 times less moisture than maize, and the demand for water is one of the most drought-tolerant plants in the world.

The results of scientific experiments and industrial tests have shown that in the conditions of our republic, corn, maize and other fodder crops are more productive. With the use of high agricultural techniques, corn crops have shown that in the reclamation conditions of the land, corn varieties can get 800-1000 centners of green mass and 60-80 centners of grain per hectare. Therefore, during the experiment, 4 varieties of corn were selected, such as Boy corn, Uzbekistan pakene and Uzbekistan 4.

The Boy corn was obtained by local breeders from Karakalpakstan. This variety has Shymbay and Shabbaz forms. The Shymbay form became a quick pisser, and the Shabbaz form was cultivated in the southern districts of Karakalpakstan and the Khorezm region. The name of this variety shows that it is tall, reaching a height of 250-290 cm. The head is sloping, dense, with hairs, the seeds are of medium size and ripen in 120-130 days. The grain yield gives 45-60 centners per hectare and 550-650 centners of silage mass.

Uzbekistan pakene. This sort was obtained by breeders of the Uzbekistan Research Institute of Agriculture by individual selection of local varieties.

Its height 96-123 cm, head is large oval, with hairs. 1000 grains without white husk weigh 34 grams and ripen in 145-150 days. Drought-resistant, does not fall, the grain is suitable for harvesting with a combine. You can get 80-85 centners of grain per hectare.

After harvesting, the roots of the previous crop are discarded and mixed into the soil and plowed to a depth of 28-30 cm on a two-tiered plow with 20-30 tons of local soil per hectare. Of course, before the harvest, as much as possible, the farm was given 30-40 tons of local lectures and

70 percent of the annual rate of phosphorus discharge and the entire rate of potassium discharge on the basis of cartograms. Depending on the degree of salinity of the land was irrigated at the rate of 2-5 thousand m³. In order to maintain moisture in the early spring, it is raked in two directions with tisley rakes, 12 percent hexachlorane is sprayed at a rate of 40-60 kg per hectare against agricultural pests.

When the daily soil temperature at the depth of sowing is 10-12 ° C, the lands are chiseled and plowed. Late ripening varieties of corn sown for grain and silage were sown in the first ten days of April.

Table 1

Water and physical features of soils of experimental fields at the beginning of the season

Endurance cm	Comparative weight g/cm^3	Volume capacity g/cm^3	Porosity %	Total soil water capacity %
0–30	2,64	1,31	49,8	22,7
0–50	2,64	1,29	51,2	22,7
0–70	2,65	1,29	51,1	22,9
0–100	2,66	1,32	50,6	23,0

During the research, the study of the physical properties of the soil water is one of the most important factors in the irrigation of irrigated crops. This is because the irrigation regimes of agricultural crops are determined based on the water and physical properties of the soil.

Therefore, the main purpose of the ongoing field experiments in scientific research was to determine the optimal order of irrigation of corn, the physical properties of water were determined at the beginning of the season. You can see the data in Table 1.

It was found that the demand for mineral spills, especially nitrogen spills, in all our corn varieties has a strong impact on its growth and development. It was determined that all varieties of corn have the same discharge rates (300 kg of ammonium nitrate and 40 kg of opium superphosphate per hectare) and at the same thickness (leaving 4-5 plants per 1 meter) they give high yields of grain and green mass. Among these, varieties of Uzbekistan 18 for silage, Uzbekistan pakene for grain, and Uzbekistan 4 had several advantages over other varieties.

The use of mineral spills on corn silage and grain has a significant impact on the chemical composition of their products, the absorption of nutrients and nutritional value.

In summary, in the condition of the Republic of Karakalpakstan, the annual shortage of water, the prevention of overgrazing of saline lands, the establishment of proper irrigation procedures, the selection of varieties of corn suitable for the soil, soil fertility, livestock-breeding it is possible to satisfy the demand for grain.

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Rezyume. *ushbu maqola sho'rlangan tuproqlarda makkajo'xori o’simligining Qoraqalpog'iston sharoitida bo’yicha boshqa qishloq xo'jalik ekinlariga qaraganda sho'rlanishga* *chidamli hamda suvni kam talab qiladigan xossasi bilan bir qotorda em-xashak bo'yichada katta ahamiyatga ega ekanligi haqqida malumotlar keltirilgan.*

Резюме. *В данной статье приводятся сведения о том, что на засоленных почвах кукуруза более устойчива к засолению и менее требует воды, чем другие сельскохозяйственные культуры в условиях Каракалпакстана, а также для кормления.*

Kalit so'zlar: *Makkajo'xori, don, em-xashak, silos, sho'rlanish, O'zbekiston 18, dan uchun O'zbekiston pakansi, O'zbekiston 4.*

Ключивые слова: *Кукуруза, зерно, корм, силос, засоленность, Узбекистан 18, Узбекистан пакене(сорт) для зерна, Узбекистан 4.*

WAYS TO USE BIOFERTILIZERS TO INCREASE CROP YIELDS

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Summary: *This article describes the ways, methods and effectiveness of the use of biofertilizers to increase crop yields. As a result, using these methods to analyze the dynamics of microbiological processes in the soil, to identify biogenic elements, ways to use biofertilizers to increase crop yields in Karakalpakstan, nitrogen, ammophos and potassium applied to saline soils of different levels. Under the influence of mineral fertilizers, cellulose-degrading bacteria change less than in highly saline soils. Thus, the strong development of microorganisms, especially mineral nitrogen-fixing bacteria, was observed in the variant where nitrogen and ammophos were added to rice straw on unsalted and moderately saline soils.*

Key words: *agriculture, bio fertilizer, nitrogen, ammophos and potassium mineral fertilizers, green and blue-green algae, Soil salinity, Spore-forming bacteria, combined use of rice straw, microorganisms belonging to physiological groups.*

The main goal of Karakalpakstan is to study the ways of using biofertilizers to increase the productivity of agricultural crops, ie the process of increasing soil fertility through the use of rice straw, which is not used in the national economy as biofertilizer. these irrigated meadow soils alternate with dry and saline soils. It analyzed the microbiological processes taking place. the effect of straw on grassland soils on the activity of soil microorganisms, the dynamics of rice growth, the total number of microorganisms belonging to certain physiological groups were studied. they contain putrefactive bacteria, bacteria that absorb mineral nitrogen.

It is known that irrigated meadow soils lack nutrients. in the growth and development of rice, the main task is to increase the amount of immobilization of new agricultural techniques. this problem, of course, depends on the activity of many microorganisms. One of the most pressing issues is the increase in the mobile form of the elements, especially under the influence of putrefactive bacteria, mineral nitrogen-fixing bacteria, fiber-degrading bacteria and several species of fungi, as well as green and blue-green algae.

As the salinity of the soil increases, the activity of putrefactive bacteria decreases, ie their number reaches 54 million. the plant's demand for phosphorus, nitrogen and potassium has been slowly declining. in strongly saline soils, the number of putrefactive bacteria decreased sharply, and the amount of nitrogen, phosphorus and potassium was reduced.

The dynamics of the development of microorganisms during the germination, evaporation and maturation of seeds 7 days after planting, the growth and development of putrefactive bacteria are fully reflected in table 2.

In the control variant of our experiment, nitrogen, ammophos and potassium were applied to rice planted in unsalted soil. in the experiments with nitrogen, ammophos and potassium, it was confirmed that the number of putrefactive bacteria was 2.8 million.

It was noted that the number of spore-forming bacteria in these plots differed significantly from the control variant, slightly exceeding 0.3 million. The total number of putrefactive bacteria in the control variant during the germination of seeds was 22.3 million. It is noteworthy that these figures doubled with the use of mineral fertilizers with rice straw. The number of spore-forming bacteria is 1-2 million. has been experimentally proven to increase [1., 485].

Under the influence of nitrogen, ammophos and potassium mineral fertilizers applied to different levels of saline soils, it is possible to observe a small change of cellulose-degrading bacteria compared to strongly saline soils. However, experiments have shown that the growth of cellulose-degrading bacteria in strongly saline soils and their number is very low in soils with mineral fertilizers and rice straw.

The combination of mineral fertilizers and rice straw in irrigated soils has been shown to have a positive effect on the growth and development of microorganisms belonging to all physiological groups and depends on the salinity of the soil.

Mineral fertilizers are used for the growth and development of putrefactive, mineral nitrogen-fixing, sulfate bacteria in the samples of saline invasive soils of different levels (unsalted, low-salinity, moderately saline). 11.3-34 IN 1 g of soil with rice straw, respectively, in relation to the applied plot; 23-23,8; 3.8-6.7 mln. Cells [2., 256].

Thus, the experiments conducted on collective farms of the republic of Karakalpakstan showed that the combined use of 5 tons of rice straw per hectare in irrigated soils with mineral fertilizers has a positive effect on the growth and development of microorganisms belonging to all physiological groups.

As a result, using these methods to analyze the dynamics of microbiological processes in the soil, to identify biogenic elements, to add 5 tons of rice straw per hectare in combination with mineral fertilizers on irrigated soils, the growth of microorganisms belonging to all physiological groups. the positive effect on the development of the soil and its dependence on the salinity of the soil has been confirmed in our experiments [3., 6].

The number of mineral nitrogen-fixing bacteria in this area, where mineral fertilizers were used, was 122 million per 1 g of soil, and even higher in the fields where rice straw and nitrogen, ammophos and potassium were applied. in the variant that gives nitrogen, ammophos and potassium to low-salinity soil, the number of putrefactive bacteria in 10 days is 27 million, and in 30 days - 18 million. In this period. during this period, the number of bacteria that absorb mineral nitrogen was 17-28 million, while in the field given nitrogen, ammophos and potassium with rice straw, in 10 days these figures were 38-52 million, and in 30 days - 68-89 million. Cells were noted to have increased.

In moderately saline soils, the number of microorganisms in the given variant of nitrogen, ammophos and potassium is 38-49 million. and the number of mineral nitrogen-fixing bacteria is 85–123 million, and in the case of rice straw, these figures are 48–52 million. and 128–380 million. forms a cell [4., 3].

In experiments carried out on strongly saline soils, the number of putrefactive bacteria in 10 to 30 days in the given variant of nitrogen, ammophos, potassium was 47-92 million. and the number of mineral nitrogen-fixing bacteria is 50-128 million. found to have changed into a cell. In this variant, the number of putrefactive bacteria when rice straw is added was 47-61 million, the number of mineral nitrogen-fixing bacteria was 129 million in 10 days, and 52 million in 30 days.

Thus, the strong development of microorganisms, especially mineral nitrogen-fixing bacteria, was observed in the variant where nitrogen and ammophos were added to rice straw in non-saline and moderately saline soils.

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Rezyume: *Bu maqolada qishloq xo`jaligi ekinlari hosildorligini oshirishda bioo'g`itlardan foydalanish yo`llari, usullari va ularning samaradorligi haqida berilgan. Natijada bu usullarni qo`llanish orqali tuproqda yuz berayotgan mikrobiologik jarayonlar dinamikasini taxlil qilish, biogen elementlarni aniqlash, Qoraqalpog`iston sharoitida qishloq xujaligi ekinlari hosildorligini* *orttirishda bioug`itlardan foydalanish yo`llari, har xil darajada sho`rlangan tuproqlarga berilgan azot, ammofos va kaliy mineral o`g`itlar ta`sirida tsellyulozani parchalovchi bakteriyalarning ko`chli sho`rlangan tuproqlarga nisbatan kam o`zgarishini kuzatish mumkin. Demak, mikroorganizmlarning, ayniqsa mineral azot uzlashtiruvchi bakteriyalarning shurlanmagan va urtacha shurlangan tuproqlarga sholi somonga qushib azot, ammafos ishlatilgan variantda ularning kuchli rivojlanishi kuzatildi.*

Резюме: *В данной статье описаны способы, методы и эффективность использования биоудобрений для повышения урожайности сельскохозяйственных культур. В результате с помощью этих методов проанализировать динамику микробиологических процессов в почве, выявить биогенные элементы, способы применения биоудобрений для повышения урожайности в Каракалпакстане, азот, аммофос и калий, внесенные на засоленные почвы разного уровня. минеральных удобрений целлюлозоразрушающие бактерии изменяются меньше, чем в сильнозасоленных почвах. Таким образом, сильное развитие микроорганизмов, особенно минеральных азотфиксирующих бактерий, наблюдалось в варианте добавления азота и аммофоса в рисовую солому на незасоленных и умеренно засоленных почвах.*

Kalit so'zlar: *qishloq xujaligi, bio og'it, azot, ammofos va kaliy mineral o`g`itlar, yashil va ko`k-yashil suv o`tlari, tuproqning sho`rlanish darajasi, spora hosil qiluvchi bakteriyalar, sholi somonning qo`shib ishlatilishi, fiziologik guruhlarga kiruvchi mikroorganizmlar*

Ключевые слова: *сельское хозяйство, биоудобрение, азотные, аммофосные и калийные минеральные удобрения, зеленые и сине-зеленые водоросли, засоление почвы, спорообразующие бактерии, комбинированное использование рисовой соломы, микроорганизмы, относящиеся к физиологическим группам.*

AN INEQUALITY FOR THE COMMUTATORS OF HERMITIAN MATRICES

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Summary. *In this paper for commutators of Hermitian matrices the following statement was proved. Inequalities for commutators of operators occupies a special place in the study of derivation of operator algebra* [1].

Key words. *Hermitian matrix, square root of matrix, positively defined matrix, eigenvalues, unitary matrix.*

Given a von Neumann algebra M denote by $S(M)$ and $LS(M)$ respectively the algebras of all measurable and locally measurable operators affiliated with M. For a faithful normal semi-finite trace τ on M let $S(M,\tau)$ be the algebra of all τ-measurable operators from $S(M)$. In work [1] given a complete description of all derivations on the above algebras of operators in the case of type I von Neumann algebra M. In particular, proved that if M is of type I_∞ then every derivation on $LS(M)$ (resp. $S(M)$ and $S(M,\tau)$) is inner.

This problem is a particular case of an inequality for self-adjoint elements of type I von Neumann algebras from the paper (see the proof of Theorem 4.1 [1, Page 2939]).

Theorem. *Let A be a Hermitian $n\times n$ matrix. Prove that there exist a unitary matrix U and real number λ such that*

$$|AU-UA|\geq|A-\lambda E|,$$

where $|B|=\sqrt{B^*B}$ is the square root of the matrix B, E is the identical matrix, $X\geq Y$ means $X-Y$ is a positively defined matrix.

Proof. Since the given matrix is Hermitian there are exists real $\lambda_1, \lambda_2,\ldots, \lambda_n$ eigenvalues. Without loss of generality, we can assume that $\lambda_1\geq\lambda_2\geq\ldots\geq\lambda_n$. Since the given matrix is Hermitian, we can represent the matrix as $A=PDP^{-1}$ where $D=diag\{\lambda_1, \lambda_2,\ldots, \lambda_n\}$ be a diagonal matrix and P positively defined matrix. We divide the proof into two steps.

Step 1. In that step, we prove the inequality for D diagonal matrix. For diagonal matrix, we take the following unitary matrix

$$U_D=\begin{pmatrix} 0 & 0 & \cdots & 0 & 1 \\ 0 & 0 & \cdots & 1 & 0 \\ \cdot & \cdot & \cdots & \cdot & \cdot \\ 0 & 1 & \cdots & 0 & 0 \\ 1 & 0 & \cdots & 0 & 0 \end{pmatrix}.$$

Then

$$DU_D-U_DD=\begin{pmatrix} 0 & 0 & \cdots & 0 & \lambda_1-\lambda_n \\ 0 & 0 & \cdots & \lambda_2-\lambda_{n-1} & 0 \\ \cdot & \cdot & \cdots & \cdot & \cdot \\ 0 & \lambda_{n-1}-\lambda_2 & \cdots & 0 & 0 \\ \lambda_n-\lambda_1 & 0 & \cdots & 0 & 0 \end{pmatrix},$$

and therefore $|DU_D - U_D D| = diag\{|\lambda_1 - \lambda_n|, |\lambda_2 - \lambda_{n-1}|, \ldots, |\lambda_1 - \lambda_n|\}$. Take $\lambda = \lambda_{\left[\frac{n+1}{2}\right]}$, where $[r]$ is the integer part of real number r. Since $\lambda_1 \geq \lambda_2 \geq \ldots \geq \lambda_n$ we have that

$$|\lambda_i - \lambda_{n-i+1}| \geq |\lambda_i - \lambda|$$

for all $i = 1, 2, \ldots, n$. The last inequalities imply that

$$|DU_D - U_D D| \geq |D - \lambda E|.$$

Step 2. In that step, we prove the inequality for Hermitian matrix. Take the following unitary matrix

$$U = PU_D P^{-1} = P \begin{pmatrix} 0 & 0 & \cdots & 0 & 1 \\ 0 & 0 & \cdots & 1 & 0 \\ \cdot & \cdot & \cdots & \cdot & \cdot \\ 0 & 1 & \cdots & 0 & 0 \\ 1 & 0 & \cdots & 0 & 0 \end{pmatrix} P^{-1}.$$

Then

$$AU_H - U_H A = P(DU - UD)P^{-1} = P \begin{pmatrix} 0 & 0 & \cdots & 0 & \lambda_1 - \lambda_n \\ 0 & 0 & \cdots & \lambda_2 - \lambda_{n-1} & 0 \\ \cdot & \cdot & \cdots & \cdot & \cdot \\ 0 & \lambda_{n-1} - \lambda_2 & \cdots & 0 & 0 \\ \lambda_n - \lambda_1 & 0 & \cdots & 0 & 0 \end{pmatrix} P^{-1}.$$

Since matrix P is positively defined, we can multiply $|P|$ on left hand side and $|P^{-1}|$ on right hand side to the inequality in Step 1. Then

$$|P(DU_D - U_D D)P^{-1}| \geq |P(D - \lambda E)P^{-1}|,$$

which gives us

$$|AU - UA| \geq |A - \lambda E|.$$

The proof is complete.

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Rezyume. *Bu ishda ermit matritsalari kommutatorlari uchun quyidagi natija isbotlandi. Operatorlarning kommutatorlari uchun tengsizliklar operator algebralari differensiallashlarin o'rganishda ahamiyatli o'ringa ega [1].*

Резюме. *В этой работе для коммутаторов эрмитовых матриц было доказано следующее утверждение. Неравенства для коммутаторов операторов занимает важную роль в изучении дифференцировании алгебр оператора [1].*

Kalit so'zlar. *Ermit matritsa, matritsaning kvadrat ildizi, musbat aniqlangan matritsa, xos sonlar, unitar matritsa.*

Ключевые слова. *Эрмитова матрица, квадратный корень матрицы, положительно определенная матрица, собственные числа, унитарная матрица.*

UDK 621.

INFLUENCE OF LOW-POWER LASER PROCESSING ON THE VFC AND CVC OF SCHOTTKY DIODES Pt-n-n + GaAs

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Summary: *The influence of laser processing with small density energy on electro physical characteristics of gallium arsenide surface-barrier Pt-n-n+GaAs structures is investigated with the purpose of detection stimulate of the given processing of the effects resulting in improvement of parameters of barrier contacts. It is shown, that observed changes of barrier Shottki parameters in result of low dose laser processing has not the thermal nature.*

Key words: *laser, diods structures, Shottky barers.*

Laser treatments are widely used in scientific experiments in the formation of device structures and to study the possibility of controlling the properties of surface layers of semiconductor materials [1-3]. At the same time, the issues of structural transformations and the associated change in the electrical properties of barrier contacts subjected to pulsed laser annealing, in contrast to the free surface, have been poorly studied.

In our work, we investigated the effect of laser radiation (P = 400-1000 W/cm^2) on the electrophysical characteristics of gallium arsenide surface-barrier structures Pt-n-n + GaAs in order to detect the effects stimulated by this treatment, leading to an improvement in the parameters of the barrier contacts. The barrier diameter was ~ 1.3 mm. The concentration of the dopant in the diode structures in the n-film was $3 \cdot 10^{16}$ cm^{-3}, the film thickness was ~6 μm, the concentration of the dopant in the n + - substrate was ~$2 \cdot 10^{18}$ cm^{-3}. An ohmic contact to n + GaAs was formed using a gold - germanium eutectic followed by its gilding.

Before and after irradiation, the static current-voltage characteristics (CVC) and capacitance-voltage characteristics (CVC) of the diode structures were measured, and the parameters of the Schottky diodes, the barrier height φ_B, the ideality factor n, the saturation current I_0, and their dose dependences were determined. The measurements were carried out on a GaAs wafer with barrier contacts.

In fig. 1a, b show typical current-voltage characteristics of Pt-n-n + GaAs diode structures before and after irradiation.

From the data shown in Fig. 1 it can be seen that in the selected irradiation range, the I – V characteristics consistently improve with an increase in the radiation power. In this case, the saturation current on the forward branch of the I – V characteristic decreases, the height of the Schottky barrier increases, and the amount of excess current decreases on the reverse branch of the I – V characteristic.

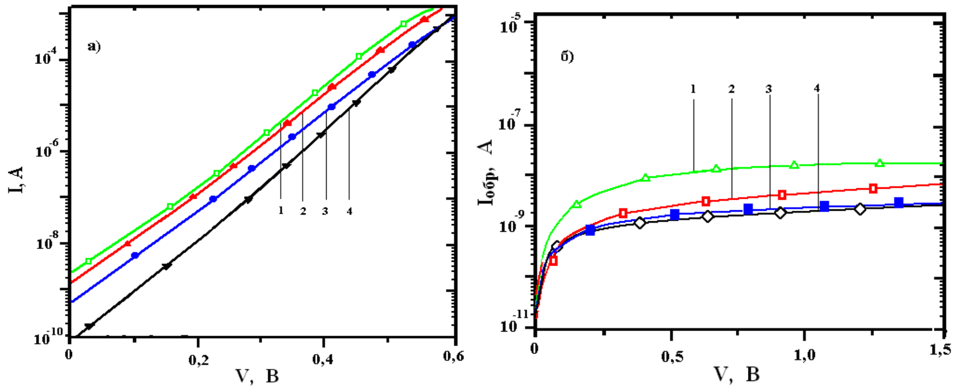

Fig. 1. Forward (a) and reverse (b) I – V characteristics of the Schottky diode Pt-n-n + -GaAs depending on the power density of the laser radiation P: 1-initial; 2-4 after P = 400, 600, 800 W/cm^2, respectively.

Analysis of the I - V characteristics of diode structures over the plate showed that in the initial state there is a significant scatter in the parameters of the Schottky barriers. As each diode was irradiated, a change in the parameters n and φ_B was observed.

In this case, individual laser treatment of the diodes made it possible to adjust the values of n and φ_B in such a way as to ensure the minimum spread of these parameters.

Table 1. Parameters of Pt-n-n + GaAs Schottky barrier diode structures before and after laser treatment

Parameters	P, W/cm^2			
	Ref.	400	600	800
ff_v, *B*	0.75	0.78	0.79	0.84
n	1.25	1.22	1.17	1.13
I_0, *A*	$2.7\cdot10^{-9}$	$1,5\cdot10^{-9}$	$6\cdot10^{-10}$	$8\cdot10^{-11}$

It can be seen from the results of the studies that the slope and the capacitance values, depending on the applied voltage and laser processing (LO) power, practically did not change, which indicates the absence of changes in the profile of the dopant concentration. Consequently, the LO can lead to an improvement in the electrophysical characteristics of Pt-n-n + GaAs diode structures without changing the concentration of the dopant in the n-GaAs layer. The best results after laser irradiation of Pt-n-n + GaAs structures are obtained in the range P = 400-800 W/cm^2.

The observed changes in the parameters of the Schottky barrier, especially an increase in the barrier height, indicate changes as a result of LO at the Pt-n-n + GaAs interface associated with the mass transfer of platinum. The probability of such a process is quite real, and the effects caused by it were observed by the authors of [4] when the Pd-GaAs contacts were irradiated by a laser with a wavelength of 1.06 μm, a pulse duration of 10-3 s in the energy density range of 20-60 J/cm^2. As a result of this treatment, a thin heavily doped n-type gallium arsenide layer is formed in the near-contact region, which is confirmed by SIMS and Auger spectroscopy data. In this case, the Schottky barrier height decreases due to the tunneling passage of carriers through a heavily doped thin n + GaAs layer formed by Pd atoms, which are shallow donors in GaAs.

In our experiment, a thin heavily doped p + -type conduction layer is apparently created in the near-contact region, due to the mass transfer of platinum, which is an acceptor impurity in GaAs [5].

$$\varphi_B^I = \varphi_B + \frac{q \cdot p_1 \cdot a^2}{\varepsilon_S} \tag{1}$$

where is the concentration of the acceptor impurity in a thin GaAs layer; is the thickness of this layer; is the dielectric constant of GaAs.

From (1) it can be seen that with the growth of the product, it will increase.

Let us estimate the increase after irradiation at P = 800 W/cm^2. In comparison with the initial value, the effective barrier height (see Table 1) increased by 0.09 V. If in (1) we put a 100 Å and, then we obtain the value observed in the experiment. The same order can be obtained if we also accept a 80Å.

We note here that the observed effect of the change in the parameters of the Schottky barrier as a result of a low-dose LO is not of a thermal nature, since the estimate of the heating of the Pt layer by laser radiation with an energy of ~ 9 × 10^{-8}J, which in our case corresponds to 10^3 W/cm^2, gives the temperature not exceeding a tenth of Kelvin units.

The formation of the p + layer and the increase in the effective height of the Schottky barrier can be explained if we assume that this effect is due to the laser-induced photostimulated mass transfer of Pt in GaAs.

Indeed, with a Pt layer thickness, the metal is partially transparent to laser radiation and light passing through the Pt-GaAs interface changes the distribution of the built-in electric field (contact field), which can cause laser-stimulated mass transfer of Pt. The photostimulated processes associated with the absorption of light in the Schottky layer are apparently not as significant as the processes at the Pt-GaAs interface, since changes in the I – V characteristic after laser exposure are associated with a change in the barrier height.

The results of studying the Pt distribution profiles in the Pt-GaAs contact before and after laser treatment confirm the possibility of Pt penetration at a distance of ~ 100 Å into the near-contact GaAs layer (Fig. 2 a, b).

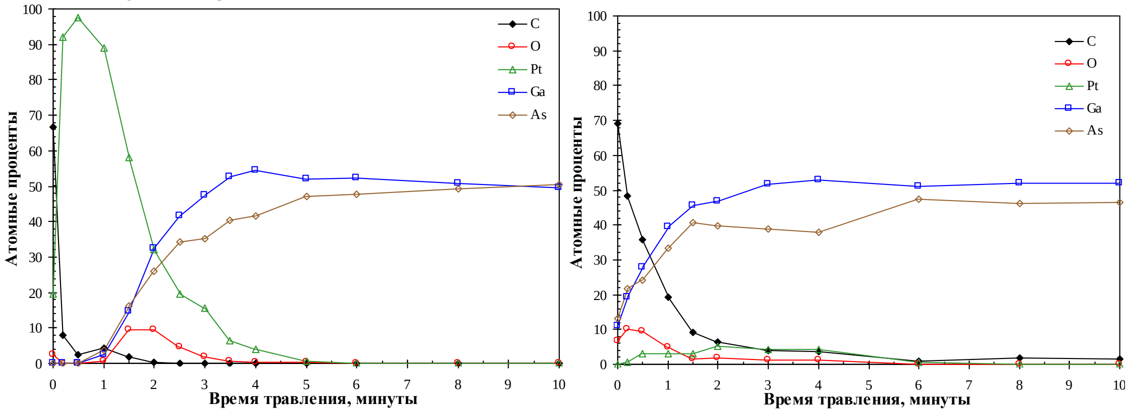

Fig. 2. Auger profiles of atomic components of the Pt-n-n + GaAs structure before (a) and after (b) LO (P≥1000 W/cm^2, τ = 20 ns, λ = 1.06 μm).

Thus, the results of our studies have shown that the change in the parameters of the Pt-GaAs Schottky barrier after a low-dose LO can be associated with the stimulated laser action of the mass transfer of Pt and the appearance, as a result, of a thin heavily doped region of p-type conductivity in the near-contact layer.

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Rezyume: *Energiya zichligi past bo'lgan lazer ishlovini arsenidgalliy sirtli-bar'er Pt-n-n+GaAs strukturalarning elektrofizik xossalarga ushbu ta'sir stimulyatsiyasi orqali bar'er kontakt xossalarini yaxshilashga olib kelish maqsadida kechayotgan jarayonlar o'rganildi. Past dozali lazer ishlovining ta'siri bar'er Shottki xossalarini o'zgarishiga olib keladi va u issiqlik tabiatga ega emasligi ko'rsatildi.*

Резюме: Исследовано влияние лазерной обработки с малой плотностью энергии на электрофизические характеристики арсенидгаллиевых поверхностно-барерьерных структур Pt-n-n$^+$GaAs с целью обнаружения стимулированных данной обработкой эффектов, приводящих к улучшению параметров барьерных контактов. Показано, что наблюдаемые изменения параметров барьера Шоттки в результате малодозовой лазерной обработки не тепловой природы.

Kalit so'zlar: *lazer, diodli struktura, Shottki bareri.*

Ключевые слова: лазер, диодная структура, барер Шоттки.

TECHNICAL SCIENCES

MATHEMATICAL MODELING OF LOGIC BLOCKCHAIN TECHNOLOGY BASED ON RSA ALGORITHM

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[2]Karakalpak State University named after Berdakh

Summary: *In this article, RSA in the formation of secure and reliable databases performing computational operations for general data groups of an asymmetric encryption algorithm a mathematical model was developed. The mathematical model is based on data generated mainly by the RSA cryptosystem information resulting from the equal distribution of information in the database block encryption, the main mechanism for calculating public and private keys can be used. The importance of blockchain technology, logical blockchain technology the basic idea of application to databases is given.*

Keywords: *Blockchain, asymmetric, cryptosystem, encryption, decryption, mathematical model, consensus, transaction, electronic digital signature, distributed register, authentication.*

Instruction. At present, technology is in the economy, especially market participants have a great influence on the interaction. Trade, property, market programming about basic economic concepts such as the interaction of participants cross-sections are changing on a large scale [1]. Transformation of business models is the transparency of all related processes and citing the need for technologies that can ensure protection produces. One such technology is blockchain - in a distributed ledger technology is a method of storing information by writing data in blocks [2].

A blockchain is a growing list of records, called blocks, that are linked using cryptography[3]. Each block contains a cryptographic hash of the previous block a timestamp, and transaction data (generally represented as a Merkle tree)[4].

By design, a blockchain is resistant to modification of its data. This is because once recorded, the data in any given block cannot be altered retroactively without the alteration of all subsequent blocks. For use as a distributed ledger, a blockchain is typically managed by a peer-to-peer network collectively adhering to a protocol for inter-node communication and validating new blocks. Although blockchain records are not unalterable, blockchains may be considered secure by design and exemplify a distributed computing system with high Byzantine fault tolerance. The blockchain has been described as "an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way[5].

The blockchain was invented by a person (or group of people) using the name Satoshi Nakamoto in 2008 to serve as the public transaction ledger of the cryptocurrency bitcoin[6]. The identity of Satoshi Nakamoto remains unknown to date. The invention of the blockchain for bitcoin made it the first digital currency to solve the double-spending problem without the need for a trusted authority or central server. The basic scheme of blockchain technology is shown in Figure 1.

Figure 1

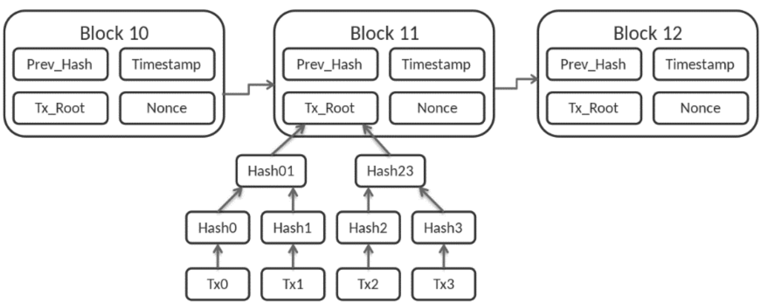

Figure 1. The working principle of blockchain technology

Logically, a blockchain can be seen as consisting of several layers[7].

- infrastructure (hardware)
- networking (node discovery, information propagation, and verification)
- consensus (proof of work, proof of stake)
- data (blocks, transactions)
- application (smart contracts/apps, if applicable)

The basis of new projects based on blockchain, according to the manufacturer's statement, is transparency, protection, security [8]. Now, we see a mathematical model based on the RSA encryption algorithm for a common database as follows.

Mathematical model. One of the issues of information protection is to ensure the reliability of data. In this study, we look at the RSA asymmetric encryption algorithm for a common database. This method of encryption allows logical blockchain systems to store large amounts of data in blocks, as we should see as an example [7]. To solve this problem, we perform the following replacement of the RSA system for large databases. The mathematical model of the problem looks like this. Suppose we are given data $M(m_1,m_2,m_3,\dots,\ m_m)$, then the following calculations are performed to perform encryption and decryption operations.

$$N = B \cdot C \tag{1}$$

In this case, $N(n_1,n_2,n_3,n_4,\dots,n_m)$ – is a set of modular numbers for open and closed switches, $B(b_1,b_2,b_3,\dots,b_m), C(c_1,c_2,c_3,\dots,c_m)$ – are vectors composed of large prime numbers. Now, we perform the substitution of equation (1) as follows

$$\begin{aligned} n_1 &= b_1c_1 \\ n_2 &= b_2c_2 \\ n_3 &= b_3c_3 \\ &\dots \\ n_m &= b_mc_m \end{aligned} \tag{2}$$

As a result of equation (2), we compute the Euler function for sets of integers.

$$\varphi(n_i) = (b_i - 1)(c_i - 1) \qquad i = 1,2,3,\dots,m \tag{3}$$

In the order of numbers in the result of calculations (2), (3) we choose the numbers $E(e_1,e_2e_3,\dots,e_i)$ from the range of sets of numbers from 1 to $\varphi(n_i)$

$$c_ie_i mod\big(\varphi(n_i)\big) = 1 \qquad i = 1,2,3,\dots,n \tag{4}$$

where $E(e_1,e_2e_3,\dots,e_i)$ is an integer (exponent). Then, as a result of the calculation of equations (4), the numbers c_i, $i = 1,2,3,\dots,n$ are calculated. We write the RSA encryption algorithm for large databases as follows

$$D_i = M_i^{E_i} mod(N_i) \qquad i = 1,2,3,\dots,m \tag{5}$$

hence,

$$\begin{aligned} d_1 &= m_1^{e_1} mod(n_1) \\ d_2 &= m_2^{e_2} mod(n_2) \\ &\dots \\ d_m &= m_m^{e_m} mod(n_m) \end{aligned} \tag{6}$$

D_i is a set of encrypted messages. Now, in equations (6), $d_1,d_2,d_3,\dots,d_m$ – are the sum of the encrypted numbers, calculates the total number of encrypted messages

$$\sum_{i=1}^{m} D_i = \left(\sum_{i=1}^{m} M_1^{e_1}\right) mod(N_i) \tag{7}$$

where, D_i is the sum of the numbers, the sum of the parts of the common encrypted text. Using equations (4), (5), (6) above, we derive the canonical equation of decryption as follows.

$$\sum_{i=1}^{m} M_i = \left(\sum_{i=1}^{m} D_1^{e_1}\right) mod(N_i) \qquad (8)$$

Thus, above (7), (8) - encryption, using the decryption equations $\{C_i, N_i\}$ is a set of private keys of the system, and $\{D_i, N_i\}$ is a set of public keys.

In the application of electronic digital signature in blockchain technology, open and closed keys are used, which are calculated as a result of equations (7), (8) above. In the application of logic Blockchain technology, a private key is used to generate digital signatures on the data in the blocks, while the public key is used to verify the electronic signature. The process of storing data in blocks is calculated based on public and private keys. In this case, the inverse calculation requires large-scale calculations.

When trying to find a private key, you will have to iterate over 2^N combinations nations, where N is the key length. Brute-force key selection [9] Even on the most modern high-performance clusters will take a long time. So, for example, with a key length of 256 bits and a password brute-force rate of 1024 per second, it will take 1.23e + 67 years. Thus, the considered method encryption used in logistic blockchain systems has a high level of security. The threat can be quantum computers with high performance compared to traditional computers, however, the use of additional protection methods (for example, blocking algorithms) solves this problem. Another important task of protecting information affecting logistic blockchain solutions is to ensure user confidence [10]. The model that ensures user trust will look like this (see Figure 2).

Figure 2

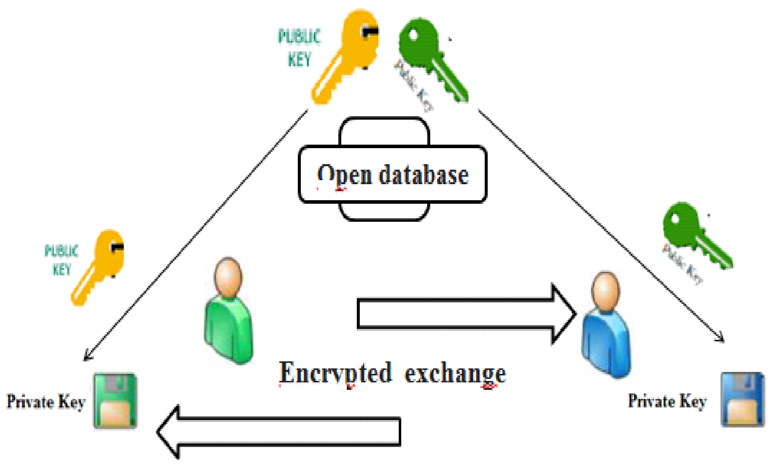

Figure 2. Model of data exchange between users

All transactions between all parties in such a network are disintegrated and decentralized at the global level. We compared blockchain technology and traditional technologies data storage in logistics systems, the results are shown in Table 1.

Table 1.

Comparison of blockchain technology and traditional data storage technologies in logistics systems

Characteristic	Blockchain technology	Traditional technologies
Data ownership	Maintenance through cryptographic keys and own cryptographic algorithms	Central governing body
Confidentiality and security	Cryptographic Authentication	Setting each line to the basis of compulsory filling from the central organ

Confidence	Through immutable records	Through the central authority
Data quality	Immutable record with an automatic technical resolution of the conflicts through consensus sous on transactions	For complex processes conflict resolution requires manual intervention
Database validity	Continuous flow	Provided only for individual copies in time
Spread data	Rapid distribution across all network notes	Through custom synchronization processes
Reliability and availability Stupidity	Peer-to-peer network for distributed data replication across all nodes	Potential single point of failure
Stored procedures	Smart contracts	Not available
Create a transaction	Available to all permitted Parties	Centralized control Organ

Thus, the use of blockchain in logistics systems solves the problems, typical of traditional database systems. The blockchain provides secure storage space for all records. Insofar as data is decentralized, the smooth functioning of the system is independent of any particular cloud provider. Since in the blockchain the technology does not allow changing the data after it has been written, they cannot be changed by the owners for personal purposes. Mathematical modeling confirms, part of the findings, in particular concerning the credibility information received and its security.

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Rezyume:. *Ushbu maqolada assimetrik shifrlash algoritmining umumiy ma'lumotlar guruhlari uchun hisoblash operatsiyalarini bajaradigan xavfsiz va ishonchli ma'lumotlar bazalarini shakllantirishda RSA matematik model ishlab chiqildi. Matematik model asosan ma'lumotlar bazasini blokirovkalashdagi ma'lumotlarning teng taqsimlanishi natijasida RSA kriptosistemasi* *ma'lumotlari asosida hosil bo'lgan ma'lumotlarga asoslanadi, ochiq va yopiq kalitlarni hisoblashning asosiy mexanizmidan foydalanish mumkin. Blockchain texnologiyasining ahamiyati, mantiqiy blokcheyn texnologiyasi ma'lumotlar bazalariga tatbiq etishning asosiy g'oyasi berilgan.*

Резюме: *В этой статье математическая модель RSA была разработана для формирования безопасных и надежных баз данных, которые выполняют вычислительные операции для общих групп данных алгоритмов асимметричного шифрования. Математическая модель в основном основана на данных, генерируемых данными криптосистемы RSA в результате равного распределения данных в блоке базы данных, может использоваться базовый механизм вычисления открытых и закрытых ключей. Важность технологии блокчейн рассматривается как основная идея применения технологии логического блокчейна к базам данных.*

Kalit so'zlar. *Blockchain, assimetrik, kriptosistema, shifrlash, parol hal qilish, matematik model, konsensus, bitim, elektron raqamli imzo, tarqatilgan registr, autentifikatsiya.*

Ключевые слова. *Блокчейн, асимметричный, криптосистема, шифрование, дешифрование, математическая модель, консенсус, транзакция, электронная цифровая подпись, распределенный регистр, аутентификация.*

ON LINEAR SUBSTITUTION OF VARIABLES AND ON SIMPLIFICATION OF EXPRESSIONS IN THE SPACE OF GENERALIZED FUNCTIONS

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Summary: *The rigorous mathematical theory of generalized functions contains the definition of a set of basic functions, the definition of continuous functional, rules for performing limit transitions, delta-like sequences, etc. Special literature is devoted to these questions, in which one can find formulations and proofs of the corresponding theorems (see, for example, the book by V.S.Vladimirov "Generalized functions in mathematical physics", I.M.Gelfand and G.E.Shilov "Generalized functions and actions on them", M.S.Agranovich "Generalized functions and Sobolev spaces", M.A.Shubin "Lectures on the equations of mathematical physics" and many others). In this article, we will look at techniques for substitution a variable in an argument of generalized function, multiplying by a local-integrable function, and simplifying expressions. The theory of generalized functions has been chosen as a mathematical apparatus. The technique of generalized functions provides a convenient apparatus for solving a number of classical problems of an applied nature. The proposed article will be useful for students of physics and mathematics, engineering and physics specialties of higher educational institutions, as well as master students, teachers of relevant universities, studying and interested in the practical application of the theory of the generalized.*

Key words: *basic functions, locally integrable functions, generalized functions, regular generalized function, $\delta-$function, linear substitution of variables*

Introduction

The importance of generalized functions in mathematics itself and its applications needs no proof. The emergence of generalized functions is associated with the names of many mathematicians and physicists. The simplest generalized function - $\delta-$the function was used by D.Maxwell (1873), O.Heaviside (1898), P.Dirac (1926). The foundations of the mathematical theory of generalized functions were laid by S.L.Sobolev (1939) and L.Schwartz (1950). The most important results in the theory of generalized functions were obtained by K.Friedrichs (1940). Further developments in the theory of generalized functions can be found in the works of I.M.Gelfand and G.E.Shilova (1959), N.N.Bogolyubov and O.S.Parasyuk (1955-1960), V.S.Vladimirov, L.Hormander, A.Zemanian, G.Bremerman (1968-1971) and others.

In modern mathematical analysis, the main mathematical tools are Sobolev spaces and the theory of generalized Schwarz functions.

Let us present some definitions and statements regarding generalized functions, which will be used in what follows [1, 3, 6].

1. Let's introduce the important space of $D.$ basic functions. We refer to the set $D = D(\mathrm{R})$ of all possible functions $\varphi(x)$, defined on the whole number line R and having the following properties:

1) each function $\varphi(x) \in C^{\infty}(R) -$ has derivatives of all orders on the whole number line;

2) for each function $\varphi(x)$ there is an interval outside of which it is equal to zero.

We denote the set of all points of x by X_{φ}, in which $\varphi(x) \neq 0$, and the closure of the set X_{φ} by $\overline{X_{\varphi}} -$, i.e. $\overline{X_{\varphi}} -$ is the union of the set X_{φ} and all of its limit points.

The set $\overline{X_{\varphi}}$ is called *the carrier of the function* $\varphi(x)$ and is denoted as

$$\operatorname{supp}\varphi(x) = \overline{X}_{\varphi} = \overline{\{x : \varphi(x) \neq 0\}}.$$

The set of basic functions, the carriers of which are contained in the given area G will be denoted by $D(G)$. In this way, $D(G) \subset D(\mathrm{R}^n) = D$.

2. Convergence in D is defined as follows. The sequence of basic functions $\varphi_1, \varphi_2, .., \{\varphi_n(x)\}$ from D converges to the function $\varphi(x)$ from D, if:

1) there is an interval $(-a, a)$, such, that $\forall n \in N$:

$$supp\varphi_n(x) \in (-a, a);$$

2) $\forall k = 0,1,2,..$ sequence of derivatives $\left\{\varphi_n^{(k)}(x)\right\}$ evenly in G converges to $\varphi^{(k)}(x)$.

The designation: $\varphi_n(x) \to \varphi(x)$ at $n \to \infty$ in space D.

The function $\varphi: R^n \to R$ is called *basic* if $\varphi(x)$ is infinitely differentiable and $supp\varphi$ is a bounded subset of G.

Let us now make it clearer that the above construction in a certain sense extends $R_{1,loc}$ — the class of locally integrable functions on the number line. This class consists of functions f that have the property

$$\forall a, b \in \boldsymbol{R}(a < b) \Rightarrow f \in R_1[a, b].$$

The inclusion $R_1(\boldsymbol{R}) \subset R_{1,loc}$ takes place.

3. The generalized function $f \in D^{/}$ corresponds to each function $f \in R_{1,loc}$ defined by the equality

$$(f, \varphi) = \int f(x)\varphi(x)dx, \quad \varphi \in D \quad . \tag{0.1}$$

The space $D^{/}$ is wider than $R_{1,loc}$, there are generalized functions that are not functionals of the form (0.1). Thus, the enclosure $R_{1,loc} \subset D^{/}$ is carried out.

4. Let's define $\delta -$ function. Any measure can be identified with a linear continuous functional on the space of continuous functions, and note that such a functional for the function $\delta(x)$ acts by the formula

$$(\delta(x), f(x)) = f(0), \tag{0.2}$$

where $f(x)$ is any function continuous on the interval, for example, $f(x) \in C_{[-1,1]}$. Consequently, *the function* $\delta(x)$ is, by definition, a functional on $C_{[-1,1]}$, contrasting the function $f(x)$ with its value at point 0.

$\delta -$ function is a mathematical expression of the density of a unit mass concentrated at the point $x = 0$. If such a mass is concentrated at the point $x = a$, we come to $\delta -$ the function $\delta(a) = \delta(x - a)$, that is defined by the equality

$$(\delta(x-a), \varphi(x)) \equiv (\delta(x), \varphi(x+a) = \varphi(x+a)|_{x=0} = \varphi(a).$$

The question arises: does locally integrable function $f \in L_{1,loc}(m.e. R_{1,loc})$ correspond to any linearly continuous functional g, i.e. is it true

$$g(\varphi) = (g, \varphi) = \int f(x)\,\varphi(x)dx?$$

The answer is negative. There is no function $f \in L_{1,loc}$ corresponding to the functional $(\delta, \varphi) = \varphi(0)$ in order to take place

$\int f(x)\,\varphi(x)dx = \varphi(0).$ Consequently, $(\delta,\varphi) \notin L_{1,loc}$.

The following statements are true.

Theorem 4.1. $\delta -$ function can be represented as a limit in the space of $D^{/}$ sequence of regular generalized functions:

$$\forall\varphi(x) \in D: \lim_{a\to 0}(\delta_a(x),\varphi(x)) = \lim_{a\to 0}\int_{-\infty}^{+\infty}\delta_a\,(x)\varphi(x)dx = (\delta,\varphi) = \varphi(0),$$

$$\lim_{a\to+0}\delta_a(x) = \begin{cases}\mathbf{0}, x \neq \mathbf{0},\\ +\infty, x = \mathbf{0}.\end{cases}$$

Theorem 4.2. Any singular generalized function can be represented as the limit in the space of $D^{/}$ sequence of regular generalized functions.

In other words, the space of generalized functions is the completion of the space of classical locally integrable functions, i.e. is obtained by adding all limit elements to the space $R_{1,loc}$ in the sense of weak convergence (in the sense of generalized functions).

5. For ordinary functions $f\colon \boldsymbol{R} \to \boldsymbol{R}$ by their very definition, we can talk about the value $f(x)$ of the function f at the point x. For the element f of the space $R_{1,loc}$, this is no longer the case ($f -$ this is a class of functions that differ from each other on a set of Lebesgue measure zero). Having chosen a function - a representative of the class, we can talk about its values in points. This understanding is also lost for generalized functions. We note, however, that with the embedding $R_{1,loc} \subset D^{/}$ considered above, on the generalized function (f,φ), it is possible to recover the value f at its points of continuity.

The space of generalized functions

Let's introduce the concept of a functional underlying the definition of generalized functions.

1. Any reflection $f : D(G) \to R$ of the space of basic functions to the set of real numbers is called *a functional*.

Definition 1. We will say that *a functional* is given on the space D if a rule is specified according to which a certain number $f(\varphi)$ is associated with each function $\varphi(x) \in D$.

The functional will also be denoted as (f,φ).

A functional f is called *linear* if for any real numbers a and b and any basic functions $\varphi_1(x), \varphi_2(x)$ from the space D there is carried out the equality

$$(f, a\varphi_1 + b\varphi_2) = a(f,\varphi_1) + b(f,\varphi_2).$$

2. We now introduce the concept of a continuous functional defined on the space D of basic functions.

Definition 2. The functional f defined on the space D is called *continuous* if for any sequence of basic functions $\{\varphi_n(x)\}$, converging to some function $\varphi(x) \in D(G)$, the numerical sequence (f,φ_n) converges to the number (f,φ).

We now formulate the central definition of this work.

Definition 3. A *generalized* function is a linear continuous functional on the space of basic functions.

The value of the functional f on an element $\varphi(x)$ of the space D, as it was said, will be denoted by (f,φ).

The collection of all generalized functions on G forms a linear space and is denoted by $D^/(G)$.

3. In the vector space $D^/$ of the generalized functions over the base space D , we give the definition of the concept of convergence.

Definition 4. The sequence $\{f_n(x)\} \in D^/$ of generalized functions is called *converging* to the generalized function $f \in D^/$ if for any function $\varphi(x)$ from the space D of basic functions the numerical sequence (f_n, φ) converges to the number (f, φ):

$$\lim_{n\to\infty}(f_n, \varphi) = (f, \varphi), \forall\varphi \in D.$$

4. Let D be the space of basic functions and let $f(x) -$ be a locally integrable function. For each function $f \in R_{1,loc}$, the equality

$$(f, \varphi) = \int_{-\infty}^{+\infty} f(x)\varphi(x)dx \ (\varphi \in D)$$

defines the generalized function f over D. Such generalized function is called *regular*.

Let's consider the Heaviside function used in mathematical physics

$$\boldsymbol{\theta(x) = \begin{cases} 0, x < 0, \\ 1, x \geq 0. \end{cases}}$$

It is locally integrable $(\theta(x) \in R_{1,loc})$, therefore, it generates a regular generalized function:

$$\forall\varphi(x) \in D: (\theta, \varphi) = \int_{-\infty}^{+\infty} \theta(x)\varphi(x)dx = \int_0^{+\infty} \varphi(x)dx.$$

The generalized function that is not regular is called *singular*.

The important example of a singular generalized function is the one $\boldsymbol{\delta(x)}$ we know. It is defined as follows (this was already in (0.2)):

$$\forall\varphi(x) \in D: (\delta, \varphi) = \int_{-\infty}^{+\infty} \delta(x)\varphi(x)dx = \varphi(0).$$

$\boldsymbol{\delta(x)} -$ is a singular generalized function.

The linear substitution of variables in generalized functions and simplification of expressions in the space of generalized functions

Here we give the definition of the operation of linear substitution of variable of generalized functions, which is known to us for ordinary functions: we will observe how an operation known to us for ordinary functions can be reformulated as an action of a regular generalized function on an arbitrary basic function, and then (already for all generalized functions, including singular ones), we will take the resulting identity as a definition.

1. Multiplication by an infinitely differentiable function. Let $f \in R_{1,loc}(\mathrm{R}^1)$ and $a(x) -$ infinitely differentiable function on the whole line R^1: $a(x) \in C^\infty(\mathrm{R}^1)$. Then $a(x)f(x) -$ locally integrable function and $\forall\varphi(x) \in D$ function $a(x)\varphi(x) \in D$. Therefore, for a regular generalized function $a(x)f(x)$, we obtain the equality

$$(af, \varphi) = \int_{-\infty}^{+\infty} a(x)f(x)\varphi(x)dx = \int_{-\infty}^{+\infty} f(x)[a(x)\varphi(x)]dx = (f, a\varphi). \quad (1)$$

So, for any regular generalized function $f \in D^/(\mathrm{R}^1)$ and for any function $a(x) \in C^\infty(\mathrm{R}^1)$, the following equality is true:

$$(af, \varphi) = (f, a\varphi), \varphi(x) \in D.$$

For singular generalized functions, equality (1) is taken as the definition of the product of the generalized function by an infinitely differentiable function. Thus, we come to the following definition.

Definition. The product of the generalized function f by an infinitely differentiable function $a(x)$ is a generalized function af acting according to the rule

$\forall\varphi(x) \in D: (af, \varphi) = (f, a\varphi).$

Example 1. To find $a(x)\delta(x)$.

Decision.

$$(a(x)\delta(x), \varphi(x)) = (\delta(x), a(x)\varphi(x)) = a(0)\varphi(0) =$$
$$= a(0)(\delta, \varphi) = (a(0)\delta, \varphi),$$

e.i. multiplying $\delta -$ function by an infinitely differentiable function $a(x)$ is equivalent to multiplying $\delta -$ function by a number $a(0)$:

$a(x)\delta(x) = a(0)\delta(x).$

Example 2. To find $cosx\delta(x)$.

Decision.

$$(cosx\delta(x), \varphi(x)) = (\delta(x), cos\,x\,\varphi(x)) = (cos\,x\,\varphi(x))(0) =$$
$$= cos\,0\,\varphi(0) = 1 \cdot \varphi(0) = \varphi(0) = (\delta, \varphi).$$

Therefore, multiplying $\delta -$ function by a function $cosx$ is equivalent to multiplying $\delta -$ function by a number $cos\,0$:

$cos\,x\,\delta(x) = \delta(x).$

2. Linear substitution of variables in generalized functions. Let $f \in R_{1,loc}(\mathrm{R}^1) -$ locally integrable in R^1 функция and $x = ay + b,\ \ a, b -$ arbitrary numbers, ($a \neq 0$) – linear transformation of the space R^1 onto itself. Then for any function $\varphi(x) \in D$ we have

$$\left(f(ay+b), \varphi(y) \right) = \int_{-\infty}^{\infty} f(ay+b)\varphi(y)\,dy. \qquad (2)$$

Let’s do the substitution of the variable in the integral $x = ay + b$. Then

$dy = \dfrac{1}{a}dx,\ y = \dfrac{x-b}{a}$ and we come to the equalities

$$\int_{-\infty}^{\infty} f(ay+b)\varphi(y)\,dy = \frac{1}{|a|}\int_{-\infty}^{\infty} f(x)\,\varphi(a^{-1}(x-b))\,dx =$$

(3)

$$= \frac{1}{|a|}\int_{-\infty}^{\infty} f(y)\varphi(a^{-1}(y-b))\,dy = \frac{1}{|a|}\left(f, \varphi(a^{-1}(y-b))\right).$$

From (2) and (3) it follows that for any regular generalized function $f(y)$ and any numbers a ($a \neq 0$) and b there is the equality

$$\left(f(ay+b), \varphi(y)\right) = \frac{1}{|a|}\left(f, \varphi(a^{-1}(y-b))\right).$$

We will take this equality as the definition of a linear substitution of variables for singular generalized functions. Thus, we introduce the following definition.

Definition. The generalized function $f(ay+b) -$ this is a functional acting according to the rule

$$\forall f(x) \in D', \ \forall \varphi(x) \in D: \ \left(f(ay+b), \varphi(y)\right) = \left(f(y), \frac{\varphi(a^{-1}(y-b))}{|a|}\right).$$

In particular,

$$\left(f(ay), \varphi(y)\right) = \frac{1}{a}\left(f, \varphi(\frac{y}{a})\right) \qquad (4) \text{ and}$$

$$\left(f(y+b), \varphi(y)\right) = \left(f, \varphi(y-b)\right). \qquad (5)$$

Using this definition for the generalized function δ by formula (4), we obtain

$$\left(\delta(ay), \varphi(y)\right) = \frac{1}{|a|}\left(\delta(y), \varphi(\frac{y}{a})\right) = \frac{1}{|a|}\varphi(0) = \frac{1}{|a|}(\delta(y), \varphi(y)), \qquad (6)$$

in other words, stretching the argument of the function $\delta(y)$ with a factor a is equivalent to multiplying $\delta(y)$ by the number $\frac{1}{|a|}$:

$$\delta(ay) = \frac{1}{|a|}\delta(y). \qquad (7)$$

Example 1. $\delta(-y) = \delta(y)$.

This follows from the calculation of the parity δ - the function and equality (7) at $a = -1$:

$$(\delta(-y),\varphi(y))=(\delta(y),\varphi(-y))=\varphi(0)=(\delta,\varphi),$$
$$\delta(-y)=\delta(y).$$

Example 2. Shifted $\delta-$ function:

$$(\delta(x-x_0),\varphi(x))=(\delta(y),\varphi(y+x_0))=\varphi(x_0).$$

3. Simplification of expressions in the space of generalized functions. Ratio

$$a(x)\delta(x-x_0)=a(x_0)\delta(x-x_0) \qquad (8)$$

is a short form of the limit ratio. Let us prove this ratio. By definition, convergence in the space of generalized functions $D^{/}$ (see Definition 4. Space of generalized functions) the ratio

$$w_\varepsilon(x)\to\delta(x),\ \varepsilon\to+0$$

in $D^{/}$ is equivalent to equality

$$\lim_{\varepsilon\to+0}\int_{-\infty}^{+\infty}w_\varepsilon(x)\varphi(x)dx=\varphi(0),\ \forall\varphi\in D, \qquad (9)$$

where

$$w_\varepsilon(x)=\begin{cases}C_\varepsilon e^{-\frac{\varepsilon^2}{\varepsilon^2-x^2}}, & |x|<\varepsilon,\\ 0, & |x|\ge\varepsilon,\end{cases}$$

where the constant C_ε is chosen from the condition

$$\int_{-\infty}^{+\infty}w_\varepsilon(x)dx=\int_{-\varepsilon}^{+\varepsilon}w_\varepsilon(x)dx=1.$$

From (9) we have

$$\int_{-\infty}^{+\infty}a(x)w_\varepsilon(x-x_0)\varphi(x)dx=\left|\text{замена}: x-x_0=y\right|=$$

$$=\int_{-\infty}^{+\infty}a(y+x_0)w_\varepsilon(y)\varphi(y+x_0)dy\underset{\varepsilon\to+0}{\longrightarrow}a(x_0)\varphi(x_0),\ \forall\varphi\in D.$$

On the other hand

$$a(x_0)\varphi(x_0)=a(x_0)\lim_{\varepsilon\to+0}\int_{-\infty}^{+\infty}w_\varepsilon(x-x_0)\varphi(x)dx.$$

Thus,

$$\lim_{\varepsilon\to+0}\int_{-\infty}^{+\infty}(a(x)w_\varepsilon(x-x_0))\varphi(x)dx=a(x_0)\lim_{\varepsilon\to+0}\int_{-\infty}^{+\infty}w_\varepsilon(x-x_0)\varphi(x)dx.$$

But this is exactly the ratio, which is briefly written in the form (8).

Example 1. Let's simplify the expression $(1+e^x)\delta(x)$.

Decision. Let $\varphi(x) \in D$, then

$$((1+e^x)\delta(x), \varphi(x)) = (\delta(x), (1+e^x)\varphi(x)) = (1+e^x)\varphi(x)\Big|_{x=0} =$$

$$= 2\varphi(0) = (2\delta(x), \varphi(x)).$$

Hence it follows that

$$(1+e^x)\delta(x) = 2\delta(x).$$

Example 2. Let's simplify the expression $x\delta(x+1)$.

Decision. Let $\varphi(x) \in D$, then

$$(x\delta(x+1), \varphi(x)) = (\delta(x+1), x\varphi(x)) = x\varphi(x)\Big|_{x=-1} = -\varphi(-1) = -(\delta(x+1), \varphi(x)).$$

Hence it follows that

$$x\delta(x+1) = -\delta(x+1).$$

Example 3. To simplify the expression $(x^2+3)\delta(x+3)$.

Decision. Let's use the equality (8):

$$(x^2+3)\delta(x+3) = (x_0{}^2+3)\delta(x-x_0)\ \Big|_{x_0=-3} = 12\delta(x+3).$$

Example 4. To simplify the expression $\delta(3x-12)$.

Decision. Let's use the formula (7):

$$\delta(3x-12) = \delta(3(x-4)) = \frac{1}{3}\delta(x-4).$$

Example 5. Is the equality true

$$\delta(2x-6y+1) = \delta(x-3y+\frac{1}{2})\text{?}$$

Decision. We will assume that the function $\delta(2x-6y+1)$ is obtained as a result of substitution of the variable $z = x-3y+\frac{1}{2}$ in the argument of the generalized function $\delta(2x)$. Since according to the formula (7) $\delta(2x) = \frac{1}{2}\delta(x)$, then we have

$$\delta(2x-6y+1) = \delta(2(x-3y+\frac{1}{2})) = \frac{1}{2}\delta(x-3y+\frac{1}{2}).$$

Thus,

$$\delta(2x-6y+1) \neq \delta(x-3y+\frac{1}{2}).$$

Conclusion

The solution of many theoretical and practical problems is closely related to both the methodological approach and the mathematical apparatus used.

The theory of generalized functions is a powerful mathematical apparatus that makes it possible to solve a wide class of problems that, generally speaking, cannot be solved by the method of classical mathematical analysis. This apparatus makes it possible to rigorously substantiate the methods used and the results obtained and make it possible to construct a general theory.

The technique that formed the basis of this work allows us to formulate the correct understanding of concepts such as basic and generalized functions, substitution of variables in generalized functions. A large number of examples are given related to generalized functions that are built from a delta function using substitutions in the argument and multiplication by a locally integrable function. The given examples give an idea of the significance of the elements of the theory of generalized functions for their decidability. The theoretical material of the article is of a reference nature and helps teachers and students in preparing for practical classes, as well as in mastering the methods of the theory of generalized functions during their independent work on the course.

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Rezyume: *Umumlashtirilgan funktsiyalarning qat'iy matematik nazariyasida asosiy funktsiyalar to'plamining ta'rifi, uzluksiz funktsional ta'rif, chegara o'tishlarini amalga oshirish qoidalari, deltaga o'xshash ketma-ketliklar va boshqalar mavjud. Ushbu savollarga maxsus adabiyotlar bag'ishlangan bo'lib, unda formulalarni topish mumkin. va tegishli teoremalarning dalillari (masalan, V.S.Vladimirovning "Matematik fizikada umumlashtirilgan funktsiyalar" kitobini, I.M.Gelfand va GEShilovning "Umumlashtirilgan funktsiyalar va ular bo'yicha harakatlar" kitobini, MSAgranovich "Umumlashtirilgan funktsiyalar va Sobolev bo'shliqlari" ni, qarang. Shubin "Matematik fizika tenglamalari bo'yicha ma'ruzalar" va boshqalar). Ushbu maqolada biz umumiy funktsiya argumentida o'zgaruvchini almashtirish, mahalliy integral funktsiya bilan ko'paytirish va ifodalarni soddalashtirish usullarini ko'rib chiqamiz. Umumlashtirilgan funktsiyalar nazariyasi matematik apparat sifatida tanlangan. Umumlashtirilgan funktsiyalar texnikasi amaliy xarakterdagi bir qator klassik masalalarni echish uchun qulay apparatni taqdim etadi. Tavsiya etilgan maqola umumlashtirilgan nazariyani o'rganadigan va qiziqtiradigan oliy o'quv yurtlarining fizika-matematika, muhandislik va fizika mutaxassisliklari talabalari, shuningdek magistr talabalari, tegishli universitetlarning o'qituvchilari uchun foydali bo'ladi.*

Резюме: *Строгая математическая теория обобщенных функций содержит определение набора базовых функций, определение непрерывного функционала, правила выполнения предельных переходов, дельта-подобные последовательности и т. Д. Этим вопросам посвящена специальная литература, в которой можно найти формулировки. и доказательства соответствующих теорем (см., например, книгу В.С.Владимирова «Обобщенные функции в математической физике», И.М. Гельфанда и Г.Е. Шилова «Обобщенные функции и действия на них», М.С. Аграновича «Обобщенные функции и* *пространства Соболева», М.А. Шубин «Лекции по уравнениям математической физики» и многие другие). В этой статье мы рассмотрим методы замены переменной в аргументе обобщенной функции, умножения на локально интегрируемую функцию и упрощения выражений. В качестве математического аппарата выбрана теория обобщенных функций. Техника обобщенных функций представляет собой удобный аппарат для решения ряда классических задач прикладного характера. Предлагаемая статья будет полезна студентам физико-математических, инженерных и физических специальностей высших учебных заведений, а также магистрантам, преподавателям профильных вузов, обучающимся и интересующимся практическим применением теории обобщенного.*

Kalit so'zlar: *asosiy funktsiyalar, mahalliy integral funktsiyalar, umumlashtirilgan funktsiyalar, muntazam umumlashtirilgan funktsiya, funktsiya, o'zgaruvchilarning chiziqli o'rnini bosish.*

Ключевые слова: *базовые функции, локально интегрируемые функции, обобщенные функции, регулярная обобщенная функция, функция, линейная подстановка переменных.*

GOALS AND OBJECTIVES OF TEACHING METHODS OF CONSTRUCTION DISCIPLINES

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Summary: *In this article is spoken about methods of the teaching constructive of discipline in professional educational college and in high educational institutions*

Keyword*: Methodology, discipline, subject, qualification, pedagogy, psychology, skill, method, engineer, construction, structures, system*

The degree of education of graduates of higher educational institutions largely depends on the methodology of teaching certain disciplines. Teaching construction disciplines together with "Psychology", "Pedagogy", forms a cycle of disciplines, the task of which is to form students in the direction of bachelor's degree and also to develop the skills and abilities of pedagogical activity.

The interconnection of construction disciplines and the possibility of using an engineer-teacher both in vocational schools and in higher educational institutions require the methodological training of this specialist of a wide profile.

In this regard, let us turn to the general issues of teaching methods of construction disciplines in vocational schools and higher educational institutions.

When teaching construction disciplines, it is very important to pay attention to a systematic approach to the organization of the educational process in the discipline.

The key issue in teaching construction disciplines is the methodology of selfless education of students in the learning process.

Currently, it is necessary to consider the methods of activating the educational work of students, developing their technical thinking and creative abilities, the implementation of which is largely based on the use of the methodology of problem learning.

In everyday practical activities, the teacher sets the goals and objectives of each lesson, determines the form of its organization, thinks over the structure of the lesson, selects educational material, establishes its connections with previously studied, outlines educational influences, selects the necessary teaching aids, maintains educational documentation. These duties are repeated every day and are common to any teacher of any discipline in a vocational school and higher education institution. Hence, we can conclude that teaching must be conducted according to certain general laws, which are established by the teaching methodology and the subject.

The concept of teaching is the activity of the teacher, learning is the activity of the student, and teaching is their joint activity.

The methodological basis of teaching methods is the theory of knowledge, which studies the general patterns, forms and methods of human comprehension of the phenomena of the surrounding world.

The teaching methodology is based on the tasks assigned to educational institutions for the preparation of diversified qualified specialists. In addition to upbringing, the tasks of modern education also include the development of students' intellect, technical thinking, and their creative abilities. In this regard, the methodology of teaching the subject should provide a scientific justification for the goals, content and principles of teaching this subject, as well as determine the effective forms, methods and means of teaching, upbringing and development of students.

Taking into account the foregoing, we can give the following definition of the methodology for teaching construction disciplines: this is a pedagogical science about the methods, organizational forms and means of teaching these subjects, as well as about the methods of education and development of students in the learning process.

The teaching methodology as an academic discipline should explain to the future teacher what and how to teach, in what sequence and why exactly this way, and not otherwise. It covers not only methods, but also the content of training, depending on the contingent of trainees.

The methodology of teaching construction disciplines unites a whole group of subjects of general technical and special cycles taught in vocational schools and higher educational institutions. In the teaching methodology of these disciplines, there are general questions that apply to all subjects of the cycle, characterizing this cycle of subjects as a whole.

These issues include the goals and objectives of the entire cycle, its importance in the training of an employee, educational opportunities, methodology, scientific foundations, etc.

Each discipline included in the cycle has its own characteristics, for example, specific methods and forms of teaching, the complex use of teaching aids.

Within one subject, one can consider general issues of the teaching methodology of the subject as a whole and the particular techniques of each section, topic, lesson, or a specific issue.

The links between teaching methods and other sciences are extensive. It is interconnected with pedagogy. Thus, the methods of teaching subjects, relying on general didactic principles, create techniques specific to their subjects. At the same time, didactics, generalizing and analyzing these methods, absorbs the truly scientific and progressive. Thus, there is a process of mutual enrichment, which determines the progress of pedagogical science as a whole.

Due to the fact that the teaching of construction disciplines by university graduates in the engineering and pedagogical specialty will be carried out in vocational schools, the methodology of teaching construction disciplines should be closely related to professional pedagogy, which has recently been dynamically developing along with the wide development of vocational education systems in the country. ... The teaching methodology is closely related to the content of the taught discipline. This discipline imparts characteristic, specific features to teaching methods. Hence it follows that the teaching methodology cannot be the same for all academic disciplines.

In the development of methods, organizational forms and the choice of teaching methods, the teaching methodology is based on the scientific achievements of psychology and logic in the field of such important issues for modern vocational education as the development of technical thinking, the creative abilities of students.

In addition to the main links with pedagogy, psychology and building science, teaching methods in vocational schools are based on the achievements of modern sociology-science about the functioning and development of society and, in particular, on the specific developments of sociologists on the problems of youth, its vocational guidance.

The study of teaching methods creates the foundation of pedagogical excellence in future engineers-teachers.

Pedagogical excellence is a system of professional techniques used by a teacher to transfer knowledge of a given subject to a student, depending on his personal qualities, abilities, will and character. This skill is formed in the process of pedagogical activity, in the course of persistent and purposeful efforts of the teacher.

Conventionally, five levels of pedagogical skill can be distinguished. The first reproductive level of a novice teacher is a simple retelling of his subject as it is presented in the textbook without taking into account the composition of the students. The second level of mastery is adaptive, in which the teacher presents material in relation to the composition of the students, feels the mood of the audience, has contact with it, that is, he is able to realize his knowledge in the fields of psychology and pedagogy. The third level of mastery is defined as locally forming knowledge, when the teacher can form students' knowledge, abilities and skills on specific topics. Some experience of his creative pedagogical work is already manifested here. The fourth level is systematically forming knowledge, abilities and skills in a given discipline, when the teacher has a personal conviction and the need to teach, is able to form a system of knowledge in his subject for students. He is characterized by a sense of high responsibility for the results of his work and he sees his discipline as a whole. The fifth highest level of pedagogical excellence is systematically shaping the activities and behavior of students. This mastery is the result of the teacher's deep knowledge of psychology, pedagogy, methodology and his subject.

A highly qualified teacher conducts classes at a high ideological and theoretical level with a great educational impact on students, manages their work, while applying effective methods for this group.

The formation of a high level of pedagogical skill among teachers of construction disciplines is a long and painstaking process. The personal efforts of the teaching engineer are critical here. In order to achieve a high level of pedagogical skill, a future engineer-teacher from his student days must develop in himself pedagogical observation and the ability to organize the educational process.

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Резюме: *Ushbu maqolada kasb-hunar maktablari va oliy o'quv yurtlarida qurilish fanlarini o'qitish metodikasi haqida suz boradi.*

Резюме: *В этой статье говорится о методике преподавания строительных дисциплин в профессионально образовательных школах и в высших учебных заведениях*

Ключевое слово: *Методика, дисциплина, предмет, квалификация, педагогика, психология, мастерство, метод, инженер, строительсто, сооружения, система*

Калит сўзлар: *Metodika, fan, mavzu, malaka, pedagogika, psixologiya, mahorat, usul, muhandis, qurilish, tuzilmalar, tizim*

SOCIAL SCIENCES

THE CONCEPT OF A HEALTHY LIFESTYLE

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Summary: *A healthy lifestyle is a typical set of forms and ways of everyday cultural life activity of the individual, based on cultural norms, values, meanings of activity and strengthening the adaptive capabilities of the body. In recent years, intensified attention to a healthy way of life, this is due to the concern of society about health professionals, produced by the graduate school, the spread of the disease in the process of training, subsequent reduced efficiency. It is necessary to clearly understand that there is no healthy lifestyle as a special form of life outside of the lifestyle as a whole.*

Key words: *Physical training, muscle, improving health, Physical strength, the complex of physical exercises.*

A healthy lifestyle is a typical set of forms and ways of everyday cultural life of an individual, based on cultural norms, values, and meanings of activity and strengthening the adaptive capabilities of the body. In recent years, intensified attention to a healthy way of life, this is due to the concern of society about health professionals, produced by the graduate school, the spread of the disease in the process of training, subsequent reduced efficiency. It is necessary to clearly understand that there is no healthy lifestyle as a special form of life outside of the lifestyle as a whole. [2.6]

A healthy lifestyle reflects the generalized typical structure of human life forms, which is characterized by the unity and expediency of the processes of self-organization and self-discipline, self-regulation and self-development, aimed at strengthening the adaptive capabilities of the body, full self-realization of their essential powers, talents and abilities in General cultural and professional development, life in General. A healthy lifestyle creates such a socio-cultural microenvironment for the individual, in which conditions there are real prerequisites for high creative dedication, efficiency, labor and social activity, psychological comfort, the most fully revealed psychophysiological potential of the individual, the process of self-improvement is updated. In conditions of a healthy lifestyle, responsibility for health is formed in a person as part of General cultural development, manifested in the unity of style features of behavior, the ability to build yourself as a person in accordance with your own ideas about a full-fledged spiritual, moral and physical life. The content of a healthy lifestyle reflects the result of the spread of individual or group style of behavior, communication, organization of life, fixed in the form of samples to the level of traditional. The main elements of a healthy lifestyle are: compliance with the regime of work and rest, food and sleep, hygiene requirements, the organization of individual appropriate mode of motor activity, rejection of bad habits, culture of interpersonal communication and behavior in the team, culture of sexual behavior, meaningful leisure that has a developing effect on the individual. By organizing their life activities, the individual brings order to it, using some stable structural components. [28.36]This can be a certain mode, when a person, for example, regularly eats at the same time, goes to bed, does physical exercises, uses tempering procedures. The sequence of life forms can also be stable: after the school week, one day off is devoted to communication with friends, another to household chores, and the third to physical training. These characteristics of a healthy lifestyle are stable in relation to the constantly changing, numerous influences of the human environment. They form a kind of barrier that protects it from the need to constantly respond to the variety of judgments, opinions, assessments, and requirements that exist around it. Within these boundaries, a person is free to regulate their actions, to try out new patterns of behavior. On the one hand, stable and repetitive components of life activity are addressed to the individual, related to his individual preferences, on the other hand, they are not his invention, but are formed and acquire cultural significance in the process of people's communication, in the course of their daily practice. [55.61]

A healthy lifestyle is characterized by a focus that is objectively expressed in what values it produces, what social needs it meets, and what it provides for the development of the individual. Between the real lifestyle and they generated a system of subjective relations there are contradictions in the resolution process which is changing, developing and improving lifestyle, the system of relations in it. It is important not only how a person lives, but also what he lives for, what he is proud of and what he fights against. Thus, a healthy lifestyle acquires an evaluative and normative [9] понятие concept. A healthy lifestyle largely depends on a person's value orientation, worldview, social and moral experience. Social norms and values of a healthy lifestyle are accepted by people as personally significant, but they do not always coincide with the values developed by the public consciousness. Thus, in the process of accumulation of social experience by a person, there may be a disharmony of cognitive scientific and everyday knowledge, psychological (formation of intellectual, emotional, volitional structures), socio-psychological (social orientations, value system), functional (skills, abilities, habits, norms of behavior, activities, relationships) processes. Such disharmony can cause the formation of asocial personality traits. Therefore, in higher education it is necessary to ensure a conscious choice of social values of a healthy lifestyle by a person and to form on their basis a stable, individual system of value orientations that can provide self-regulation of the individual, motivation of his behavior and activities. A person with a high level of personal development is characterized not only by the desire to know himself, but also by the desire and ability to change himself, to change the microenvironment in which he is located. Through active self-change, the personality forms its way of life. [76.80] Self-awareness, taking into itself the experience of individual achievements in various activities, checking physical and mental qualities through external activities, communication, forms a complete picture of a person about himself. At the same time, the structure of self-consciousness includes ideals, norms, and values that are inherently social. They are appropriated by the personality, become its own ideals, values, norms, part of the core of the personality — its self-consciousness.

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Rezyume: *Sog'lom turmush tarzi - bu madaniy me'yorlar, qadriyatlar va faoliyatning ma'nolariga asoslangan va tananing moslashish qobiliyatini kuchaytirishga asoslangan insonning kundalik madaniy hayotining shakllari va usullarining oddiy to'plami.So'nggi yillarda odamlarning sog'lom turmush tarziga e'tibor kuchaytirilmoqda, bu jamoatchilikning salomatlik haqidagi tashvishi bilan bog'liq. oliy ma'lumotni tamomlagan mutaxassislar, kasbiy tayyorgarlik jarayonida kasallar sonining ko'payishi va ish qobiliyatining pasayishi. Sog'lom turmush tarzi umuman yo'qligini aniq anglash kerak.*

Резюме: *Здоровый образ жизни - типичная совокупность форм и способов повседневной культурной жизнедеятельности личности, основанная на культурных нормах, ценностях, смыслах деятельности и укрепляющая адаптивные возможности организма.В последние годы активизировалось внимание к здоровому образу жизни человеков, это связано с озабоченностью общества по поводу здоровья специалистов, выпускаемых высшей школой, роста заболеваемости в процессе профессиональной подготовки, последующим снижением работоспособности. Необходимо отчетливо представлять, что не существует здорового образа жизни как некой особенной формы жизнедеятельности вне образа жизни в целом.*

Kalit so'zlar: *Jismoniy tarbiya, sog'liqni saqlash, mushaklar, jismoniy kuch, jismoniy mashqlar to'plami.*

Ключевые слова: *Физическое воспитание, укрепление здоровья, мышцы, физическая сила, комплекс физических упражнений.*

WORK-REST REGIME

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Summary: *Understanding the importance of a well-organized work and rest regime is based on the laws of biological processes in the body.*

A person, observing the established and most appropriate mode of life, better adapts to the flow of the most important physiological processes. It is necessary to lead a well-organized lifestyle, observe a constant regime in educational work, rest, nutrition, sleep, and exercise. With the daily repetition of the usual way of life, the relationship between these processes is established fairly quickly, fixed by a chain of conditioned reflexes.

Key words: *Physical training, muscle, improving health, Physical strength, the complex of physical exercises.*

Understanding the importance of a well-organized work and rest regime is based on the laws of biological processes in the body.

A person, observing the established and most appropriate mode of life, better adapts to the flow of the most important physiological processes. It is necessary to lead a well-organized lifestyle, observe a constant regime in educational work, rest, nutrition, sleep, and exercise. With the daily repetition of the usual way of life, the relationship between these processes is established fairly quickly, fixed by a chain of conditioned reflexes.

The daily routine is the normative basis of life for all people. At the same time, it must be individual, that is, meet specific conditions, health status, level of performance, personal interests and inclinations of the person. It is important to ensure the constancy of a particular type of activity within a day, without allowing significant deviations from the specified norm. The mode will be real and feasible if it is dynamic and built with unforeseen circumstances in mind. [18.22]

How can I develop a science-based daily routine? First, it is necessary to analyze the costs of educational, extra-curricular and free time in accordance with the given hygiene standards. According to them, the daily budget of a person's time consists of two halves: 12 hours of training sessions (6 hours of classroom and 4 hours of self-study) and 12 hours devoted to the recovery of the body (sleep, rest, self-service) and personal development (interest classes, social activities, household and friendly communication, physical culture and sports). Sundays contain 12 hours of reserve time (instead of time spent on educational activities). Then you should distribute the different activities within a specific day, establish a constant sequence and correct alternation of work and rest, the General daily routine, depending on the shift and training schedule.

1.Sleep pattern

Sleep is a mandatory and most complete form of daily rest. For a person, it is necessary to consider the usual norm of night monophasic sleep 7.5-8 hours. the Hours intended for sleep can not be considered as a reserve of time, which can often be used with impunity for other purposes. This is usually reflected in the productivity of mental work and psycho-emotional state. Erratic sleep can lead to insomnia and other nervous disorders.

Strenuous mental work must be stopped 1.5 hours before going to bed, since it creates closed cycles of excitation in the cerebral cortex, which are characterized by great resistance. Intensive brain activity continues even when the person has finished practicing. Therefore, mental work performed just before bedtime makes it difficult to fall asleep, leads to situational dreams, lethargy and poor health after waking up. Before going to bed, you need to ventilate the room, and even better, sleep with the window open. [28.32]

For people with little sleep, 5-6 hours of sleep is enough for good health and high performance. These are usually people who are energetic, actively overcoming difficulties, and do not hold too much attention to unpleasant experiences. People who sleep a lot need 9 hours of sleep or even more. These are mainly people with high emotional sensitivity.

The most common sleep disorder, when a person sleeps little and poorly, is called insomnia. Sometimes they do not allow you to fall asleep: a person is overwrought or disturbed. Such insomnia is called situational. It usually passes along with the disappearance of the causes of concern or conflict. It happens that a crisis situation passes, but leaves the bad habit of "trying too hard to fall asleep". It can cause a backlash — the development of persistent insomnia from fear of insomnia. The cause of persistent sleep disorders can be sedatives and sleeping pills, if they are taken for a long time. Sleeping pills turn off the sleep mechanism, break and reshape its phases. [68.72]

2.Eating pattern

Food culture plays a significant role in shaping a healthy lifestyle. Everyone can and should know the principles of rational nutrition, regulate the normal weight of their body. Rational nutrition is a physiologically complete meal by people taking into account gender, age, nature of work and other factors. Nutrition is based on the following principles: achieving energy balance; establishing the correct ratio between the main food substances-proteins, fats, carbohydrates, between vegetable and animal proteins and fats, simple and complex carbohydrates; balance of minerals and vitamins; rhythm of food intake.

Food is a source of energy for all body systems and tissue renewal. Part of the energy goes to basal metabolism required to sustain life in a state of peace (for men weighing 70 kg, he is averaging 1700 kcal; women 5 — 10% below); energy demands for digestion be about 200 calories, or 10 — 15%; about 30 — 40% of the energy is spent on ensuring the physical and professional activity. On average, the daily energy consumption of young men is 2700 kcal, girls-2400 kcal. The energy demand of the population in the Northern zones is higher than in the Central zone, by 10 — 15%, [16] in the southern zones, it is 5% lower. [98.100]

The caloric content of the diet for 1400-1600 kcal is provided by carbohydrates (350-450 g), 600 — 700 kcal by fat (80 — 90 g) and 400 kcal by protein (100 g). Of the total number of carbohydrates, the proportion of sugar should not exceed 25%. It is desirable that at least 30% of carbohydrates are provided by potatoes, vegetables, and fruits. It is advisable to provide the fat part of the diet with 1/4 butter, 1/4-vegetable, and 2/4-due to the fat contained in the food itself. The amount of animal protein should be 50-60% of its daily value, half of which is provided by dairy products.

During the examination sessions, when energy costs increase, the breakdown of proteins increases, so that the energy value of the diet increases to 3000 kcal, and the consumption of proteins to 120 g.

In the process of regular exercise and sports, depending on its types, energy consumption increases to 3500-4000 kcal. In this regard, the ratio of basic food products is changing. Thus, when performing sports exercises that help increase muscle mass and develop strength, the diet increases the protein content (16-18% in calories). With long-term endurance exercises, the carbohydrate content increases (60-65% in calories). During the competition, it is advisable to include easily digestible foods rich in proteins and carbohydrates in the diet. In addition, there is an increasing need for vitamin and above all (per 1000 kcal) ascorbic acid (35 mg), theamine (0.7 mg), Riboflavin (0.8 mg), Niacin (7 mg), tocopherol (5 mg). [28.30]

The body's need for water corresponds to the amount of fluid it loses. Water makes up an average of 66% of our body. Under normal conditions, a person loses an average of 2300-2800 ml of water per day. The water requirement is 35-45 ml per 1 kg of body weight. Under normal conditions, the body's need for water is partially met by the intake of solid food (on average 800 — 1000 ml/day) and oxidation water (formed in the body itself during the oxidation of proteins, fats and carbohydrates-350-480 ml/day). Therefore, to fully meet the body's need for water, it is necessary to consume an additional 1200-1500 ml of the so-called free liquid (tea, milk, water, compotes, soups, juices, etc.). The lack of water contributes to the accumulation of breakdown products of proteins and fats in the body, and the excess-leaching of mineral salts, water-soluble vitamins and other necessary substances from it.

An important aspect of food culture is the diet and the distribution of calories during the day. There are three points of view on this issue. The first value is the maximum Breakfast. 40-50% of the daily caloric intake should fall on the morning meal, about 25% remains for lunch and dinner. This is due to the fact that most people have higher body activity in the first half of the day and a hearty Breakfast is more suitable for them. The second point of view is related to the uniform distribution of the load by caloric content with three or four meals a day (30% for Breakfast and dinner, 40% for lunch). This distribution of calories is often recommended for any diet. The third approach is related to the maximum dinner (about 50% of the daily calorie content is for dinner and 25% for Breakfast and lunch). This means that you should have dinner no later than 18-20 hours and at least 2-3 hours before bedtime. This position is explained by the fact that the maximum allocation of gastric juice and enzymes falls on 18-19 hours. In addition, to protect against the evening accumulation of metabolic products, nature has "provided" an evening maximum of kidney functions, which provides rapid excretion of toxins in the urine. Therefore, this food load is also rational. [48.52]

The diet should be approached strictly individually. The main rule is to eat fully at least 3-4 times a day. Choosing a particular food regime, strictly observe it, because sudden changes in nutrition, food stress, are not indifferent to the body. Systematic violations of the diet (eating dry food, rare or abundant, disorderly meals) worsen the metabolism and contribute to the emergence of diseases of the digestive system, in particular gastritis, cholecystitis.

When doing physical exercises, sports, take food for 2-2.5 hours before and after 30-40 minutes after their completion. With motor activity associated with intense sweating, you should increase the daily rate of consumption of table salt from 15 to 20-25 g. it is Useful to use mineral or slightly salted water.

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Rezyume: *Sog'lom turmush tarzi yomon odatlarga mos kelmaydi. Spirtli ichimliklar, giyohvand moddalar, tamaki mahsulotlarini iste'mol qilish odamlarning sog'lig'iga salbiy ta'sir ko'rsatadigan ko'plab kasalliklar uchun eng muhim xavf omillaridan biri hisoblanadi.Shuning uchun ichadigan erkaklar ruhiy kasalliklar, jigar va nafas olish organlari kasalliklaridan 2,5 baravar ko'proq; ko'pincha ayollarda tug'ma anomaliyalari bo'lgan bolalar bor. Spirtli ichimliklar giyohvandlik ta'siriga ega; ushbu moddalar guruhiga xos bo'lgan barcha xususiyatlarga ega.*

Резюме: *Понимание важности хорошо организованного режима труда и отдыха основано на закономерностях протекания биологических процессов в организме.*

Человек, соблюдая устоявшийся и наиболее целесообразный режим жизнедеятельности, лучше приспосабливается к течению важнейших физиологических процессов. Необходимо вести четко организованный образ жизни, соблюдать постоянный режим в учебном труде, отдыхе, питании, сне и заниматься физическими упражнениями. При ежедневном повторении обычного уклада жизни, довольно быстро между этими процессами устанавливается взаимосвязь, закрепленная цепью условных рефлексов.

Kalit so'zlar: *Jismoniy tarbiya, sog'liqni saqlash, mushaklar, jismoniy kuch, jismoniy mashqlar to'plami.*

Ключевые слова: *Физическое воспитание, укрепление здоровья, мышцы, физическая сила, комплекс физических упражнений.*

STUDY OF THE KHOREZM EXPEDITION OF THE MATERIAL CULTURE OF THE APASIAKS

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Summary: *The ancient history of the Karakalpaks is one of the most pressing issues in historical science. Since the last century, much attention has been paid to the study of the ancient history of the Karakalpaks and the origins of their way of life and culture. The materials of the Khorezm archaeological and ethnographic expedition are of great significance in studying the ethnogenesis of the Karakalpaks.*

Keywords: *Apasiak, Khorezm Archaeological and Ethnographic Expedition, Dzhanbas-kala, Toprak-kala.*

In 1945 the Khorezm Expedition (headed by S.P.Tolstov, deputy headed by Y.G.Gulyamov), organized by the institutes of History of Material Culture and Ethnography of the USSR Academy of Sciences with the participation of Faculty of History of MSU, Academy of Sciences of USSR and Karakalpak Research Institute, worked for 4 months (August - November) in one archaeological and 3 ethnographic detachments (two for the study of Karakalpaks - headed by T. A.A.Zhdanko and A.S.Morozova, and one for studying Ural Cossacks of the Delta, headed by E.E.Blomquist).

Archaeological work of the expedition developed in three directions:

1) The study of monuments of the primitive culture of Khorezm in the area of Dzhanbas-kala and along the route Dzhanbas-kala - Toprak-kala was made. There were 11 new sites discovered near Dzhanbas-kala, including several sites belonging to the new culture of Late Bronze Age, which we named Su-Yarganskaya. The excavations of Dzhanbas-kala №4, a Neolithic site, and Dzhanbas-kala №6, a site of Su-Yargan culture, were completed.

2) Reconnaissance excavations of antique settlement Toprak-kala were continued (2 excavations were made in the upper ground of the castle palace of the town. 3) Reconnaissance survey of the north-eastern outskirts of Karakalpakstan, between Takhtakupyr and lower course of Syr-Darya river was started. Here were discovered, besides several Bronze Age sites, two complexes of late antique monuments: Kurgancha-kala and "Barak-Tam" [1].

S.P. Tolstov classifies the tribes of the Massaget confederation in the following order: khorasmiya and apasiaki ("water Sakas") - along the northern borders of Khorezm, from Uzboy to Janydarya - correspond to Strabo's "Massagetes of the swamps"; sakaravaki (Saka-haumavarga, amurgi) - from southeastern borders of Khorezm to Nura-tau mountains - correspond to "Massagetes of mountains and plains"; Derbiks - middle Amu Darya, between present Turkmenabat and Bukhara; Tokhars (dakhi) - Kuwandarya, asiyas (yatiyas, asiyans, usuns, yaksarts) - middle Syr Darya from present Turkestan town to Tashkent and further to the east; atasiyas (augasy, augaly) - location is not clear [2, 234].

S.P.Tolstov noted that Achaemenid inscriptions do not know at all about Massagetes, to whom so much attention is given by antique authors. And since Ctesias, using the direct Persian information, transfers the legends about events connected by Herodotus with Massagetes, to the Amyrgian Scythians ("Scythians of the king Omarg"), there is every reason to assume, that Achaemenid Persians knew Massagetae by different names, not using the collective name known to Greeks, apparently from the European Scythians, and the saka haumavarga, probably the most significant of the Massagetae tribes, is in the foreground of the inscriptions. The Bactrian Greeks, who also had more than close contact with the Massagetae tribes, could write about each of them individually, like the authors of the Achaemenid inscriptions, while the Chinese of the II c., like the Greeks in the time of Herodotus, knew them under a collective name of "Great Getae" [2, 243].

According to G. Tarn, following basically J. Hermann, in the Massagetian confederation consisted of five tribes - the Derbikes, the Augasii or Augalis, the Attasii, the Apasiaks and the Horasmians. "For the most part we can accept these provisions with some refinements," notes S.P.Tolstov. - First, the Sakarawaks and Tokhars should take first place in this list. Secondly, the Horasmians can hardly be considered a tribe, rather a result of the merger of various Massagetian tribes, and probably first of all of the Sakaravaks, drawn into the system of the Khorezmian statehood. Thirdly, probably Y.Hermann is right in the identification of Athasii and Augasii. Fourthly, a variant of the name Apasiacs is a name of Strabo's Pasian. Fifth, to the mentioned by Hermann variants of the Derbic name should be added Ptolemy's mentioned Drybaktos ("over the Sogdian mountains") and Drepsians to the east from the Horasmian and the names of towns, apparently of ethnic origin, Drespa and Tribaktru located in the Zeravshan and Kashkadarya delta area. Finally, apparently, in addition to the five main tribes that formed the base of the confederation, it included numerous smaller tribal units, probably the splinters of larger, older tribes, and sometimes subdivisions of the five main ones. These are the Oksidrani (beyond Sughd mountains), Oksiani, neighbours of Khorasmians, Aristaeans of the Lower Yaksart and Kirrdeans near Ox, Napastes, neighbours of the Sakaravaks, and finally, Ribians near Ox and Mards near the Ox River, near the Apasian [2, 244].
The identity of Pasiks and Pasians and Apasians, in the opinion of S.P.Tolstov, is beyond doubt, and the identity of Yatians and Asians is very probable.

The name Massagetes A.Tomasek, and after him W.Markwart tried to etymologize (in connection with the characteristic given by Strabo) as "fish-eaters", from the Avest. masyo="fish", hence masyaka~masyaga with an Ossetic plural suffix. S.P.Tolstov noted that essentially this hypothesis is at the level of 'folk etymology' [1].

The ancient Khorezmian civilization was created in big Khorezm oasis irrigated by the Amu Darya waters for ages, and was linked to a settled population, which had highly developed irrigation, landraising culture, cities and statehood. And the early and medieval ancestors of Karakalpaks are considered nomadic and semi-settled tribes of the steppe periphery of Khorezm states, the inhabitants of the Aral Sea steppes; they were pastoralists, who were partly farmers and possessed primitive irrigation techniques.

But we must not forget that one of the main features of Central Asia and Kazakh history is the historically developed interaction between the population of oases and steppe and the mutual influence of pastoral nomads and farmers. These economic, cultural and, often, ethnic ties are manifested throughout the history of present-day Karakalpakstan and are reflected in the ethnographic character of its peoples who have long lived in the area where ancient Khorezm civilization centres and whose monuments have survived in the sands of the Kyzylkum desert were once located. Archaeological evidence confirms that the ancestors of the Karakalpaks, who inhabited the Aral Sea steppe, were involved in shaping the Khorezm culture. In Central Asia as a whole, there have been very close and varied links between nomads and farmers since times immemorial.

In the Central Asian region, the historical role of semi-nomads was also very important. There were semi-nomads and semi-settled populations of two historically established types: one were settled nomads, and the other were those groups of semi-settled tribes which never became nomads.

Since ancient times, since the Bronze Age, they traditionally had a complex economy, pastoral-agricultural, and in some areas, such as the deltas of Amu Darya and Syr Darya, also fishery. This economic and cultural type was identified by S. P. Tolstov on the basis of archaeological materials, and ethnographic research convincingly proves that the Karakalpaks, like many of their ancestors from the ancient and medieval times, are its characteristic representatives.
On the territory of Uzbekistan, not far from Urgench, in the Amu Darya delta, on the river bank in 1939, a settlement was found of a man who lived there at the turn of the fourth and third millennium B.C. 18 such settlements were discovered, and all of them were named by Tolstov, who discovered them, the Celteminaric culture.

The Tazabaghyab culture of Late Bronze Age tribes (second half of the 10th and early 1st millennium BCE) spread along the Akchadarya delta in the lower reaches of the Amu Darya. The main occupation of the Tazabagyab tribes was farming with primitive irrigation and cattle breeding. The southern Akchadarya delta in the lower reaches of the Amu Darya was the site of the Suyurgan culture, dating from the Bronze Age. There are two stages in the development of the Suyurgan culture: early (Kamishli) and late (Kaunda). The Suyurgan sites are mainly located along the banks of river channels.

The Suyurgan culture was replaced in Khorezm by the Amirabad culture of the Late Bronze Age from the beginning of the 1st millennium B.C. Irrigated farming was the main occupation. The settlements were located along the channels of quite large canals [5].

Apparently, already in the beginning of the 1st millennium B.C. there were confederations, probably based on the principles of military democracy, with an elected king or queen, such as Tomiris or Zarina. The culture of the Saks of the Aral Sea area reached its peak in the 1st-3rd centuries B.C. The most outstanding monuments of that period are the early Sak burial mounds of Uigarak and South Tagisken. Beautiful examples of fine art have been found here. These are images of animals on horse trappings, gold plaques and covers. All works of art found in the mounds of Tagisken and Uigarak include Saks of the Aral Sea Region in the area of the "Scythian animal style". The funeral implements of the Saks of the Aral Sea region often find direct analogies in Savromatian burials of the Southern Urals, Sak of Central Kazakhstan and burials of early nomads of Southern Siberia and the Altai. Finally, the remarkable samples of bronze and gold items made in the Scythian animal style include Sak Priaralie in a vast Istrian-cultural area that covers a vast territory from Central Asia in the West to Central Asia in the East [7].

The civilization of ancient Khorezm is one of the most original and brightest in Central Asia. Its territory hosts such outstanding monuments as the Koy-Krylgan-kala, Toprak-kala, Ayaz-kala, etc. The Khorezm civilization emerged as a distinctive, original riverine agricultural and irrigation civilization. The remains of the ancient agricultural culture of Khorezm in the middle of the first millennium B.C. occupy 2.5 million hectares in the form of ruins of settlements, canals, etc. The process of formation of the Karakalpak nation from various ancient and medieval tribes and peoples took place on the territory of the Aral Sea region and was closely connected with the ethnogenesis of other Turkic-speaking peoples of Central Asia, primarily the Kazakhs and Uzbeks. The most ancient of the tribes which, most probably, took part in the ethnogenesis of the Karakalpaks were the Apasiaks, the Augasyks and some other tribes of the Sako-Massagetian confederation mentioned by ancient authors on the southern shores of the Aral Sea in the first centuries B.C.

Archaeological excavations of the cultural monuments of these tribes, conducted in recent years by the Khorezm Expedition of the USSR Academy of Sciences, have helped to identify the distinctive features of their economic life and some elements of their material and spiritual culture. The Apasians were engaged in agriculture, stockbreeding, fishing and crafts (pottery, smithery, jewellery, etc.). Crops were grown not only in the wetlands of the Syr Darya and Amu Darya deltas, but also in drier areas irrigated by canals. Along with the remains of temporary nomadic dwellings, archaeologists found semi-settled rural settlements of the Apasiaks, fortified urban settlements (Chirik-Rabat, Babish-Mulla, Balandy), burial mounds and majestic funerary structures made of mud bricks and pakhsa [3].

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Some works of Karakalpak epos (epic poem Kyrk kyz) have still retained traces of archaic traditions of this remote epoch, such as remnants of matriarchy, and ancient customs and beliefs so typical of the Sako-Massagetaean tribes [4].

On the ethnic basis of the Saka-Massagetae tribes, as a result of their partial mixing with the Huns, who came to the Aral Sea steppe from the east (end of the 2nd century BC - 4th century AD), and then the Turks (6th - 8th centuries AD), formed the early medieval peoples of the Aral Sea area, the Pechenegs and Oguzes. It is proved that these ethnonyms have continuity with the names of ancient Apasiaks and Augasiaks. This continuity is observed in the economy and culture of Augasians and Oguzes during the archaeological study of their sites located on the Aral Sea coast, between the mouths of the Syr Darya and nowadays dried up Kuvandarya. Just as Saka-Masaget tribes were associated with the population and culture of powerful states emerging on the territory of ancient Khorezm, so medieval Oguzes and Pechenegs were under strong political influence of Khorezm and Khorezm civilization, preserving at the same time the distinctiveness of complex pastoral, fishing and farming culture and semi-sedentary lifestyle [6].

In the ethnogenesis of the Pechenegs, in comparison with the Oguzes, a greater role played Ugrian elements, the tribes of the Urals, who later joined Bashkir and other peoples, the language of the Pechenegs was close to Bulgars and Suvars, ancient Turkic languages, and differed from more developed Türkic - Oguzes. Thus, the materials of the Khorezm expedition are valuable sources on the ethnogenesis of the Karakalpaks.

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Rezyume: *Tashkilot materiallari va S.P.Tolstov boshchiligidagi Xorazm arxeologik-etnografik ekspeditsiyasining haqiqiy jarayoni batafsil o'rganilib, ekspeditsiyaning uchta yo'nalishda amalga oshirilganligi aniq bo'ldi. Bu erda Qadimgi Xorazm hududi, qadimgi yunon olimlari tomonidan qoraqalpoq ajdodlari haqida so'z yuritilishi ham ko'rib chiqilgan.*

Резюме: *Более подробно изучены материалы организации и непосредственно самого процесса Хорезмской археолого-этнографической экспедиции во главе С.П.Толстовым, стало ясно, что экспедиция была проведена в трёх направлениях. Здесь также рассматривался вопрос о территории Древнего Хорезма, упоминания древнегреческих учёных о предках каракалпаков.*

Kalit so`zlar: *ekspeditsiya, Qadimgi Xorazm, yunon olimlari, Gerodot, Ktesiy*

Ключевые слова: *экпедиция, Древний Хорезм, греческие учёные, Геродот, Ктесий*

FACTORS INFLUENCING THE CONTRIBUTION OF AGRICULTURE TO GROSS DOMESTIC PRODUCT (GDP) IN CENTRAL ASIAN COUNTRIES

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Summary: *This paper identifies the factors that influence agriculture's percentage contribution to gross domestic (GDP) in selected Central Asian Countries Uzbekistan, Tajikistan and Kazakhstan. According to the theories it was hypothesized that FDI to GDP, population growth and share of people living in rural areas of countries had statistical significance to dependent variable.*

Keywords: *Agriculture, forestry, and fishing, value added (% of GDP), FDI, GDP, Central Asian, Uzbekistan, Tajikistan, Kazakhstan*

Introduction.

At the end of 2020, agriculture, forestry and fisheries showed positive growth rates at the level of 3.0%. The positive dynamics in this industry is due to an increase in crop production by 3.4% (in 2019 - an increase of 4.8%, in 2018 - a decrease by 4.2%) and livestock production - by 2.1% (in 2019. - an increase of 1.6%, in 2018 - an increase of 5.7%). The importance of agriculture in the economy of Uzbekistan and other countries is measured as the value added of the agricultural sector as percent of GDP. Agriculture includes forestry, hunting, and fishing, as well as the cultivation of crops and livestock production. Definition: Agriculture corresponds to ISIC divisions 1-5 and includes forestry, hunting, and fishing, as well as cultivation of crops and livestock production. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3 or 4.

Literature review.

Explanations of the importance of the agricultural sector in the economy as economic growth progresses have benefited greatly from Arthur Lewis' dual sector theory (Lewis 1954)[1]. According to this theory, the modern or industrial sector uses surplus labor in the agricultural or primary sector as its source of growth, along with capital generated by savings investment, to expand its production and thus the economy's gross output. The agricultural sector's percentage contribution to gross output falls as the industrial (modern) sector grows in importance. This growth process generally necessitates the movement of labor from rural to urban areas, resulting in a decrease in the rural population as a percentage of the national population. However, there has been growing concern in recent years about the agricultural sector's declining contribution to Gross Domestic Product (GDP), particularly in developing countries. While it has been established that as a country develops, its agriculture sector is expected to decline, this decline has recently been rapid rather than gradual. Awan (2015)[2] investigated the sources of agricultural growth in China, the role of growth in the modern market, and the impact of institutional reforms. Labor, land, fertilizer, irrigated area, and power were used as input variables, with stock of usable knowledge and research investment serving as dummies. To analyze the agriculture research and stock of knowledge variables, a new constructed data was used. Ahmad (2008)[3] investigated output growth in terms of input growth and total factor productivity, taking into account technological change and technical efficiency. Awan and Sheikh (2015)[4] estimated the impact of supervised agriculture credit on low-income farmers and attempted to increase their farm income in the study area, as well as the effect of credit on land use and cropping intensity in the project area. Awokuse et al. (2009)[5] attempted to investigate the dynamic interaction between agricultural productivity and economic growth in general, using time series analysis of fifteen developing and transition economies in Latin America, Asia, and Africa to discover the relationship between agriculture and economic growth.

Awan and Vashma (2014)[6] attempted to identify the major determinants of agricultural sector and the mutual relationship between agricultural economic development and GDP, as well as how agriculture contributed to economic development, using 31 observations from 1980 to 2010.

Research Methodology.

Resent study is based on the determinants of agriculture, forestry and fishing % of GDP in selected Central Asian countries Uzbekistan, Tajikistan and Kazakhstan. Population growth, FDI to GDP ratio and people living in rural areas are taken as independent variables. All the economic variables are taken from World Bank Metadata of selected countries. In order to check the relationship between dependent and independent variables, regression analyze is run using fixed effects model.

Hypothesis:

The research has following hypothesis:

H1: There is a positive relationship between population growth and Agriculture, forestry, and fishing, value added (% of GDP);

H2: there is a positive relationship between people living in rural areas to total population and dependent variable;

H3: FDI to GDP impacts on dependent variable positively

Population Growth (PT)

If a country experiences rapid population growth and thus has a larger population base, it can transfer labor to the expanding modern sectors without reducing agricultural labor supply. In fact, a rapidly expanding population may allow a country to increase its labor surplus, allowing for a longer period of economic growth through expansion of both the agricultural and modern sectors, particularly if technological innovations in the agricultural sector, such as improved genetic planting material, are taking place. As a result of population growth, the rural sector may be able to play a role in promoting economic growth (Pemberton 2002)[7]. Under these conditions, PT could be expected to have a positive impact on agriculture's percentage contribution to GDP. However, increasing population pressures, according to Pender (1999)[8], may result in land degradation, as these pressures encourage agricultural production to expand onto marginal lands, resulting in lower land productivity. As a result, rising population is expected to have a negative impact on agriculture's contribution to GDP.

Rural Population as a Percentage of Total Population (RP)

In general, if a country has been able to keep a large proportion of its population in the rural sector, it can be expected that its agricultural sector will account for a larger proportion of its gross output. According to the Lewis Model, this means that a large proportion of the country's labor has not been transferred to the modern sectors and is still engaged in the agricultural sector, which could be expected to contribute a greater percentage of GDP.

FDI to GDP

The coefficient of FDI is expected to be positive in countries where foreign direct investment is concentrated in food and agriculture. However, if a country's foreign direct investment is in the non-agricultural sector, it is expected that the FDI coefficient will be negative.

Table 1

Table of descriptive statistics [9]

Variable	Obs	Mean	Std. Dev.	Min	Max
Agricultur~y	86	20.19736	9.882479	4.28833	37.09319
popgrowth	87	1.365142	1.022316	-1.752259	2.82285
Ruralpeopl~l	87	56.13433	12.47226	42.46	73.665
FDItoGDP	84	3.899868	3.729433	-.179769	13.10218

Table 1 represents the descriptive statistics on collected data, using the data of three selected countries we have about 87 observations and all indicators show the percentage, which makes our analysis more reliable. Descriptive statistics are used to describe the fundamental characteristics of data in a study. They provide concise summaries of the sample and measures. They form the foundation of almost every quantitative data analysis, along with simple graphics analysis.

In most cases, descriptive statistics are distinguished from inferential statistics. Descriptive statistics simply describe what is or what the data reveals. With inferential statistics, you are attempting to draw conclusions that go beyond the immediate data. For example, we use inferential statistics to try to infer what the population might think based on the sample data. Alternatively, we use inferential statistics to assess the likelihood that an observed difference between groups is reliable or that it occurred by chance in this study. As a result, we use inferential statistics to draw conclusions from our data to more general conditions, whereas descriptive statistics simply describe what is happening in our data. In order to check the relationship between dependent and independent we should run correlation analysis to prevent multicollinearity problem.

Table 2

Correlation matrix

	Agricu~y	popgro~h	Ruralp~l	FDItoGDP
Agricultur~y	1.0000			
popgrowth	0.3960	1.0000		
Ruralpeopl~l	0.4952	0.5294	1.0000	
FDItoGDP	-0.6274	-0.2345	-0.2319	1.0000

Table 2 represents the correlation ratios between variables. It has been done in order to prevent the multicollinearity problem. One of the primary goals of regression analysis is to determine the relationship between each independent variable and the dependent variable. A regression coefficient represents the mean change in the dependent variable for each 1 unit change in an independent variable when all other independent variables are held constant. That final section is critical for our discussion of multicollinearity.

The concept is that you can change the value of one independent variable while leaving the others alone. When independent variables are correlated, it means that changes in one variable are associated with changes in another. The stronger the relationship, the more difficult it is to change one variable without affecting the others. Because the independent variables tend to change in unison, it becomes difficult for the model to estimate the relationship between each independent variable and the dependent variable independently.

Analysis and results

According to the results it can be said only two variables out of three have statistical significance on dependent variable. They are population growth and FDI to GDP ratios. Percentage of people living in rural areas doesn't have statistical significance. However, all our hypothesis has been rejected. Because population growth negatively impacts on the agriculture output to GDP, it can be explained by the increasing number of people needs more land for housing and other business rather than agriculture, therefore there is a negative relationship. FDI to GDP ratio also could increase the agriculture, forestry and fishing output to GDP, however, it also has negative relationship, it can be explained by that foreign direct investment is attracted to other fields than agriculture.

Recommendations

According to the results and discussions, the following recommendations have been developed:

Countries should attract some FDI to agriculture sector to motivate its share in Gross domestic products of the countries, because of the changes and reforms the share of agriculture, forestry and fishing in GDP is decreasing.

Countries should subsidize some funds to increase the share in GDP Countries should find alternative ways for housing such as many floor blocks rather than decreasing the agriculture land for housing.

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Rezyume: *Ushbu maqolada O'rta Osiyoning ayrim mamlakatlari, O'zbekiston, Tojikiston va Qozog'istonda qishloq xo'jaligining yalpi ichki mahsulotga (YaIM) qo'shgan hissasiga ta'sir etuvchi omillar aniqlangan. Nazariyalarga ko'ra, tovar ayirboshlash to'g'ridan-to'g'ri YaIMga, aholi sonining o'sishiga va mamlakatning qishloq joylarida yashovchi aholining ulushiga bog'liq bo'lgan o'zgaruvchi uchun statistik ahamiyatga ega deb taxmin qilingan.*

Резюме: *В этом статье определены факторы, влияющие на процентный вклад сельского хозяйства в валовой внутренний (ВВП) в некоторых странах Центральной Азии, Узбекистане, Таджикистане и Казахстане. Согласно теориям, это было предположено, что ПИИ к ВВП, рост населения и доля людей, живущих в сельских районах страны, имели статистическую значимость для зависимой переменной.*

Kalit so'zlar: *Qishloq xo'jaligi, o'rmon xo'jaligi va baliq ovlash, qo'shilgan qiymat (YaIMga nisbatan foiz), XIM, YaIM, Markaziy Osiyo, O'zbekiston, Tojikiston, Qozog'iston*

Ключевые слова: *Agriculture, forestry, and fishing, value added (% of GDP), FDI, GDP, Central Asian, Uzbekistan, Tajikistan, Kazakhstan.*

TOPICAL ISSUES OF ENSURING THE REVENUE OF CURRENCY OPERATIONS OF COMMERCIAL BANKS

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Summary: *The article provides information on the climatic conditions, nature and history ofthe Aral Sea region, including the Republic of Karakalpakstan.*
Keywords: *Ecology, climate, Kyzylkum, Ustyurt, natural geographical zone.*

In accordance with the Decree of the President of the Republic of Uzbekistan No. 5177 dated September 2, 2017 “On Priority Measures for the Liberalization of the Currency Policy”, ensuring the full realization of the rights of legal entities and individuals to freely purchase and sell foreign currency and dispose of their own currency at their discretion, increase the role of market instruments in the use of foreign exchange resources, the creation of equal competitive conditions in the foreign exchange market for all business entities, are priority areas of the state economic policy of Uzbekistan in the field of further liberalization of foreign exchange policy [1]. And this necessitates the development of foreign exchange operations of commercial banks. In turn, the development of foreign exchange operations requires ensuring their profitability.

The results of the study by O. Korshunov and E. Kashcheyev showed that the position of the dealer can be divided into two parts. The first of these provides a profit (financial result) that does not depend on the future state of the market and is exposed only to the risk of default by counterparties. The second part of the position is speculative and the financial result on it depends on the future exchange rate at the time of execution of the contract [2].

According to N. Sokolinskaya, “the necessity of dividing currency banking operations into own and client ones is also due to the fact that the financial results in the first case are formed as marginal income or loss, and in the second case as income as a commission for performing an intermediary function, reduced on bank expenses related to the performance of this function ”[3].

A group of economists from Uzbekistan claim that there are two methods for commercial banks to earn income from forward operations:

* income from forward operations in the conditions of the premium;
* income in terms of discount [4].

According to the Law of the Republic of Uzbekistan “On currency regulation” (article 8, 20), “banks of the Republic of Uzbekistan have the right to have correspondent and other accounts with banks of the Republic of Uzbekistan and foreign banks and conduct operations on the purchase and sale of foreign currency, including currency derivatives, directly between themselves, with their customers, as well as through currency exchanges and in international markets. Banks of the Republic of Uzbekistan are obliged to carry out foreign exchange operations, provided that residents and non-residents submit the relevant documents required by banks for foreign exchange operations ”[5].

It should be noted that in Uzbekistan the main object of conversion currency transactions of banks is the US dollar.

Below we give an assessment of the profitability of foreign exchange operations of commercial banks using the example of the National Bank of the Republic of Uzbekistan for Foreign Economic Affairs (NB FEA).

Table 1

The value and level of income of the NB FEA received from foreign exchange transactions [6]

Indicators	2017y.	2018y.	2019y.	Change in 2019 compared to 2017 y.

Interest-free income, billion soums	926,7	848,7	1603,2	173,0 %
Revenues from foreign exchange transactions, billion soums.	356,3	19,7	130,3	36,6 %
The share of income from foreign exchange transactions in the total amount of interest-free income	38,4	2,3	8,1	- 30,3

As can be seen from the data in Table 1, in 2019, compared with 2017, the income from foreign exchange transactions in the NB FEA has significantly decreased (63.4%). Also, over this period, the share of income from foreign exchange transactions in the total volume of interest-free income of the NB FEA has greatly decreased. These factors indicate that the National Bank has problems associated with ensuring the profitability of foreign exchange transactions.

In banks of Uzbekistan, income from foreign exchange transactions are recorded in the structure of interest-free income of commercial banks.

In our opinion, the main problems associated with ensuring the profitability of foreign exchange operations of commercial banks. are the following:

1. The instability of the nominal exchange rate of the national currency in the context of the large size of the short currency positions of banks in US dollars.

Over the past five years (2015-2019), the national currency - UZS depreciated against the US dollar by 3.4 times.

Due to the low level of diversification of foreign exchange reserves of enterprises and banks, commercial banks will not be able to reduce the size of a short foreign exchange position in US dollars (over 90% of foreign exchange reserves are formed in dollars).

The low level of diversification of foreign exchange reserves impedes the improvement of foreign exchange risk management.

Also, the high growth rate of foreign currency purchases by business entities limits the ability of banks to reduce the size of short foreign currency positions in US dollars. Thus, the total amount of purchased currency by business entities in 2019 increased by 1.3 times or from 10.4 to 13.7 billion US dollars [7]. Such a high growth in the purchase of the dollar contributes to an increase in the size of short positions of banks in US dollars.

2. Instability of interest rates on deposits and loans in national currency.

It should be noted that the high level of the refinancing rate of the Central Bank of Uzbekistan is one of the main factors affecting the level of interest rates on loans in national currency.

Since June 28, 2017, the refinancing rate of the Central Bank of the Republic of Uzbekistan has been increased from 9 to 14 percent [8].

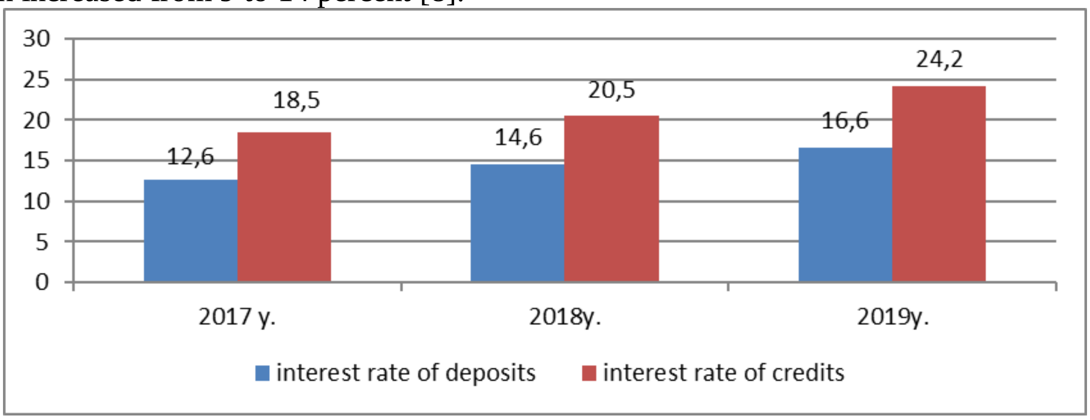

Fig. 1. The average annual interest rate of deposits and loans in national currency in the Republic of Uzbekistan, in percent [9]

As can be seen from the data in Fig. 1, in 2017-2019, the average annual interest rates of deposits and loans in the national currency were unstable.

In our opinion, to solve the problems associated with ensuring the profitability of foreign exchange operations of commercial banks, the following measures should be taken:

1. To reduce the size of the short currency position of domestic commercial banks in US dollars by:

– reduction of the share of the US dollar in the total foreign exchange reserves of enterprises and banks on the basis of an increase in the share of the euro, pound sterling, Swiss franc, Japanese yen and Canadian dollar through the active use of swap operations, review of the currency structure of foreign economic transactions of enterprises and banks;

– ensuring the stability of the nominal exchange rate of the national currency;

– introduction of call and put options of the European standard in the practice of domestic banks.

Currently, in the banking practice of the republic, there are no operations with currency options and currency futures.

2. It is necessary to ensure the stability of deposits and loans in national currency by:

– increase the level of coordination of monetary and budgetary policies;

– the integrated use of centralized loan forms (discount loans, pawnshop loans, secured term loans, unsecured term loans, overdraft loans);

– maintaining a low and stable inflation rate;

– ensuring moderate rates of devaluation of the national currency.

Currently, the Central Bank does not have such forms of centralized loans, such as discount loans, pawnshop loans.

In addition, inflation in Uzbekistan remains high. In 2019, the country's annual inflation rate was 15.2% [10].

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Rezyume: *Valyuta operatsiyalari tijorat banklari aktiv operatsiyalarining asosiy turlaridan biri hisoblanadi. Shu sababli, valyuta operatsiyalarining daromadliligi tijorat banklarining daromad bazasini shakllantirishda muhim o'rin tutadi. Maqolada O'zbekiston Respublikasi tijorat banklari valyuta operatsiyalarining daromadliligini ta'minlash bilan bog'liq bo'lgan muammolar aniqlangan va ularni hal qilishga qaratilgan ilmiy takliflar ishlab chiqilgan.*

Резюме: *Валютные операции являются одним из основных видов активных операций коммерческих банков. Поэтому, доходность валютных операций занимает важное место в формировании доходной базы коммерческих банков. В статье выявлены проблемы,* *связанных с обеспечением доходности валютных операций коммерческих банков Республики Узбекистан и разработаны научные предложения, направленных на решение этих проблем.*

Kalit so'zlar: *valyuta operatsiyasi, valyuta kursi, valyuta pozitsiyasi, valyuta riski, valyuta siyosati, spot, forvard, svop, daromad, zarar.*

Ключевые слова: *валютная операция, валютный курс, валютная позиция, валютный риск, валютная политика. спот, форвард, своп, доход, убыток.*

THE IMPORTANCE OF DEVELOPING STRATEGIC PLAN SCENARIOS FOR SUSTAINABLE DEVELOPMENT OF REGIONS

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Summary: *The article is based on the analysis of trends in socio-economic development in the development of scenarios and options for the Strategic Plan for Sustainable Development of the Republic of Karakalpakstan, the presence of systemic problems, imbalances, risks, changes in domestic and external demand, the need for effective use of natural and economic potential, the impact of limited resources.*

Keywords*: Region, ecology, climate, strategy, analysis, forecast, demography.*

The analysis of socio-economic development trends in the development of scenarios and options for the strategic plan of sustainable development of the Republic of Karakalpakstan is based on factors such as systemic problems, imbalances, risks, changes in domestic and external demand, the need for efficient use of natural resources.

Effective use of the rich natural and economic potential and competitive advantages of the regions play an important role in ensuring economic stability and achieving high growth rates in Uzbekistan.

Therefore, the Action Strategy for the five priority areas of development of the Republic of Uzbekistan for 2017-2021 emphasizes "comprehensive and balanced socio-economic development of regions, districts and cities. [1] " Among the regions of the country, the Republic of Karakalpakstan is distinguished by its rich mineral resources, limited land and water resources, the problems of the Aral Sea of international importance. This situation requires the effective use of the existing natural and economic potential of the region, the development of a long-term strategy aimed at reducing the impact of negative factors on socio-economic development and its consistent implementation. Also, a comprehensive development program of the Republic of Karakalpakstan for 2020-2023was developed. Measures will be taken to save 2.5 billion cubic meters of water a year in the region. It is important to repair 14,200 kilometers of canals, introduce water-saving technologies on 45,000 hectares of arable land, install meters at water distribution points, and laser level 38,000 hectares.

The program provides for special measures in Takhtakopir, Bozatow, Shomanay districts, which have a relatively low level of socio-economic development. In particular, 172 projects worth 409 billion sums will be implemented in 2021-2023 to improve production and social infrastructure in these districts.[2]

Taking into account the specifics of the Republic of Karakalpakstan, the scenarios of the strategic plan can be developed in interrelated key areas (Figure 1).

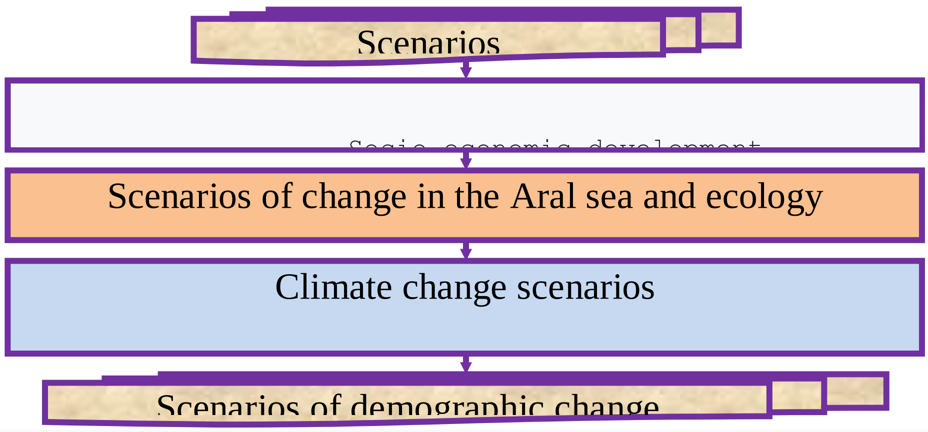

Figure 1. Republic of Karakalpakstan

Scenarios of the main directions of the strategic plan

Aral Sea scenarios. The problem of the Aral Sea is of global international importance, which threatens the future and development of the population of our planet. The most organization United Nations in the world has also officially acknowledged that the Aral Sea tragedy is a major environmental problem on a global scale. Therefore, today and in the future, the search for a way out of the tragedy and environmental consequences of the Aral Sea belongs to the world community, Central Asia, Uzbekistan and the Republic of Karakalpakstan.

The Aral Sea tragedy is the largest environmental and humanitarian catastrophe in human history, with a population of 50.0 million. people. As a result of the sea, complex environmental, socio-economic and demographic issnes have emerged.

Today, as a result of coastal retreats, many freshwater lakes have disappeared, the area of the forest has decreased, the area of reeds has halved, and the productivity of pastures has declined . As a result of the impact of salt-sand migration, the salinity of arable lands and pastures increases. This led to the loss of vegetation cover and the formation of mobile sands. According to experts, the amount of sand released into the air per year is 15-75 million tons. Island sand dust is also found in European countries.

Over the last 57 years, the depth of the Aral Sea has decreased by 27 meters (Table 1).

Table 1

Dynamics of change of Aral Sea indicators

Indicators	1960 year.	1990 year.	2010 year.	2019 year.
Depth of the sea, meters	53,4	38,2	28,0	26,0
Water volume, km3	1083,0	323,0	70,0	65,0
Water level area, thousand km2	68,9	36,8	17,0	16,0
The degree of the mineralization of water, %	9,9	29,0	100,0	100,0
Amount of water following, km3/year	63,0	12,5	2,0	2,0

Source: 2019 expert assessment, calculated on the basis of data from projects and programs implemented by the United Nations.

According to the UN Project on the Republic of Uzbekistan (environmental monitoring based on the formation of environmental indicators), the volume of sea water has decreased from 1,083 km^3 to 70 km^3. The salinity of the water reached 110-112 g / l. in the western part of the sea and 280.0 g / l in the eastern part. The Aral Sea has become a truly lifeless reservoir. The sea level has risen to 4.0 million tons.[3]

Analyzing the dynamics of the above indicators, as well as the proposals and comments of international organizations, scientists and experts on solving the problems of the Aral Sea, scenarios for changes in the long-term prospects of the sea area have been developed (Table 2).

The first scenario is based on the fact that the downward trend in sea levels has continued in recent years. In this inertial scenario, the sea level is projected to decrease to 13,000 km^2 in 2030 and to 7.0 thousand km^2 in 2040.

Table 2

Scenarios for changes in the level of the Aral Sea (thousand km2)

Years	I scenario	II scenario	III scenario
2017	16,0	16,0	16,0
2030	13,0	5,0	14,0
2040	7,0	0,0	12,0

Source: Developed by the author on the basis of data from the Center for Hydrometeorology, Committee on Architecture and Construction, Internet.

In the second scenario, photos and analysis of the Aral Sea taken from space by scientists and experts of the European Space Agency predicted the drying up of the Aral Sea by 2040-2050.

In the third scenario, the sea level may decrease from 16,000 km^2 to 12,000 km^2 in 2040, given the periodic changes in climate and precipitation, and the extent to which the Amudarya River reaches the Aral Sea in some years. According to international organizations, the preservation of the Aral Sea is a very difficult task. Even if the Syrdarya and Amudarya waters are not used and flow in full, it will take 200 years to reach the previously available amount of water in the Aral Sea.

Although there are a number of projects aimed at preserving the Aral Sea, their implementation in practice is very difficult and requires large material and financial costs. These projects include bringing the waters of Russia's Ob River in Siberia to Central Asia, pumping Caspian water into the Aral Sea via Ustyurt, sending water from all existing reservoirs to fill the Aral Sea, and so on.

According to experts, the practical preservation of the Aral Sea is very complicated. The main goal is to ensure the safety of the people living here. Therefore, it is necessary to develop measures to reduce the effects of the drying up of the Aral Sea and the environmental situation. For example, creating plants in the basin to create small ponds on the dried seabed, to reduce salt and sand storms. It is worth noting the large-scale measures currently being taken in this regard. They have begun work on the establishment of an international trust fund, the establishment of an international innovation center along the Aral Sea, the creation of protected forests on the dried seabed, the construction of small reservoirs in the Amudarya delta.

Demographic, environmental, climatic and socio-economic scenarios have been developed taking into account the specific characteristics of the region, its relative advantages, development risks. These scenarios are aimed at the targeted plan of the systemic strategy, to prevent future negative consequences. According to the scenario selected by comparison, measures to improve the structure of the region's economy by 2040, including reforms in industry and agriculture, competitive advantages, reducing the negative impact of climate and ecology, the widespread use of innovative and digital technologies in all areas ensuring growth and public safety[6].

In general, the strengths (advantages) of the natural and economic potential of the region serve as the main impetus for the scientific substantiation of development strategies, ensuring high economic growth rates, further improving the living standards of the population.

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Rezyume: *Maqolada Qoraqalpog’iston Respublikasini barqaror rivojlantirish strategik rejasining stsenariy va variantlarini ishlab chiqishda amalga oshirilgan ijtimoiy-iqtisodiy taraqqiyot tendentsiyalari tahlili, tizimli muammolar, nomutanosibliklar, xavf-xatarlar mavjudligi, ichki va tashqi talabning o’zgarishi, tabiiy-iqtisodiy salohiyatdan samarali foydalanish zarurati chegaralangan resurslarning ta’siri singari omillarga asoslanadi.*

Резюме: *Статья основана на анализе тенденций социально-экономического развития при разработке сценариев и вариантов Стратегического плана устойчивого развития Республики Каракалпакстан, наличии системных проблем, дисбалансов, рисков, изменении внутреннего и внешнего спроса, необходимости эффективного использования природного и экономического потенциала, влиянии ограниченных ресурсов.*

Kalit so'zlar: *Mintaqa, ekologiya, iqlim, strategiya,taxlil,prognoz, demografiya.*
Ключевые слова: *Регион,экология,климат,стратегия,анализ,прогноз, демография.*

ISSUES OF IMPROVING THE AUDIT OF FREIGHT FORWARDING ACTIVITIES

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Summary: *The article identifies the objectives of the audit of transport and forwarding activities as a result of research conducted in the framework of the organizational and methodological framework for the audit of transport and forwarding activities and their improvement. Forms of audit were grouped. Recommendations were made to develop an initial audit plan and improve it.*

The basis for the organization of the audit of freight forwarding activities was studied. The letter of commitment, the content of the contract, planning, programming, methods used in the audit, the procedure for registration of the results of the audit were disclosed in the organization of the audit.

The audit of freight forwarding activities was based primarily on the professional need to know the requirements of the laws of our country and equivalent legal documents, as well as internationally accepted laws, rules, agreements and other documents, which are the legal basis of their activities.

Keywords: *Ecological-economic model, ecological factors, stochastic programming, database, information security.*

In the context of economic liberalization, the main goal of any entity is to get the maximum benefit. Profit is an important quality indicator of any business. Profit tax is paid, deductions are made to the charter capital. Profit as an economic category represents an increase in the assets of an entity. [1. - 141 p.]

Freight forwarding companies also try to increase the amount of profit as an indicator of the quality of their activities. To do this, they try to reduce costs and save them. Therefore, in conducting an audit of its activities, the main goal is not only to verify the accuracy of the financial statements, but also to determine the effective and correct spending.

When conducting an audit of freight forwarding activities, the auditor seeks to identify the most common points of error in the activities of the enterprise. It starts the audit by comparing the performance of reporting forms that reflect key aspects of the entity’s operations.

During the initial audit, the indicators of financial results (income, expenses, profits) were recorded in the "Balance Sheet" (Figure 1), "Report on Financial Results" (Figure 2), "Report on the movement of fixed assets" (Figure 3) and " Cash Flow Statement ”(Figure 4).

In doing so, the auditor should compare key performance indicators. The auditor should, as a key indicator, compare individual items in the balance sheet with the reporting forms in which those items are available. It is recommended to perform the check by creating the following table (conditional table 1):

Conditional table 1

Checking the performance of reporting forms by the method of cross-comparison*

s/n	**The main reporting blind-sellers, in the balance sheet**	**Comparative reporting indicators**	**The difference (-few / + many)**
1	Initial cost of fixed assets	Report on the movement of fixed assets	0
2	Depreciation of fixed assets	Report on the movement of fixed assets	0
3	Residual value of fixed assets	Report on the movement of fixed assets	0
4	Charter capital	Private equity report	-12
5	Additional capital	Private equity report	+12
6	Reserve capital	Private equity report	0
7	Long-term receivables	Certificate of receivables and payables	0
8	Current receivables	Certificate of receivables and payables	0

9	Long-term accounts payable	Certificate of receivables and payables	0
10	Current accounts payable	Certificate of receivables and payables	0
11	Tax arrears to the state budget	Tax reports	0
12	Cash	Cash flow statement	0

* Calculated by the authors on the basis of data from enterprise "A"

Completion of the first stage, the indicators of the financial reporting forms determine to the auditor to focus on the information of which accounting (which accounts, which business transactions are subject to error). The auditor then initiates the next phase of the audit. At this stage, the auditor compares the individual items in the balance sheet with the balances in the accounts. The data in this process of verification is much more fragmented. In separate items of the reporting forms the sum of several accounting accounts is compared (conditional table 2):

Conditional table 2

Comparison of individual items of the balance sheet with the data of the accounts (general ledger)*

s/n	Balance sheet items	Balances of accounting accounts	The difference (-few / + many)
1	Initial cost of fixed assets	0100- "Accounts for fixed assets"	0
2	Depreciation of fixed assets	0200- "Accounts for depreciation of fixed assets"	0
3	Residual value of fixed assets	From the amount in account 0100 0200 account balance is deducted	0
4	Initial cost of intangible assets	0400 - "Accounts for intangible assets"	0
5	Depreciation of intangible assets	0500- "Accounts for amortization of intangible assets"	0
6	Financial investments	0600 "Accounts for financial investments"	0

* Calculated by the authors on the basis of data from enterprise "A"

Comparing the balance sheet figures with the balances of the accounts allows the auditor to obtain the following information: Firstly, the auditor determines which items of the balance sheet do not correspond to the accounting records. Secondly, it is important for the auditor to compare the information in the accounting records with the individual items in the balance sheet forms and to try to reason on the differences based on their qualifications and to determine the underlying purpose. Thirdly, the auditor may change the audit strategy and tactics.

In the third stage of the audit (excluding the balance sheet), the correlation of the indicators of the financial reporting forms with the accounting accounts is compared. This is because the balance sheet reflects the balances of the accounts in Sections 1-8 of NSA(IFRS 21), the Chart of Accounts. The remaining reporting forms reflect the information required for external users describing the main activities of the business entity (conditional table 3):

Conditional table 3

Accounting for indicators of reporting forms check the interaction with the accounts*

s/n	Items in the statement of financial performance	Balances of accounting accounts	The difference (-few/+many)
1	Revenue from sales of products (works, services)	9000 "Income Accounts"	0
2	Cost of goods sold (work, service)	Account 9100 "Cost of goods sold (work, services)"	0
3	Administrative expenses	9420 "Administrative expenses" account	0

4	Sales costs	9410 "Sales expenses" account	0
5	Income from financial activities	9500 "Accounts for income from financial activities"	0
6	Fixed assets per year	0100 Balances of "fixed assets accounts"	0
7	Fixed assets at the end of the year	0100 Balances of fixed assets accounts	0
8	Long-term receivables	0900 "Accounts receivable for long-term receivables"	0
9	Current receivables	4010 "Accounts receivable" account	0
10	Long-term accounts payable	7000 "Accounts for long-term liabilities"	0
11	Short-term payables	6000 "Current liabilities accounts"	0

* Calculated by the authors on the basis of data from enterprise "A"

This stage of the audit allows you to conclude that the data of the forms "Report on financial results" and "Report on the movement of fixed assets" correspond to the data of the accounting records. The auditor also re-checks the accuracy of the results of the previous steps based on the table data. This in turn improves the audit for the auditor and helps to look for any source data if there are discrepancies.

In the fourth stage of the audit, the auditor should examine the interrelationships of the accounts. At the same time, the main focus should be on the results of the second stage of the audit, ie on the accounts, the data of which differ from the data in the reporting forms.

The above-mentioned stages of the audit allow you to verify the accuracy of information about the activities of transport and forwarding companies and the sources of their formation.

The final stage of freight forwarding activities is the income received from them. Therefore, special attention is paid to the audit of income in the scientific works on auditing, as well as educational and methodological developments.

Revenue audit is carried out on the basis of the following documents: "Regulations on the structure of costs of production and sale of goods (works, services) and the order of formation of financial results" approved by the Cabinet of Ministers of the Republic of Uzbekistan on February 5, 1999; income ”, IFRS 3: -“ Statement of Financial Performance ”, NSA(IFRS) 4: -“ Inventories ”and other regulatory documents. Revenue audits are conducted depending on their type and formation. The auditor checks the formation of income mainly through the following entries in the following accounting accounts: 9000 - "Accounts for income from operating activities", 9200 - "Accounts for other income from operating activities", 9500 - "Accounts for income from financial activities" and 9900 - "Final financial result" accounts.

However, the inspection should take into account the specifics of the freight forwarding activity, the data of the accounting accounts and the initial account, as well as the reports of the persons responsible for production and material. To do this, in the audit of income should pay special attention to the recognition of income. Since the bulk of revenues from freight forwarding activities are derived from the services of foreign companies, they can be determined in the service contract based on international rules. Therefore, when auditing income, it is advisable to check the extent to which the conditions set out in the contracts are met.

The breadth of activities of freight forwarding companies should take into account these aspects when examining the income of these companies. When checking the income from the activities of freight forwarding companies, it is advisable to carry them out in a certain sequence. This ensures the reliability and accuracy of the audit results.

Freight forwarding companies are required to incur expenses in order to earn income. Therefore, the audit of income is directly related to the audit of costs.

This is because the auditor verifies that the accounting compliance principle applies when conducting an audit of income. Expenditures corresponding to the income received in accordance with the Tax Code in force in the Republic should be recognized.

The cost of services depends on the amount of direct costs and the rational use of resources. The more efficiently the material, financial and labor resources of the enterprise are used, the lower the cost and value of the services provided. This in turn has a positive impact on the financial stability of the enterprise. Therefore, costs should be constantly monitored. As a result of the cost audit, internal opportunities and ways of rational use of resources are identified. The auditor should have an in-depth knowledge of the economic content, composition, and types of expenses.

According to the Regulation adopted by the Cabinet of Ministers of the Republic of Uzbekistan, the costs of all enterprises are divided into the following groups:

- costs included in the cost of production of goods (works, services);
- current expenses;
- expenses on financial activities;
- emergency expenses (losses).

The types of costs consist of specific items that are accounted for and controlled separately. Costs are studied as the object of the audit, and ways to reduce them are identified. It should also be noted that unreasonable reduction of costs in the activities of enterprises may not give the expected results. Entrepreneurship development is focused on getting more income (profit) and costs should not increase. This is determined through a cost audit. Determining the cost of services plays a special role in the cost audit.

When auditing the cost of services, attention is paid to the following:

- correct assessment and accounting of raw materials and supplies included in the cost of services;
- compliance of the cost and value of services with the accounting policies of the enterprise and tax legislation;
- correct accounting of the cost of services;
- the correctness of the transactions related to the service process in the accounting records.

The cost of the service is directly related to fixed and variable costs. As the volume of freight forwarding activities increases, so does the share of variable costs in the cost of services. Therefore, when auditing the cost of services, special attention is paid to the "business plan", "production program", "cost estimates", "planned (actual) calculation" of the enterprise. The cost of services is directly related to the cost of raw materials and consumables. The auditor should pay special attention to the “FIFO” and “Average Price” methods of valuation of raw materials.

Freight forwarding companies also have costs that are not directly related to the volume of services. For example, the costs associated with the provision of freight forwarding enterprises with the necessary raw materials, maintenance of fixed assets, lease of fixed assets, technical safety of workers. The amount of these costs does not change even when the volume of services changes over a period of time.

The auditor examines the costs associated with the cost of the service mainly through the following accounting accounts:

2010 - "Main production" (the debit of this account reflects the costs directly related to production);

2310 - "Auxiliary production";

2510 - "General production costs";

2610 - "Manufacturing scrap";

1000 - "Accounts of materials";

2810 - "Finished goods in the warehouse";

9110 - "Cost of finished goods sold" and other invoices.

Costs that form the production cost of the product are audited through entries in 0200, 1210, 1310, 1610, 5110, 5010, 5210, 6010, 6710, 6870, 6890 and other accounts. The auditor analyzes the production costs associated with the service by individual items, identifies the factors that affect them, makes recommendations to reduce the cost of services.

Expenses related to the management of freight forwarding activities, sales of services are current expenses. The structure of current expenses includes the following expenses in accordance with the adopted Regulation (Picture 1):

Current expenses

Sales costs | Administrative expenses | Costs of other transactions

Picture 1. The structure of current expenses of enterprises [2]

Depending on the type of recurring expenses are reflected in 9400 - "Current Expenditure Accounts". The auditor verifies the formation of current expenses and the correctness of the transfer to the account "Final financial result" through the following accounts:

9410 - "Sales expenses";

9420 - "Administrative expenses";

9430 - "Other transaction costs";

9450 - "Auxiliary farms" and other accounts.

The entries in the debit of these accounts indicate the formation of current expenses. The auditor examines the formation of current expenses through entries in accounts 5110, 6010, 4210, 6710, 5010, 6520, 0200, 1310, 6890, 9210, 6410 and others (entries in the credit of these accounts). At the end of the month, all period expenses will be transferred to account 9900 - "Final financial result" (there will be no balance in the accounts taking into account period expenses). During the audit, periodic expenses are examined for individual items and certain conclusions are drawn.

Expenses arising from the financial activities of the enterprise include expenses in the form of interest, losses on exchange differences and other types of expenses on financial activities. The auditor verifies the accuracy of these costs through 9600 - "Accounts for financial activities". This account is in correspondence with accounts 6820, 7510, 6920, 5210, 0610, 4620 and others, and at the end of the month it is closed with account 9900 - "Final financial result". The auditor checks whether the entries in these accounts meet the requirements of the law.

The results of the audit of expenditures in the recommended sequence are included in the audit report and conclusion (Picture 2):

Picture 2. Sequence of cost audit*

Cost audit

Checking cost planning

Determining the composition of costs

Product cost audit

Audit of current expenses

Financial Operating Expenses and Emergency Losses Investigation

Registration of inspection results

***** compiled by the authors

In freight forwarding companies, the amount of profit is directly proportional to the price, and inversely proportional to the cost. According to the adopted "Regulations on the structure of costs and the formation of financial results", the profits of enterprises are characterized by the following indicators:

- gross profit from the sale of products;
- profitability of the main activity;

- profit from economic activity;
- profit before tax;
- net profit for the year.

The main source of profit is the result of the main activity of the enterprise. Increasing profits is an important task for all businesses. Due to the profit, the company's activities will be expanded, mutual settlements will be made on time, and employees will be given additional financial incentives. Profitability is constantly monitored by the founders, property owners, the state budget and the bank. Profit is an important object of the audit. The auditor verifies that the benefits have been properly calculated under the contract and used during the year in accordance with the requirements of the law. Such an audit is carried out through accounts 8710 - "Retained earnings (uncovered losses) for the reporting period", 9900 - "Final financial result" and others.

The auditor verifies that the profit margin is calculated correctly through the following transactions:

- transactions by types of income;
- transactions by types of expenses;
- Profit transactions used during the year.

Thus, the profit audit is carried out by checking the accounting entries in the transit account 9900 - "Final financial result".

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Rezyume: *Maqolada qishloq xo`jalik ishlab chiqarishini joylashtirish masalasini optimallashtirishni ekologik-iqtisodiy modeli uchun sonli ma`lumotlarni loyihalish asosida axborot ta`minotini ishlab chiqilishi tahlil qilinadi. Ekologik-iqtisodiy modelning axborot ta`minoti loyihalashtirish elementlari bo`yicha tizimni tuzilishi bosqichma-bosqich ishlab chiqiladi. Qishloq xo`jalik ishlab chiqarishi ekologik-iqtisodiy modeli uchush qo`llaniladigan ma`lumotlarini asosiy belgilari bo`yicha ajratib olinadi. Ular, ixtisoslashtirish bo`yicha ma`lumotlar ta`minoti, resurslarning taqsimlanishi bo`yicha ma`lumotlar ta`minoti, ekin maydonlarining joylashtirilishi, qishloq xo`jalik ishlab chiqarishiga ta`sir etuvchi ekologik omillari, ishlab chiqarish intensivlik darajasi belgilari bo`yicha qo`llanilishi taklif etiladi.*

Резюме: *В статье определены задачи аудита транспортно-экспедиторской деятельности по результатам исследования, проведенного в рамках организационно-методической базы аудита транспортно-экспедиторской деятельности и их совершенствования. Формы аудита сгруппированы. Были даны рекомендации по разработке первоначального плана аудита и его улучшению. Изучены основы организации аудита транспортно-экспедиторской деятельности. Раскрыты обязательство по организации аудита, содержание договора, планирование, программирование, используемые методы аудита, порядок оформления результатов аудита. Аудит транспортно-экспедиторской деятельности основывался, прежде всего, на профессиональной необходимости знать требования законодательства нашей страны и приравненных к ним юридических документов, а также международно признанных законов, правил, соглашений и других документов, которые являются юридическими. основы их деятельности.*

Kalit so'zlar: *Ekologik-iqtisodiy model, ekologik omillar, stoxastik dasturlash, ma'lumotlar bazasi, axborot ta'minoti.*

Ключевые слова: *Эколого-экономическая модель, экологические факторы, стохастическое программирование, база данных, информационное обеспечение.*

SWOT ANALYSIS OF TOURISM SERVICES IN ANDIZHAN REGION AND WAYS TO EXPAND THEM

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Summary: *This article analyzes the SWOT market of tourist services in Andijan region, explores the strengths and weaknesses of the region, and highlights its opportunities and weaknesses. The article provides feedback on ways to develop and expand tourism in the region. It also analyzes the current state of the tourism industry in the region and provides conclusions, suggestions and recommendations for its future development.*

Keywords: *tourism, modernization, tour operator, SWOT analysis, market, transportation, route, guide, interpreter, enterprise, hotel, excursion, services, infrastructure.*

Introduction. In the context of modernization of the economy, the integration of the wholesale market with the national economy is becoming increasingly important. Demographic, spiritual and economic, as well as the size of the population are important in the segmentation of the regional service market.

The most important geographical location of Andijan region is its dense population. The population density is 727 people per 1 sq. km. This is not only the case in Uzbekistan or Central Asia, but also in the entire CIS. The population of the region is 1,665.9 people in urban areas and 1,522.2 people in rural areas. Such equality between the city and the rural population plays an important role in the exchange of tupictlap, in the socio-economic development of the region.

Such a compact location of the population in a large village in a small area is a geographical feature of the region itself. In spite of the presence of a consumer in stages, the attractiveness of nature, the richness of cultural objects, national craftsmanship and ethnography, self-cooking and a culture of hospitality, tupictlap flow in the Andijan region cuct. In a region with high potential, it is possible to achieve positive results, such as the proper organization of the service market, its planning and implementation, employment of the population, improvement of the quality of life.

Aims and objectives of the work. The purpose of the study is to determine the size of the organization and the size of the population, the diversification of the population, the ability to meet the needs of domestic and foreign tourists, or to meet the requirements of the defined territory.

The objectives of the article are to study the strengths and weaknesses of regional tourism and its opportunities and risks on the basis of SWOT analysis;

Based on the results of the study, appropriate proposals and recommendations will be made to expand and develop the regional market of tourist services.

The main part. According to the Law of the Republic of Uzbekistan "On Tupism", tupictic service is "accommodation, catering, tpansport, ekkupciya and advice services for multiplication, as well as tupict and excursion to meet the needs of [1]. Tupictik service is a place where the laws of supply and demand are combined in the process of buying and selling tupictik products.

Turictik market is “the beep part of the general market of service and goods, consisting of the interrelation of the two constituent parts. ... demand (domestic and international tupictik markets), supply (tupictik attention worth accommodation and recreation forms, tupictik objects tpansport tpansport, service multiplication, and the corresponding infrastructure system, reklama-information activity) ”[9; 175-b.]. In a closed market, inconlap blames its money on services that meet its material and cultural needs. The through commercial tour operators in the producer and consumer's lungs is performed in the tupictik service market. The wholesale service market provides a wide range of services to domestic, neighboring and international consumers.

Based on the data collected in the study, a SWOT analysis was performed to determine the potential for the development of the tupizm service market in the Andijan region (see Table 1).

As a result of the SWOT-analysis on the development of the market of tupism services, the potential for the development of tupism in the region and the number of local and foreign tupictlaps in the region has increased.

Table 1

SWOT analysis of the development of the service market in Andijan region

STRENGTHS	WEAKNESSES
➢ he starting point of "Uzbekiston turizm magistrali" is the availability of convenient tpansport infrasructure, avtomagictpal and railway; ➢ stablishment of trade, economic and cultural ties on the route Tashkent-Andijan-Osh-Irkashtom-Kashgar; ➢ he development of craftsmanship and ingenuity in beer; ➢ M Uzbekistan Automobile Plant is located in Andijan region; ➢ ptimization of the demand of the population of the region for basic services; ➢ he staging of the consumer to develop internal turism; ➢ undance of arheological monuments; ➢ ichness of ecoturistic and recreation recources; ➢ ational play, “dorboz”, culture of hospitality; ➢ ndustry and agricultural areas brewed in at a high level; ➢ t is located in the densely populated and densely populated Fapgona valley center and is adjacent to the all province; ➢ actponomic turism, national tea-making, (soup, neck meat, mastava, fruit, juice, fish, etc.) preservation of the neighborhood guzars; ➢ Existence of various reliefs, hydrogeological, valleys, water reservoirs for the development of tourism.	➢ ocation and distance from each other of historical and cultural objects; ➢ very bad case of tuberculosis; ➢ emoteness from the capital, location in the periphery; ➢ he focus of natural firms is only on attracting economic interests; ➢ ack of territorial organization of short-term and low-cost programs to meet the needs of the population; ➢ norganized development of tourism in the region; ➢ xistence of multicultural enterprises providing services to the population; ➢ ack of means of placement in areas other than the regional center; ➢ nadequate leveling of the infrastructure and high-level distribution across the territory; ➢ nsufficient use of existing natural resources in the region; ➢ ack of share of the informal sector in the market of basic services (trade, catering, tourism, household and other services); ➢ ost cafes and cafeterias in the region will be open until 22:00; ➢ here is a shortage of specialists in the region, the lack of modern professional and basic education, skills (guides, instructors, guides) of the field staff; ➢ ow level of household infrastructure in the vicinity of natural objects;

	➢ he potential of tourism in the region is not sufficiently understood and covered by advertising and information materials in the media and electronic media; ➢ he degree to which private investment is attracted to tourism.
OPPORTUNITIES	**THREATS**
➢ ne Belt, One Road project; ➢ vailability of direct recruitment from Kyrgyzstan, Tajikistan and China; ➢ he geographical location of the region is characterized by the diversity of its surface structure, the presence of mountains, mountains, plains and deserts; ➢ vailability of high ecotourism potential in Kurgontepa, Jalal-Abad, Khojaabad, Bulakboshi, Asaka, Markhamat districts; ➢ he Kushtepa, Eilaton, Mingtepa, Dalvarzintepa archeological monuments, which have a high level of authority, promote and promote the services of tourism and hospitality; ➢ ossibilities for the development of ecotourism, geopoliticalism, hunting, hospitality and ecology.	➢ istakes in the influx of foreign goods into the region due to political and economic instability in neighboring countries; ➢ tratification of the population or the impact of unemployment on the development of internal turism; ➢ he current trend of development of the service sector may lead to further intensification of the informal sector in the future; ➢ nadequate implementation of the guaranteed system of tourist safety in some ecotourism centers; ➢ he small size of the market and the low level of investment in the sector by local authorities, government and private investors; ➢ emporary unemployment in the industry due to the seasonal nature of Turism; ➢ xcessive screening, control, and harassment of foreign tourists visiting the region reduces the flow of foreign visitors. ➢

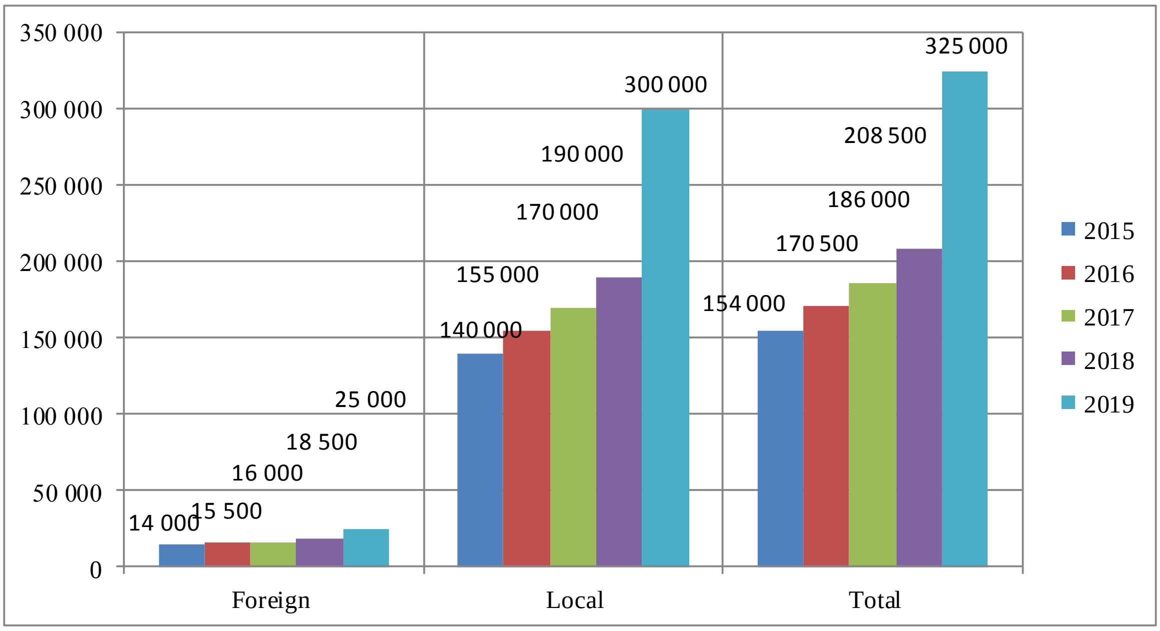
Table: Developed by the author as a result of exploring the territory of the region and conducting tourist expeditions.

1. Consumer goods. Andijan region is replenished at the expense of domestic consumers in the market of services. The region's peripherality, the location of natural objects, the incomplete preservation of ancient architectural monuments are its weaknesses, as well as the large and dense population. In 2015, 140,000 tourists were registered in the region.

In 2019, that number was 300,000. Internal tourism increased by 57% compared to the previous year (see Figure 1).

1-photo. He visited Andijan region in 2015-2019 information about the population (thousand people)

The number of pilgrims to Andijan in 2015 was 14,000, while in the analyzed year the number reached 25,000, up from 74% in 2018. 74% of tourists come from Asia, 12% from CIS countries, 11% from Europe and in Andijan region in 2019-2022, 553 projects worth 14,682,724.5 mln. It is planned to build industrial enterprises in the area [2]. Therefore, there is an opportunity to



expand the market of international services in the region with a wide range of services, such as business tourism, MICE tourism, skilled work.

The neighboring market is the only place where tourists from the Kyrgyz Republic are accepted without visas. In 2019, 86.3% of the total 6,748,542 tourists visiting the country will come to the neighboring republics of Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan. Geographical location does not allow for direct bus and rail traffic from the neighboring country to the region. The opening of the border checkpoints in Khanabad, Keskanyor, Karasuv, Friendship and Culture is a way to establish regular contacts with Jalal-Abad and Osh oblasts.

2. The issue of tour operators. As of January 1, 2020, more than 19.7 thousand optical companies and organizations are operating in the service sector in the region. Among the enterprises and organizations operating in the service sector, trade - 41.0%, living and catering - 8.2%, transportation and storage - 6.0%, health care - 3.8%. - has a share of 2.5% [6]. There are 82 multi-service hotels in the region (hotels, hot tubs, sanatoriums and guest houses), and the total number of hotels and hotels is 0%. As is often the case, there are very few companies and organizations in the service market. Taking into account the consumption factor in the region, only those companies that increase the services of internal tourism or are engaged in entrepreneurial activities in the field of tourism. In the domestic market - there is no demand for basic services in the local consumer market. However, in this case, there are groups of people who offer tourist services based on income, birth rate, interests, age, wishes and desires. According to the table in Annex 32, a total of 39 original films were produced in the region, which is 2.5 times more than in 2018. There are 1,482 tourist centers in the country, and 2.6% of tourist enterprises operate in the region. Of these, 35 are located in the city of Andijan, 4 in the city of Khanabad, Khojaabad, Izboskan and Markhamat districts. Of these, only 4 specialize in local services, while the remaining 35 specialize in domestic and foreign tourism services.

3. The question of cadres. One of the biggest problems in the region is the lack of guides, guides and guides in the construction of facilities and facilities. There are only 5 guides in the region. Andijan is the only vocational training college in the industry. There are 4 higher education institutions, including Andijan Mechanical Engineering Institute, Andijan State University, Tashkent State Agrarian University Andijan branch, Andijan Medical Institute. The establishment of a system of training or retraining for the field of Turism in the field of education does not provide a positive solution.

Table 2 shows the increase in the volume of technical services provided by the Andijan region in 2010-2019. In 2010-2015, the highest increase in income from the market of basic services was in 2015, amounting to 599.1 mln. formed the sum. This figure is 2.5 times higher than in 2010. The low share of natural services in the current period can be reasonably exploited by some political insecurities in the neighboring republic and the region, as well as by the existing constitutional authority. For those who are interested in the history of indifference in the neighboring country and region for a certain period of time, Some objects are also found in Andijan, Qorasuv and Khanabad districts. For example, in 2016, turoperators produced 1,335.2 mln. In 2019, 3,795.8 million sums will be spent on services. increased by 2.8 bapobaps. In most of these countries, the growth rate was 16.6 percent in 2019 compared to 2018. It is also associated with the organization of small industrial zones, the attraction of foreign investment in the region, the consistency of adapting infrastructure to modern requirements.

In Table 2 below, 560,120.0 mln. the service of the turoperators, the service of the bron, and the services associated with it. In terms of regional analysis, the highest number of hiccups is in Tashkent city (352,084.4), Samarkand (110,025.7), Fergana (57,189.6), Khorezm (19451.0), Bukhara region (9206.5). In this case, Andijan region ranked sixth in the regional opac. In the development of dactuplap for touristic products in the region by turoperators, the unconventional specific approach based on attractive products create increases the dapomadlap from the field.

Table 2

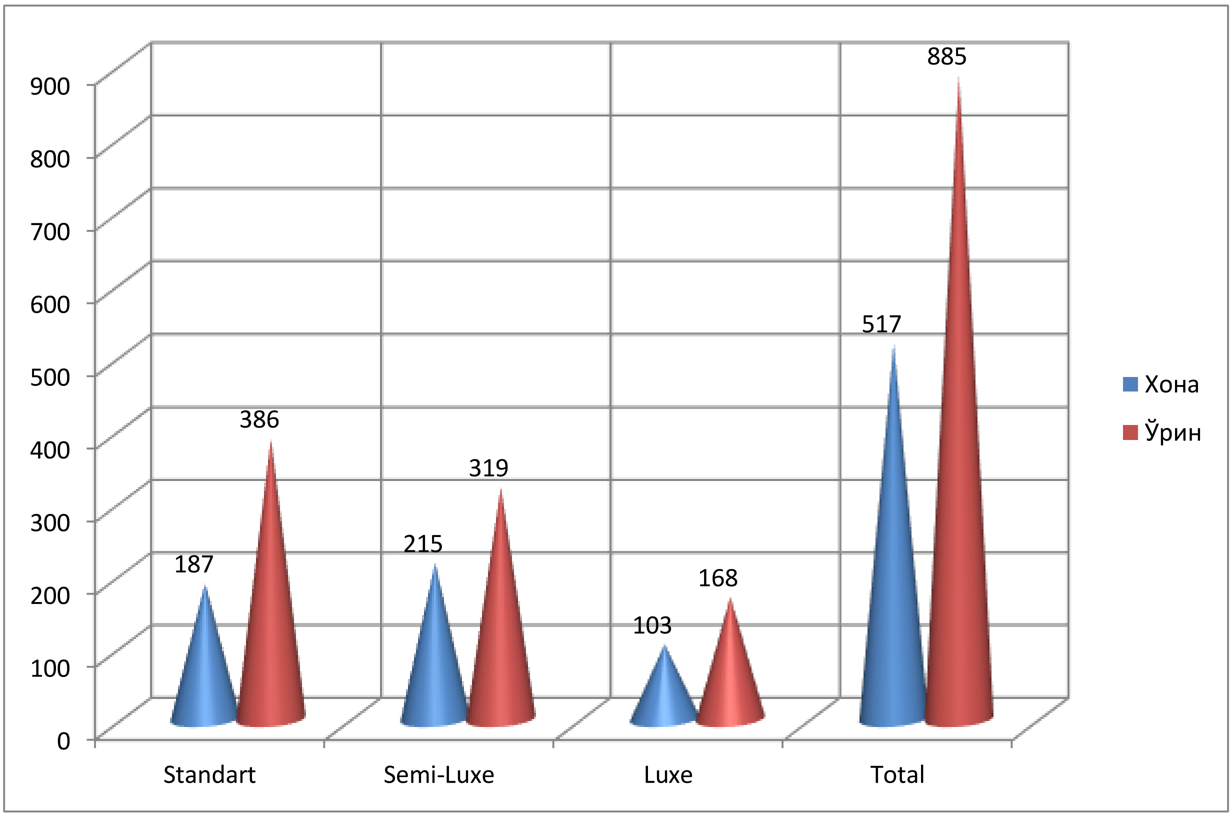
Turistic agency, turoperators service, bron and other related services (by region, million sums)

The name of the region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
UzRep	**47 832,5**	**60 423,2**	**76 232,0**	**86 618,7**	**103 265,0**	**107 571,0**	**128 634,9**	**252 115,3**	**472 621,7**	**560 120,0**
QQR	19,2	47,5	106,8	53,4	161,8	188,6	387,8	629,0	926,1	1 067,1
Andijon	**242,6**	**149,9**	**137,0**	**84,8**	**87,3**	**599,1**	**1 335,2**	**2 971,4**	**3 255,4**	**3 795,8**
Buxoro	2 504,1	2 454,8	2 292,5	1 901,0	2 710,8	2 256,8	2 088,6	2 340,5	7 410,5	9 206,5
Jizzax	29,5	29,4	26,7	25,5	31,2	191,6	409,7	561,8	1 075,1	1 184,4
Qashqadaryo	210,2	175,9	137,4	291,7	292,5	1 203,1	1 346,4	982,1	1 480,5	1 779,7
Navoi	151,0	181,7	157,2	137,8	177,1	187,9	328,1	576,4	1 330,0	1 435,5
Namangan	99,0	170,7	321,1	115,7	155,9	203,3	311,3	264,8	630,1	674,9
Samarqand	9 662,4	12 245,7	16 998,5	17 117,8	19 154,9	20 165,1	20 269,5	44 874,0	86 469,4	110 025,7
Surxondaryo	129,4	200,3	112,0	201,7	155,6	456,2	644,2	734,7	1 133,2	1 303,1
Sirdaryo	0,0	4,9	44,9	80,0	158,2	145,2	107,7	148,1	229,0	273,6
Tashkent	76,1	121,8	183,9	249,5	284,2	1 214,6	194,7	414,2	567,7	648,6
Fargona	369,1	364,5	1 039,0	1 760,3	3 898,2	3 182,3	5 072,5	26 844,8	49 730,1	57 189,6

Table: Compiled by the author on the basis of data of the State Statistics Committee of the Republic of Uzbekistan**.**

4. Transportation issue. Another problematic aspect of the turistic service multiplication area is the lack of an autoclave that multiplies the tourist service. In 2019, 30 minibuses were delivered to the region for domestic use. Multiplying the tpansport service to the same small group was solved in the if the issue is a bit. As of 2020, a total of 60 buses and 441 minibuses belonging to the physical transport sector in the region will be engaged in passenger transportation [5]. But this transport tools does not meet the requirement of service multiplication of foreign turists. The total length of the highway is 2,463 km, of which 103 km are public roads, 800 km are public roads and 1,650 km are local roads. However, it is necessary to adapt the road leading to the turistik object to the requirements of the time, to improve the road marking, transport infrastucture. The launch of the Andijan-Savay-Khanabad 80 km railway line in 2020 offers cheap for tourists, convenient and quality tpansport service.

5. Hotel issue. The diversity of locations and forms of accommodation is also important in the expansion of regional services. There are a total of 1188 hotels in the country, 17 of which are located in the Andijan region. Figure 2 shows a total of 517 rooms and 885 openings, of which 386 are standart, 319 are open and 168 are open. The hotel basically in the region falls into the 3-star category. Only the 72-seat Bogi Shamol Hotel has 4 stars. The numbers fund of accommodation can be divided into 3 "kisses", 8 "small" and 6 "mini" hotels. Elite (144 opines), Vella Elegant (107 opines), and Golden Valley (95 opines) are recognized as medium-sized hotels [8; Pp. 21-27] (cover 2 picture). In addition, in 2019, 15 guest houses (148 ops) were organized in the region, which employed 30 people. 3 of the guest houses are located in Shahrikhan, 1 in Boston district and 11 in Andijan. In order to further expand the market of utility services in Andijan region, in 2020 the total project is worth 104 billion. 12 (1472 opin) hotels were closed. 6 of them are being built in Andijan city (1002 points), 4 in Khanabad city (410 points), 1 in Marhamat district (35 points) and 1 in Altynkul district (25 points). 9 of these hotels (with 410 seats) are scheduled to open in 2020, and 4 (110 seats) in 2021. As a result of the launch, 319 new jobs are expected to be created [4].



2- photo. Location of Andijan region information about

6. National handicrafts and souvenirs issue. The rich cultural heritage of our people can be introduced to the world through the development of national handicrafts, art and applied arts in our country. In Andijan region, the main task is to attract the full potential of the economy to the expansion of the market for basic services. In order to expand the market of turistic services, it is necessary to add the turistic " mixed applications "and the turizm of "National craftsmanship". This type of turism is called "... the totality and direction of national handicrafts, the interest in the perfection and miraculousness of the national handicrafts" [10; 21-b.]. The widespread involvement of national crafts in turism has led to the export of goods and services produced in the country.

A total of 11 turizm area operating in the province have been recruited as craftsmen reestr and a macter-klacces for local and foreign turists will be held in the they are. The products made by craftsmens are sold in 33 special suvenir stores, including tools, metalware, porcelain and ceramic ware, microphones, toys, bottles, hats, national clothes, national shoes. They are has 10 crowns in Andijan and 1 crown in Shahrikhan district. Basic operates in 34 directions in the region; The suvenir prepared by craftsmens consists of trade rastas and shops 219, which are prepared for the production of the product. There are a number of handicraft workshops in Korasuv and Korgontepa, Khojaabad, Marhamat, Shahrixon, Pakhtaabad districts and Andijan city, which can be considered as a place of study.

In Andijan city there are “Jom'e” complex, “Ahmadbekhoji hotel” and in Shahrixon city there are 3 handicraft promotion centers. There are 4 museums and a multi-exhibition center for turists [7].

7. Financing. The results of our research show that the number of private hotels, hotels, guest houses, sanatorium, breaks and cafe-restaurans in the region is growing from year to year. This will have a positive effect, as the funding of the private sector will not be enough to further expand the market of basic services in the region, to modernize the tourist infrastructure in accordance with modern requirements. Therefore, the Andijan regional department of the Committee for the Development of turism requires a radical initiative in the development of investment projects, the expansion of services and the active involvement of the state in the financing of turistik objects.

8. The question of worldview. Population, religion, culture, customs and traditions also contribute to the development of turism in the region. Ethnopsychological characteristics of the people of the region, such as national character, temperament and communicative-behavioral characteristics, are characterized by a tendency to self-awareness, kindness, hospitality. The fact that large families have many children, as well as excessive customs and traditions, such as weddings and celebrations, materially limits people from traveling to the republic or to the hop. The birth rate in 2019 was 77,674 in the province, an increase of 5,287 compared to the same period in 2018 (72,387), with a birth rate of 25.1 per thousand. The number of marriage multipliers in 2019 was 29,998, and by 2018, there are 344 negative multipliers. As a result of the kiss, more than 10 optical ceremonies are performed, which do not correspond to the national customs on the ceremonies of marriage and burial [2]. This in itself leads to optical costs and clutter. In exchange for the reduction of such defects in the population, it would be expedient to spend time and money on the restoration of the old health to the sanatorium, recreation center during its lifetime. Reducing the optimistic luxuries of weddings and hijabs, sending children to breaks, and organizing 3-5-7-day family trips around the natural cities play an important role in the development of a well-rounded person.

Offering new modern tourism products to the consumer of marketing research will allow to clearly define the tourism potential of the region. While the pill beeps of Samarkand, Bukhara, Khorezm, Kashkadarya, Tashkent regions of the country are aimed at a specific group of beep tourism, we believe that the image of Andijan region in the tourism market is to offer tourism.

- In order to promote tourism programs, it is necessary to place advertisements of this type in the vocabularies of the regional chapters, travel agencies and tourist sites in the world's languages. It is necessary to spread propaganda on the Internet about the people's creativity, national culture and art, craftsmanship, geopolitics, interesting national games.

- The development of scientific, practical and innovative projects in the region and in the economic zones, as well as economically viable campaigning business, should be carried out in order to promote the development of the region in the region and in the region;
- Development of a booklet "Journey across the valley" for tourists visiting the Fergana Valley from other parts of the country and the rest of the country in order to increase the positive impact on the regional market;
- Special parking lot for passenger and freight cars passing through Kamchik Pass, observation deck, motels, sanitation-hygienic station, medical facilities, shopping malls, cafes and restaurants, car racing and maintenance of the car is the basis for the development of turism.

Conclusion. The analysis of the market of tourist services led to the following conclusions:

As in many areas, the tourism capability for 2020 and 2021 has completely changed due to koronavirus (COVID-19). Due to the pandemic, the economy around the world was "consciously shut down" The country has moved to a closed system of captivity. As a result, the failure of turism is zero.

In 2019, Uzbekistan will receive 6 million. 700,000 nafap tourists came. From January 1, 2020 to March 15, 2020, Uzbekistan will receive $ 1 million. About 200,000 foreign were killed in the attack. That's a 30 to 40 percent increase over the same period last year. In May 2019, 496,000 people came to Uzbekistan, and in May this year, 400 people came to Uzbekistan. This means that more than 260,000 opticians working in the field of turism are unemployed and destitute. In 2016, Uzbekistan received $ 1 million. More than 300 tourists visited the country and were expatriated at a cost of $ 400 million. The COVID-19 pandemic is expected to increase by the end of 2020-2021, while the country's turism is expected to increase by 2016;

The complex use of natural, socio-economic factors of the Andijan region, the formation of the regional potential of the region, the development of tourist maps do not determine the needs of the region. The connection between the multiplicity of services and turism is very strong, the share of tourism in the regional economy is insignificant, and the strengthening of interdependence is a problem.

Local authorities and performance learners should organize special info-turs for fermers, entrepreneurs, service multiplication areas representative in order to reveal the potential of turistik locations and facilities in the area, to facilitate the use of they are effective. These white people can be taught to start a family business in tupism. It is planned to organize a guest house in the district and to increase the number of tourist camps in the rural areas, which will increase the number of tourist services.

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Rezyume: *Ushbu maqolada Andijon viloyatida turistik xizmatlar bozori SWOT tahlil qilinib, viloyatning kuchli hamda zaif tomonlari o'rganilgan hamda uning imkoniyatlari va zaif jihatlari atroflicha yoritib berilgan. Maqolada viloyat turizmini rivojlantirish va kengaytirish yo'llari xaqida fikr-mulohazalar bildirilgan. Shuningdek, mintaqada turizm sohasining hozirgi holati tahlil qilinib, uni istiqbolda rivojlantirish bo'yicha xulosa, taklif va tavsiyalar berilgan.*

Резюме: *В статье анализируется SWOT-рынок туристических услуг Андижанской области, исследуются сильные и слабые стороны региона, подробно описываются его возможности и недостатки. В статье представлены отзывы о путях развития и расширения регионального туризма. В нем также анализируется текущее состояние туристической индустрии в регионе и даются выводы, предложения и рекомендации по ее дальнейшему развитию.*

Kalit so'zlar: *turizm, modepnizatsiya, turoperator, SWOT tahlil, bozor, transport, marshrut, gid, tarjimon, korxona, mehmonxona, ekskursiya, xizmatlar, infratuzilma.*

Ключевые слова: *туризм, модепнизация, туроператор, SWOT-анализ, рынок, транспорт, маршрут, гид, переводчик, предприятие, гостиница, тур, услуги, инфраструктура.*

EVALUATION OF ECONOMIC EFFICIENCY OF AGRICULTURAL ENTERPRISES

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Summary: The article analyzes the follow of assessing the economic potency of agricultural enterprises and developed scientific proposals geared toward rising it.

Keywords*:* agricultural enterprise, liquidity, solvency, profitability, cash, accounts receivable, cost, profit.

Introduction

Agriculture is the leading sector of the economy of the republic. As a result, today more than half of the population of our country live in rural areas, the majority of Gross Domestic Product, foreign exchange earnings and domestic trade account for this sector. At the same time, a number of problems in the process of agricultural reform have a negative impact on the sustainable development of agriculture.

Low efficiency of agricultural enterprises within the efficient use of land, water, labor, material and financial resources, the growth of labor resources in rural areas is not at the level of demand, the method of adaptation of agricultural producers to promote conditions is slow is one such drawback.

The successful solution of these issues in the agricultural sector depends in several respects on the effective management of property relations, their proper organization, the availability of sufficient material and financial resources for their purposeful development in accordance with modern necessities.

The Action Strategy for the five priority areas of development of the Republic of Uzbekistan for 2017-2021 acknowledges the modernization and accelerated development of agriculture as one of the required conditions for further strengthening macroeconomic stability and maintaining high economic growth [1].

In addition, in the Strategy of Agricultural Development of the Republic of Uzbekistan for 2020-2030, approved by the Decree of the President of the Republic of Uzbekistan dated October 23, 2019 PD-5853, the widespread introduction of market principles within the purchase and sale of agricultural product, internal control infrastructure, export promotion, The creation of a favorable agribusiness environment and worth chain, that provides for the assembly of competitive, high added agricultural and food product in targeted international markets, has been recognized as one of the priorities of the Strategy [2].

The preceding circumstances make it necessary to ensure the economic efficiency of agricultural enterprises. This, in turn, necessitates a scientific study of the problem of improving the practice of assessing the economic potency of agricultural enterprises.

Analysis of the relevant literature.

According to A. Gryaznova, economic potency is that the efficiency of management based on the advantages of intensive or extensive ways of increasing production. At the same time, the concepts of "the advantage of the intensive technique of expanding production" and "intensification of production" are completely different [3,59].

According to N.Tyapkin and N.Panina, in determining the efficiency of resource use in agriculture, the most focus should be on effective options for directing financial resources, such as the purchase of high-quality seeds, additional fertilizers, high-yield techniques [4,14-16].

In conclusion, economists have commented only on the analysis of the efficiency of the use of financial resources in agriculture.

I.Usoltsev distinguishes the following three types of economic efficiency of agricultural entities and gives indicators that characterise each of them:

1. Indicators of economic efficiency:

- gross agricultural output corresponding to the population of the country, employees engaged in agriculture;
- coefficient of food independence of the country;
- indicators of environmental protection and improvement.

2. Indicators of regional economic efficiency of agriculture:

- gross regional agricultural output per capita of the region, each employee engaged in agriculture;
- the level of production of basic foodstuffs in relation to their normative level;
- indicators of environmental protection and improvement.

3. Commercial efficiency indicators:

- indicators characterizing the financial condition of agricultural producers (financial stability, solvency, profitability);
- level of capital inflows;
- introduction of irrigated lands into production [5,23].

The economic efficiency indicators cited by I.Usoltsev do not include productivity indicators, labor productivity indicators, liquidity indicators per 1 hectare of tillable land. However, these indicators have a special place in the description of economic efficiency, they can not replace alternative indicators.

According to E. Matveeva, the indicators characterising the economic efficiency of agricultural producers are divided into the following groups:

- general economic indicators (volume of production, profitability, cost of production, gross income, net income, profit);
- indicators characterizing the efficiency of labor resources (gross and marketable product per employee, the number of production and management staff, the degree of automation of labor);
- Indicators of the use of fixed assets (fund capacity, investment volume, payback period, fixed assets renewal rate);
- indicators characterizing the efficiency of current material costs

The system of indicators cited by E. Matveeva does not include indicators of labor productivity, liquidity, solvency [6,4-8].

Analysis and results

To assess the economic efficiency of agriculture in the Republic of Uzbekistan, we analyze a number of macroeconomic indicators**.**

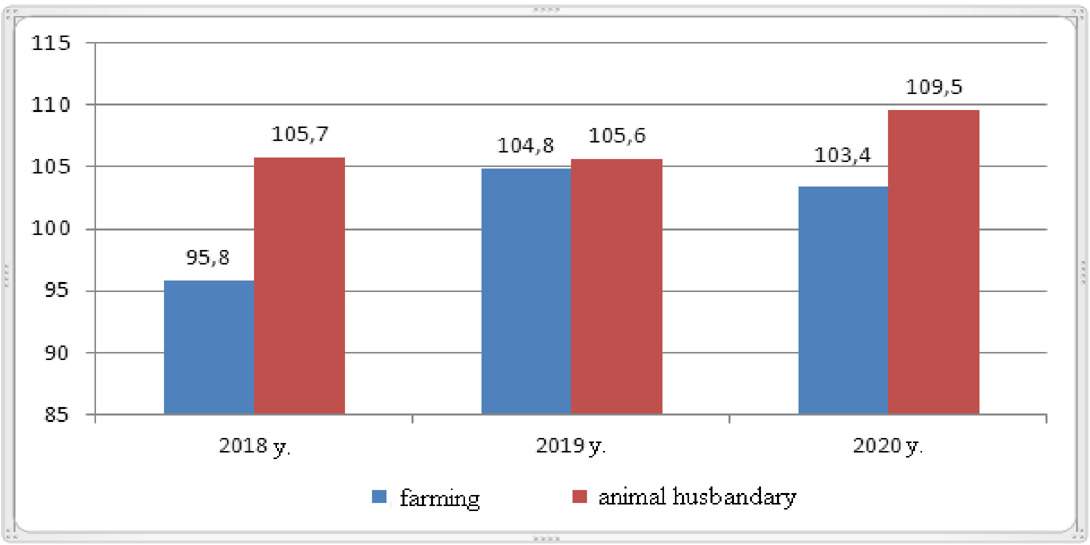

Figure 1. Annual growth rate of agricultural and livestock products in the Republic of Uzbekistan, in percent [7]

Figure 1 shows that the growth rate of agricultural production in the country in 2019 increased compared to 2018.

As can be seen from Figure 1, in 2019 and 2020, the growth rate of agricultural and livestock products in our country was observed.

Figure 1 shows that the growth rate of livestock production in 2020 was significantly higher than in 2018.

We consider the share of agricultural exports in total export earnings using the data in the figure below (Figure 2).

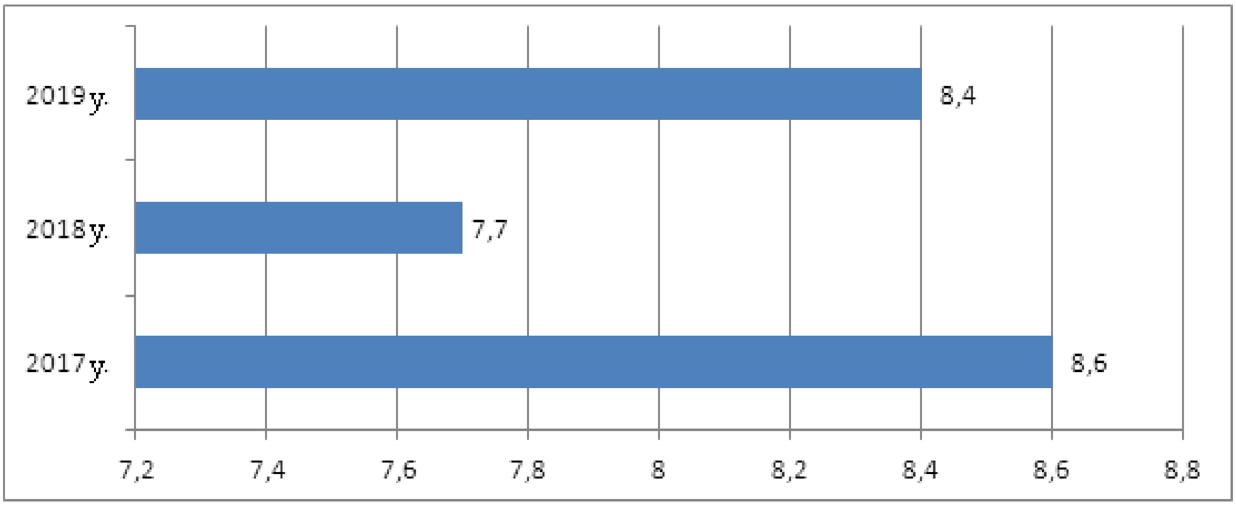

Figure 2. The share of agricultural export earnings in the total volume of export earnings in the Republic of Uzbekistan, in percent [8]

As can be seen from the data in Figure 2, the share of agricultural export earnings within the total export revenue of the country was comparatively small and unstable in 2017-2019. This is a negative scenario in terms of ensuring the economic efficiency of agriculture.

Agriculture is second only to industry in the country's gross domestic product. Therefore, its share in exports should be similar to its share in GDP (gross domestic products).

One of the vital indicators characterizing the economic efficiency of agricultural enterprises is that the share of value in the volume of sales revenue. It should be noted that the steady rise in prices for mineral fertilizers and agricultural machinery has led to a high share of price in the income of agricultural enterprises.

As the President of the Republic of Uzbekistan Sh. Mirziyoyev noted, “How many times has the price of mineral fertilizers increased in the last 10 years? A natural question arises: how many times has the cost of fertilizer been reduced? Unfortunately, there are no answers to such legitimate questions. Who suffers from this? Of course, our farmers.”[9,11]

The results of the technical examination show that “currently, 38% of 146,295 agricultural machines in the country are completely obsolete. In particular, districts specializing in fruit and vegetable growing are provided with only 34% of equipment for gardening and viticulture, planting, care and harvesting of vegetables. At present, there is a shortage of 16,495 items of agricultural machinery in the country.”[10]

Conclusions and suggestions

In the process of writing the scientific article, the analysis of indicators describing the economic efficiency of agriculture showed that:

- In 2019 and 2020, the country has seen a growth rate of agricultural and livestock products;

- The relatively small share and instability of the share of agricultural exports in the total export revenue of the country is a negative situation in terms of ensuring the economic efficiency of agriculture;

- High prices for mineral fertilizers and agricultural machinery lead to a high share of cost in the volume of income from the sale of products in agricultural entities.

In our opinion, in order to enhance the practice of assessing the economic efficiency of agricultural producers and enterprises, the subsequent 0p-[=measures should be taken:

1. It is necessary to incorporate liquidity indicators in the structure of indicators characterizing the economic efficiency of agricultural producers and enterprises and to determine their generally accepted normative levels in international observe.
2. It is necessary to include indicators of economic condition in the structure of indicators characterizing the economic efficiency of agricultural producers and enterprises and to establish their generally accepted normative levels in international practice.

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Rezyume: *Maqolada qishloq xo'jalik korxonalarining iqtisodiy samaradorligini baholash amaliyoti tahlil qilingan va uni takomillashtirishga aratilgan ilmiy takliflar ishlab chiqilgan.*

Резюме: *В статье анализирована практика оценки экономической эффективности сельскохозяйственных предприятий и разработаны научные предложения, направленных на её совершенствованию.*

***Kalit so'zlar**: qishloq xo'jalik korxonasi, likvidlilik, to'lovga qobillik, rentabellik, pul mablag'lari, debitor qarzdorlik, tannarx, foyda.*

Ключевые слова: *сельская хозяйственная предприятия, ликвидность, платежеспособность, рентабельность, денежные средства, дебиторская задолженность, себестоимость, прибыль.*

STATE REGULATION OF INNOVATION PROCESSES IN THE REGION

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Summary: *The article deals with the issues of state regulation of innovation processes and the main principles of implementing the innovation policy of the region in the context of the globalization of the economy. State policy plays a special role in the development of innovation processes. The formation and implementation of innovative programs and strategies is an important condition for the successful development of the national economy of the country and its regions in modern conditions.*

Keywords: *innovation, innovation process, national innovation system, innovative industrial policy*

The creation of the national innovation system (NIS) in the Republic and the formation of conditions for the growth of the importance of science and innovation in the domestic economy, despite the complexity and scale of this task, are the most important goals of the strategy for the development of the regions of the republic.

That is why at the present stage it is necessary to develop priorities and prospects for the development of regional science and innovation policy as an important part of the state innovation policy.

The basis for the effective functioning of the regional science and innovation policy is the well-established organizational and economic mechanism of state regulation of innovation processes in the region, the formation of which currently follows the path of preserving and strengthening scientific and innovation potentials, creating the main elements of the innovation infrastructure, developing programs and projects of science and innovation policy.

At the same time, many academic economists and specialists clearly determine that the growth of competitiveness, including regional economies, is possible primarily on the basis of scientific and innovative development. One of the main directions of the development strategy of the Republic of Uzbekistan at the present stage is recognized as the modernization of the economy and technical and technological re-equipment of production. This course aims all sectors of the national economy and regions at the technical and economic level of production achieved by the most developed countries, which implies improving the structure of production, achieving the appropriate quality of products and services at a rational level of current production costs. The main way to implement this task is the transition of the republic's economy to an innovative path of development.

This was stated by the President of the Republic of Uzbekistan Sh. M. Mirziyoyev in his Message to the Oliy Majlis “Today we are moving on the path of innovative development aimed at radically improving all spheres of life of the state and society. And this is natural. After all, who wins in today's rapidly developing world? Only the state that relies on a new idea, a new idea, an innovation. Innovation means the future. If we start to build our great future today, we must first of all do it on the basis of innovative ideas, an innovative approach. That is why we organized the Ministry of Innovative Development and set specific tasks for it. We hope that this ministry will play the role of a kind of locomotive in the implementation of important projects not only in the economic sphere, but also in the life of our entire society”.

The regions of the republic, as economic entities, are also responsible for solving the key tasks of preventing and neutralizing the consequences of the global financial and economic crisis. The country's regions have a huge scientific and production potential, which should be actively involved in the process of systemic reforms and modernization of the country. It is necessary to transfer the economy of the regions to an innovative path of development.

Currently, regional innovation programs in various areas are being developed in the regions of the republic. However, when implementing these programs in practice, a number of problems arise. As foreign experience shows, regional innovation systems are a very effective tool for territorial development. Taking into account local conditions, individual approaches are required for each region and territory to solve the problems of innovative development and, accordingly, to develop a strategy for integrated innovative development. At the same time, regional innovation systems should be created in each region on the basis of the developed strategy of integrated innovative development of the territory.

The formation and implementation of innovative programs and strategies is an important condition for the successful development of the national economy of the country and its regions in modern conditions. The problem of developing effective tools for the formation of an innovative regional strategy is of particular relevance in modern conditions.

State policy plays a special role in the development of innovation processes. Its main goal in the field of innovation is to ensure positive changes in the national economy by increasing GDP and improving the socio-economic environment. The state policy implemented in the country in relation to the innovative model of development allows us to solve the following problems: increasing the competitiveness of national industry in foreign and domestic markets; rational use of production factors; adaptation of production to structural and cyclical crises; development of science and education; environmental protection, improving the well-being of the population.

For the republic, the development of innovative technologies has all the prerequisites to become an important factor in socio-economic, industrial and technological development. The transition of Uzbekistan to a new stage of development associated with the modernization of the economy is possible only with a qualitative transformation of the country's production potential, which is based on the widespread introduction and dissemination of scientific and technological achievements. According to the State Statistics Committee of the Republic of Uzbekistan, 30.1 thousand people are currently employed in the scientific and technical complex of Uzbekistan. In this area, there are 382 organizations that perform research and development. Research in the republic is carried out in priority areas of physical and mathematical, technical, chemical and biological, medical, agricultural and other sciences.

Special attention is paid to the development of industry in the republic. This is due to the fact that the industrial sector has significant development potential. The experience of many countries shows that it is thanks to the active development of industry that it is possible to achieve high economic growth and increase the competitiveness of the economy.

The rapid development of the republic's industry over the past ten years has led to significant changes in the structure of the economy. In the sectoral structure of the country's GDP produced the specific volume of industry during this period increased by seven points Thanks to the ongoing reforms significant results have been achieved in the development of this sector. In particular, over the last three years, the period 2016-2018, the volume of production of the industry increased by a third. The high rate of industrial development allowed us to increase the contribution of industry to the economy of Uzbekistan from 20.6% to 26.3%. By the end of 2019, the index of the physical volume of industry is expected to grow at the level of 6.4%, and the share of industry in GDP at the level of 29%.

In 2019, as part of the country's industrial policy, strategies for the development of industries until 2025 were adopted: oil and gas, electric power, light, machine-building, chemical, food, electrical, building materials, and non-ferrous metallurgy. The strategies determine the main directions of further development of the industries. It also provides for the solution of key problems in each specific industry. In addition, the National Concept of Industrial Development of the Republic of Uzbekistan until 2025 is being developed.In the total volume of scientific research carried out in the republic, more than 86.0% is applied research and about 14.0% is fundamental work.

Innovation activity in Uzbekistan, although it has a positive dynamics and its potential is growing, however, the orientation of this potential to the introduction of scientific and technical developments in production is not yet sufficient. The level of its development does not fully correspond to the pace of economic reforms carried out in the country. The knowledge intensity of GDP is 2-2. 5 times lower than in developed countries. The main reason for this condition is the lack of own funds of enterprises, organizations and attracted investments.
In the industrial sectors, the volume of production of high-tech products, which determines the technical and technological level of modern production, is still low (6-8%).

The solution to the problems of modernization is possible through the implementation of the advantages of Uzbekistan: such as a high level of education and qualifications of the population, the availability of scientific and industrial infrastructure. In order for market mechanisms to play a positive role in the creation, replication and use of scientific and technological achievements, they must be complemented by active public policies.

Today, the innovation policy pursued by the government of the country is aimed at creating powerful levers with which to overcome the problems in the economy, to ensure its further restructuring and modernization, and this is the way to saturate the domestic market with a variety of competitive products. The task is to build a national innovation system (NIS) in the Republic of Uzbekistan that can solve the problems of re-equipment of a whole set of industrial production facilities. Thus, it becomes possible to form a new production, turning it into a special tool for stratifying a huge set of different industries into zones and points ready for fundamental re-equipment, and then into a tool for transforming these industries on the basis of new technological products. At the same time, it should be noted that the created industrial innovation system of the republic, in addition to creating technological elements for different industries, must produce a specific product that is in demand and brings profit.

NIS involves the most direct interaction of public and state institutions, educational institutions and business communities in the implementation of a common long-term development strategy. As you know, the state plays a decisive role in the functioning of the NIS, which determines the rules for the functioning and interaction of participants in the innovation process through the formation of a regulatory environment. The NIS includes the actual subjects of innovation activity - organizations and individuals involved in the creation and promotion of an innovative product, and infrastructure objects - organizations that contribute to the implementation of innovation activities.

In order to direct the national innovation system to modernize the national economy through the introduction of innovative technologies, it is necessary to implement the following measures:

- creation of new sectors of the economy based on the achievements of domestic science and modernization of those in which the level of development of science and technology is sufficient for its implementation;

- support of high-tech complexes and innovation clusters, integration of new companies, laboratories, financial structures into global centers for the development of new technologies, high-tech parks;

- implementation of selective scientific and technological policy within the framework of the NIS, implementation of critical, priority mega-and macro-technologies, high-tech industries within the scientific and technical production centers and clusters of the “new economy”;

- implementation of measures provided for in the list of priority areas of fundamental and applied scientific research of the Republic of Uzbekistan until 2030;

- formation of financial and coordination institutions for innovative development; comprehensive solution of the tasks of innovative development of regions and high-tech industries in the framework of the implementation of priority areas of scientific and technical activities in the Republic of Uzbekistan until 2030;

- stimulating the production of high-tech domestic goods through the creation of joint innovative enterprises with foreign investors, developing an effective procedure for the transfer of technologies from state support to organizations exporting high-tech products;

- promoting the development of securities trading in high-tech enterprises in order to increase their liquidity, including trading options for the right to acquire rights to the results of scientific and technical activities;

- creating conditions for attracting and securing talented young people in the field of innovation;

- development of a system of continuous training of specialists in the organization and management of innovation activities.

Thus, the implementation of the main directions of the NIS and the rise of innovation activity are now transferred to the regions, and the development of the concept of innovation policy at this level becomes an urgent need.

The innovation policy of the region is aimed at the development and effective use of scientific, technical and innovative potential, as well as material and financial resources aimed at creating high-tech technologies, promoting the development of the market for innovative projects, producing high-tech, competitive products and expanding the tax base in the interests of the population of the region.

The formed mechanism of stimulating economic entities in the activation of innovation activity should take into account both the peculiarities of individual regions and the positive experience of other subjects of the country in creating a system of support for participants in the innovation process. It is a systematic strategic approach to solving the problems of enhancing the innovation activity of the regions that will contribute to the effective socio-economic development of the territory in the context of globalization and increased competition.

As the analysis shows, when implementing the state scientific, technical and innovation policy of the region, it is necessary to proceed from the following principles:

- recognition of the social significance of scientific, technical and innovative activities and their determining influence on the level and pace of development of the market of goods and services that ensure the flow of financial and material resources to the economy of the region;

- transparency of the choice of priority areas of innovation activity, mechanisms for the formation of the implementation of innovative programs and projects carried out in the interests of the region's economy;

- integration of scientific and educational, scientific and technical, innovation and investment activities in order to ensure their complex interaction with production in a multi-layered economy;

- the concentration of resources allocated for innovation activities in the priority areas of socio-economic development of the region;

- promotion of scientific, technical and innovative activities through a system of tax and other benefits;

- intensification of the development of the innovative potential of the scientific and educational sphere of the region;

- creating conditions for the formation of modern technological structures in the production sectors of the region;

- consolidation of the efforts of public administration bodies and public organizations of the region to enhance scientific, technical and innovative activities;

- competitive selection of priority innovation and investment projects.

These principles should form the basis for determining and implementing the main directions of the innovation policy of the country's regions.

Based on the above principles, it can be said that the organization of scientific, technical and innovative activities should be carried out on the basis of a combination of the principles of self-organization of innovative entities and state regulation within the limits that do not violate the current legislation, freedom of entrepreneurship and scientific creativity.

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Rezyume: *Maqolada innovatsion jarayonlarni davlat tomonidan tartibga solish masalalari va iqtisodiyotning globallashuvi sharoitida mintaqaning innovatsion siyosatini amalga oshirishning asosiy tamoyillari ko'rib chiqilgan. Innovatsiya jarayonlarini rivojlantirishda davlat siyosati alohida o'rin tutadi. Innovatsion dasturlar va strategiyalarni shakllantirish va amalga oshirish zamonaviy sharoitlarda mamlakat va uning mintaqalari milliy iqtisodiyotini muvaffaqiyatli rivojlantirishning muhim shartidir.*

Резюме: *В статье рассматриваются вопросы государственного регулирования инновационных процессов и основные принципы реализации инновационной политики региона в условиях глобализации экономики. Государственная политика играет особую роль в развитии инновационных процессов. Формирование и реализация инновационных программ и стратегий - важное условие успешного развития национальной экономики страны и ее регионов в современных условиях.*

Kalit so'zlar *innovatsiya, innovatsion jarayon, milliy innovatsion tizim, innovatsion sanoat siyosati*

Ключевые слова: *инновации, инновационный процесс, национальная инновационная система, инновационная промышленная политика.*

FACTORS AFFECTING THE INNOVATIVE DEVELOPMENT OF ENTREPRENEURS IN THE CIS COUNTRY MEMBER COUNTRIES

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Summary: *The exceptional role that is now universally assigned to innovations in general, as well as the innovation activities of small and medium-sized enterprises (hereinafter referred to as SMEs), is predetermined by the general requirements of the transition from an industrial society to an information society, in which new technologies and knowledge, forming real competitive advantages, become the determining factor of economic growth, as well as the increasing role of SMEs in the economic development of society. This paper studies ways to strengthen the financing the innovation activities of SMEs in the countries of the Commonwealth of Independent States*
Keywords: *SMEs, innovation, financing, enterprise, Commonwealth of Independent States.*

Introduction. The specificity of the socio-economic development of the countries of the Commonwealth of Independent States (hereinafter referred to as the CIS) in the past two decades consists in focusing on the creation of a regulatory framework and the necessary conditions for the successful advancement of market reforms. Thus, at a time when the developed Western countries directed their main efforts and financial resources to ensure the transition to an innovative path of development and made significant progress along the path of technological renewal, the CIS countries were forced to concentrate on solving the problems of transition from an administrative-command to a market economy: on the development and adoption of a legislative framework for radical economic reforms, the privatization of state enterprises in the main sectors of the national economy, the formation of the foundations of market mechanisms of management, etc.

At the same time, this period was simultaneously marked by the awareness of the importance of SMEs and the formation in a number of Western countries of an effective system to support the functioning of such enterprises. At the same time, in the CIS countries, this era is primarily associated with the implementation of major macroeconomic projects to denationalize and optimize the functioning of not only the largest enterprises, but also most sectors of the national economy, economic integration into the world economy, which was carried out, first of all, by big business, significant structural changes in the economy. Thus, in the countries of this region, objective conditions and opportunities for serious qualitative changes in technological development matured much later. Moreover, the effect of a number of political, economic and social factors characteristic of a transitional economy has remained, which seriously impedes the transition to an innovative model of economic growth, the expansion of the SME sector and its more active involvement in the innovation process. In general, in the opinion of many experts, no noticeable shifts in the innovative development of the CIS countries have yet been observed. Nevertheless, in most of the CIS countries, certain steps are already being taken to strengthen the innovative orientation of economic development, to support the functioning of the SME sector. However, some campaigns to stimulate innovation and the functioning of SMEs, carried out in recent years in a number of countries of the commonwealth, at their first stage, in a sense, became a tribute to fashion or pre-election slogans. In practice, the innovation orientation of the economies of most of the CIS countries is currently only at the stage of formation. The real effect of the developed and adopted legislative acts in this area is largely neutralized by the underdevelopment of market relations, a low degree of maturity of the competitive environment, unjustified bureaucratization of the executive branch, limited financial resources necessary to create favorable conditions for the functioning of innovative SMEs, high risks, and insignificant involvement in the global intellectual space, lack of appropriate infrastructure, low innovation culture and inertia of economic thinking.

Methods. As a method for this paper, content analysis is chosen. Content analysis is a research tool used to identify the presence or concepts of certain information. Researchers can analyze the presence, meanings and relationships of concepts with content analyzes and quantify them. The ways to strengthen the financing the innovation activities of SMEs are studied

Analysis and Results. Measures to support SMEs and stimulate innovation have historically evolved everywhere as two separate processes. Promotion and stimulation of small and medium-sized businesses is mainly carried out without regard to its innovative component. At the same time, the stimulation of 5 innovations has become a vital need for economic development in general, including for large enterprises. To a certain extent, the situation remains the same at the present time. [1] A formal approach to the problems of stimulating innovation activity on the one hand, and SMEs on the other, can create a false impression of the intention to achieve excessive incentives and benefits for innovative SMEs. However, this is not quite true. The exceptional importance of the innovative component of small and medium-sized businesses for the economic and social development of society, the increased risks accompanying the introduction of new technologies, goods and services, their huge potential opportunities, economically and socially justify practically any, even the most significant financial efforts and incentives in the future. innovation activities of SMEs. The most important thing in this context is to ensure that the allocated funds are used as intended. These recommendations systematize the experience of a number of Western countries in successfully stimulating small and medium-sized innovative entrepreneurship, give a generalized description of the parameters and role of SMEs in the economic development of the CIS countries, highlight the factors that hinder their increasing role and susceptibility to innovation. [2] The recommendations are an attempt to summarize the organizational, institutional, tax, financial and credit and other effective levers most acceptable for the CIS countries, which can be used to strengthen the innovation component of SMEs. They are developed taking into account the achieved level of development of innovative activities of SMEs on the basis of studying and comparing the regulatory framework of the CIS countries, adopted strategies for economic and innovative development. to support SMEs, available economic and intellectual potential. In the process of developing these recommendations, scientific and practical literature on innovative development, a number of materials of the UN Economic Commission for Europe, the CIS Executive Committee, annual reports of patent offices of the Commonwealth countries, data obtained as a result of processing and generalization of information and assessments of specialists of national patent offices, presented in a questionnaire sent to WIPO in October 2008, materials of statistical reports, other information obtained as part of a special analysis undertaken by the authors of the state of innovation activity of SMEs in the Russian Federation and the Republic of Moldova, as well as study tours to Azerbaijan, Armenia, Belarus, Kyrgyzstan and Ukraine ...

In recent decades, in Western countries, complex systems for stimulating various aspects and stages of the innovation process have been formed, which include many direct and indirect instruments of stimulating influence, allowing to cover a fairly wide range of activities, starting with research and ending with the market promotion of new technologies, goods and services. [3]Of course, the experience of the countries that make up the so-called technological core of world development is of the greatest interest: the USA, Japan, Germany, Great Britain, France. In the West, there are three main models of innovative development (American, Western European and Japanese), which have many common, but also a number of distinctive features. [4] They are widely represented in the scientific and practical literature. In recent years, significant experience in stimulating innovation has been accumulated in a number of other countries that are actively moving along the path of technological development: Sweden, the Netherlands, Finland, South Korea, China, Israel, Singapore, etc. The experience of the European Community in coordinating innovation policies of the Union countries is also of undoubted interest. , strengthening integration in order to create a single scientific and innovative pan-European space. Given the impossibility of generalizing all the vast experience in stimulating innovation processes within the framework of these recommendations, we will restrict ourselves to only the most effective direct and indirect measures aimed primarily at the innovative development of SMEs. The main forms of support and stimulation of innovation activities of SMEs used in developed countries, in the most general form, are as follows:

Direct financing of research and development and work on the creation and use of innovations in the form of subsidies for the development and promotion of new technologies, goods and services, which usually account for about 50% of the total costs of enterprises for these purposes (USA, France, etc.). [5] A large part of these costs are usually used to stimulate innovation by SMEs. For example, in the total volume of government subsidies in Germany, directed to finance inventions in industry, the share of SMEs is about 30%. In the UK, a special government program has been created through which the costs of small innovative enterprises are subsidized for innovation. The most common form of subsidies in recent years are grants, which are provided by both the state and various international and public organizations, as well as special funds, through financing innovative projects on a competitive basis. Concessional lending for innovative activities, carried out, as a rule, on certain conditions and providing for full or partial compensation of bank interest from special funds, or the state budget. [6] This incentive measure is most widespread in Western Europe. For example, in Germany, SMEs that invest in the modernization of production, the development of new types of products or in measures to rationalize the use of energy are provided with concessional loans in the amount of up to 50% of the funds that the enterprise itself spends for these purposes, and bank loans for acquisitions new equipment is subject to insurance from the state budget. In Italy, preferential loans for technological innovations are provided in the amount of up to 80% of the cost of an innovation project for a period of up to 15 years. The provision of tax incentives and vacations refers to measures of indirect incentives for the activities of small and medium-sized innovative enterprises. Based on the fact that the profit of an enterprise is the basis for financing innovative activities, and its increase leads to an increase in the innovative capabilities of companies, as well as the stimulating and regulatory functions of taxes, many developed countries, since the 60s of the last century, have been actively using the fiscal system in order to motivate innovative development. [7]

In practice, different countries use different approaches to tax incentives: targeted or targeted provision, setting time frames, etc. The most common and effective forms of tax incentives are: lowering tax rates on profits used to finance R&D, purchase of high-tech equipment, and others. goals related to innovation; a decrease in the tax base by the amount of expenses aimed at conducting research and development, which in some countries significantly exceed the costs of research themselves (in some periods they amounted to 200% in Singapore, 175% in Australia, 125% in England, and for SMEs - 150%); the so-called research (investment) tax credit, which essentially provides a deferral of tax payments from profits used for innovative purposes and helps to reduce the overall tax burden (USA, Japan, France, Spain, Ireland, Canada, the Netherlands); inclusion of R&D costs in the cost of production; tax holidays on profits received from the implementation of innovative projects, provided for several years; establishment of tax benefits for profits obtained as a result of the use of patented inventions, utility models, know-how and other objects of intellectual property; a decrease in taxable profit by the amount of contributions to funds 11 used for innovation, the purchase of devices and equipment transferred to research and innovation, etc. In the United States, small innovative enterprises are automatically subject to preferential taxation by setting the level of taxes 25% lower than other small businesses. The tax legislation of a number of countries also provides for the possibility of postponing the right to certain tax benefits, if it is impossible to use them due to the direction of profit for innovative purposes. [8] In this case, the grace period can be from one to 15 years. In general, according to the results of studies carried out in recent decades in various countries (USA, Canada, France, etc.), it can be concluded that the provision of tax incentives to stimulate R&D has a positive effect on increasing investment in research and development from the private sector. sector. That is why in many industrially developed countries (England, USA, Japan, France, Canada, Australia, Korea, Singapore, the Netherlands, etc.) tax breaks and vacations are widely used to stimulate innovation.

The role of the state, its central and local authorities, including national patent offices, in the innovative development of SMEs

In the CIS countries, an exceptionally large role of state regulation of economic development in general, innovation, as well as the functioning of SMEs, in particular, has objectively developed and traditionally remains. This is due to the unique tasks of the period of radical economic reforms, and in relation to innovative development - the fact that about 80% of the research potential is concentrated in the hands of the state, the functioning of which is financed mainly from the state budget. Low susceptibility of private capital to innovation, high risks typical for the implementation of relevant projects, the complexity and failures of the transition to an innovative model of economic growth, which, in addition to research, integrates budget, fiscal, credit, customs, investment and other components of economic policy, indicates the feasibility and need for preserving the exclusive role of the state in the regulation of innovation, as well as expanding the role of local authorities. 20 Such a situation presupposes high requirements for the efficiency of state regulation of innovation activity. [9] However, according to the results of the survey (see Fig. 1), in the CIS countries it is estimated by indicators below the average level. This is also indicated by the analysis of the literature on the state of the innovation process, statistical data on the development of new technologies and products.

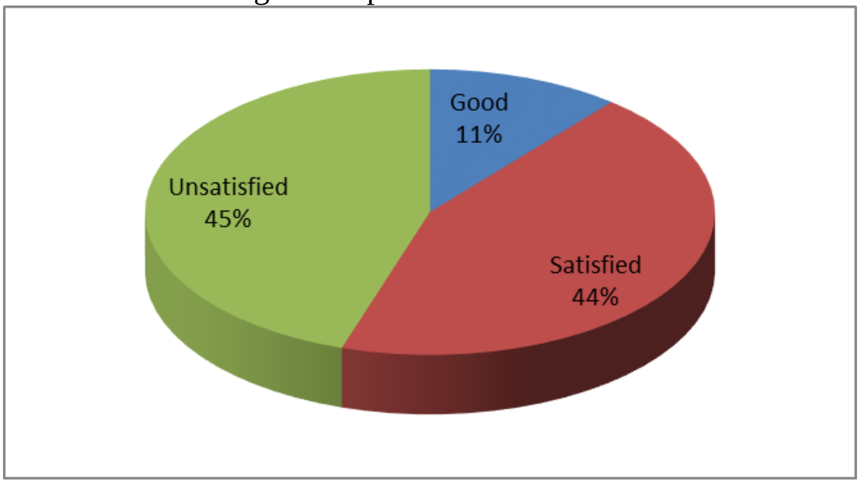

Figure 1: Effectiveness of state regulation of innovation activity

In recent years, in a number of fears, there has been a tendency to increase the role of subnational regions in coordinating and stimulating innovation.

Discussions.

Problems of transition to an innovative path, as well as stimulation of SME activities have been in the focus of attention of scientists and practitioners of the CIS countries since the mid-90s. Nevertheless, according to the majority of experts, the creation of an effective innovative model of economic development is still only at the initial stage. Strengthening the role of small and medium-sized innovative enterprises in the economic development of modern society is an integral part of the transition to an innovative growth model, which sets extremely important tasks for all participants in the reproduction cycle, from macroeconomic to microeconomic processes.

Conclusions. In the modern conditions of the world economic crisis, the relevance of the transition to an innovative way of development increases significantly. This is confirmed by the history of the development of the market economy and is manifested in the following:

1. Enterprises using the latest technologies and promoting new products have a better chance of overcoming the crisis with less losses and getting out of it in the first echelon;

2. complete overcoming of the consequences of the crisis, of course, is connected to one degree or another with the technological rise and will mean a transition to a new technical and technological level;

3. the financial and economic crisis is a kind of technological test, the specific purpose of which is to exclude from the economic activity of those enterprises that are not capable of modernizing technological processes and using innovations;

4. In the context of a decline in production and the innovative susceptibility of large-scale production, the role of SMEs is increasing, which are able to implement innovative projects in a shorter time frame and at lower costs.

Thus, no matter how difficult the conditions of the crisis are, it is he who provides an effective incentive for innovative development and re-equipment of production on a new technological basis. In the conditions of stable economic growth, no entrepreneur dares to suspend the production of products in demand by the market in order to modernize it.

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Rezyume: *Endilikda umuman innovatsiyalarga, shuningdek, kichik va o’rta korxonalarning (bundan keyin KO’K deb yuritiladi) innovatsion faoliyatiga ajratilgan alohida rol sanoat jamiyatidan ma’lumotga o’tishning umumiy talablari bilan oldindan belgilab qo’yilgan. yangi texnologiyalar va bilimlar, haqiqiy raqobatbardosh ustunliklarni shakllantirgan holda, iqtisodiy o’sishni belgilovchi omiliga aylanadi, shuningdek, jamiyatning iqtisodiy rivojlanishida KO’Blarning roli oshib boradi. Ushbu maqola Mustaqil Davlatlar Hamdo’stligi mamlakatlaridagi KO’Klarning innovatsion faoliyatini moliyalashtirishni kuchaytirish yo’llarini o’rganadi.*

Резюме: *Исключительная роль, которая сейчас повсеместно отводится инновациям в целом, а также инновационной деятельности малых и средних предприятий (далее - МСП), предопределена общими требованиями перехода от индустриального общества к информационному. общество, в котором новые технологии и знания, формируя реальные конкурентные преимущества, становятся определяющим фактором экономического роста, а также возрастающей роли МСП в экономическом развитии общества. В статье исследуются пути усиления финансирования инновационной деятельности МСП в странах Содружества Независимых Государств.*

Kalit so’zlar: *KO’K, innovatsiya, moliyalashtirish, korxona, Mustaqilь Davlatlar Hamdo’stligi.*

Ключевые слова: *МСП, инновации, финансирование, предпринимательство, Содружество Независимых Государств.*

THE IMPORTANCE OF LITERATURE IN STUDYING THE HISTORY OF THE KARAKALPAK NATION

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Summary: *The article discusses the role of fiction in the study of the history of the Karakalpak people and the importance of working with works of art and historical sources in teaching history.*
Key words: *historical and fictional literature, live imagination, works of oral creativity, fiction, spiritual development.*

Literature is an important source of introducing pupils with the historical past. It serves as a tool to bring school children up with propriety, esteem and aesthetics. Bright, deep, sensible and believable literary images make easy the historical past. In history lessons the cognitive direction gets strength with help of the leaping literary images which creates possibility for teachers to explain the content of the topic. It is worth mentioning as well that literary texts are helpful for pupils to gain the historical materials deeply. Using literary texts is essential for both pupils and teachers who are improving their pedagogical competence. The interest for literature arises the fond for studying history as well. . [1;3-6]

Historical-fictional literature is an important factor in absorbing historical processes, and it is necessary to take into account the psychological and age differences of students while using historical fictions in history lessons, The use of fictional images ensures the visibility of the teacher's narrative, identifies it, and gives readers a vivid picture of the past. The role of fiction does not stop there. The realistic depiction of the social realities of a certain period, the real artistic image, the typical images highlight the importance of the social realities. Parts from fiction in the narrative of the study also provide an influential part of the narrative, by expressing goodness, enjoyment, sadness, hatred and surprising emotions.

The resources which are used in the study of history can be divided into two groups:1-Literary monuments of the period under study 2-Historical fiction.

Literary memoirs include historical works written by target writers. The compositions which are included in this group serve as a body of history for the subject. [2; 22-26]

The works of historical fiction include legends, epics, poems, poems, etc., which were written even orally. In the vast majority of such works, it was really re-wanted, enriched with folk imagination and embellished. Poems and monuments that objectively illustrate the reality have long passed without reaching us, for example, in the history of modern Khorezm, such poems have been used in a critical way.

The use of fiction in the teaching of history is one of the most effective tools for educating students morally and aesthetically. Its usage in modern schools is an integral part of the study of history at the deepest and deepest levels. The state educational standard pays great attention to teaching schoolchildren to work with works of art and historical data, which is the most methodologically important. The main purpose of the use of fiction in history lessons is to develop empathy in students, that is, to encourage other people and to form the ability to put themselves in the shoes of those involved in the story. An important goal is also to develop critical thinking in students.

It is appropriate for the teacher to use fiction as a source of information on the topic "People's uprising under the leadership of Aidos in 1827-1828", which is included in the curriculum of 8th grade history of Karakalpakstan. For example, a well-known educator, poet and playwright Seifulgabit Mazhitov recorded many legends of our people and published them in the press. In their work, the legend "Aidosbiy and Mamanbiy" tells of two leaders talking.

"Karakalpaks came from Turkestan and came to Khorezm after spending several years in Zhanadarya for several reasons. A group of them, led by Orynbay and Maman, stayed in Zhanadarya. After the Karakalpaks settled in Khorezm, the government was in control of them.

One day, in consultating with the Khan of Khiva, Aidos agreed to evacuate his brothers who had remained in Zhanadarya for a fee, and the following conversations took place between Maman and Aidos.

Maman : "How extent can you rule?"

Aidos: " At the top of Maili shengel and at the bottom of the Aral see, between Karakalpaks,, without The Khan"

Maman; " How does the Khan respect you?"

Aidos: " The khan has two assistants. When I go to Khiva, they wait for me in the place of Khos kopir".

While I am back, they see me off with high gratitude!

Maman asked "What are the reasons of having such respectful atmosphere?"

Aidos said: " Due to the fact the nations are friendly, the courageous men who defend own country. What is more, the bravery of own to attack of Khiva"

Maman : " In that case , do not say a lot, take back"

Congratulations. Success in your upcoming by us"

Aidos: "No. We should be together. I took rewarding sign for you. . [3;64-67]

In this composition, Aidos and Maman 's bravery is a sample for pupils which describes the bravery, interactive forces to defend personal nation. The content is interesting and understandable for learners.Additionally, when we explain the revolutions of Ernazar and Maman, historical novel which was written in poetic style ,"Ernazar Alakoz" by O.Alewov takes a vital role in the curriculum of Karakalpakstan history. This novel illustrates the conditions of Karakalpaks in the XIX century, Ernazar Alakoz's and his companions achievements in order take liberty .

There were united four nations' as four leaders
By giving speech to bossy Ernazar
By giving the same ideas
On dividing into a free country was considered… [4; 34]

Therefore, it is said that Ernazar Alakoz was chosen from the leaders of four nationalities, namely Uzbek, Kazakh, Turkmen and Karakalpak leaaders, to rule them and establish the South Aral Khanate. Of course, such historical novels have a certain emotional impact on readers. In order to use fiction in history lessons, it is necessary to choose it carefully. For historians, the main thing in fiction is the "spirituality of the time", that is, the "authenticity" of the past, the psychological reliability of the picture. Few historians, who have raised the issue of the use of fiction as a historical fact in the context of historical and psychological research, have paid attention to these differences.

The works of historical fiction include legends, epics, poems, poems, etc., which were written even orally. In the vast majority of such works, it was really re-wanted, enriched with folk imagination and embellished. Poems and monuments that objectively illustrate the reality have long passed without reaching us, for example, in the history of modern Khorezm, such poems have been used in a critical way.

The use of fiction in the teaching of history is one of the most effective tools for educating students morally and aesthetically. Its usage in modern schools is an integral part of the study of history at the deepest and deepest levels. The state educational standard pays great attention to teaching schoolchildren to work with works of art and historical data, which is the most methodologically important. The main purpose of the use of fiction in history lessons is to develop empathy in students, that is, to encourage other people and to form the ability to put themselves in the shoes of those involved in the story. An important goal is also to develop critical thinking in students.

For history teachers, it is important that students of all ages read both historical-fictional literature to contribute to the development of their knowledge. It is vital for a history teacher to use students' interest and interest in learning while using fiction in their extracurricular activities.

In order to effectively use the literature as a source of information, the teacher must carefully select the fragment:

- it corresponds to the goals and objectives of teaching history;
- coverage of the most typical facts and events of the epoch;
- organically connected with traditional materials;
- Assist students in ensuring the relevance of historical knowledge to the questions and tasks related to knowledge;
- Be understandable and interesting to students in terms of content and substance
- Include daily and plot details which can distinguish tasks
- Students' concretization of ideas about certain events, gifts, processes;
- Indication of certain sensory effects on them;
- To develop both cognitive freedom and curiosity, to improve the techniques of intellectual labor, to have both literary and scientific services, to have access to comprehensive information.

- Thus, fiction has become one of the ways of both moral and intellectual development of students.

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Rezyume: *Maqolada qoraqalpoq xalqi tarixini o'rganishda badiiy adabiyotning o'rni va badiiy asarlar, tarixiy manbalar bilan ishlashning tarixni o'rgatishdagi ahamiyati ko'rib chiqiladi.*

Резюме: *В статье рассматривается роль художественной литературы в изучении истории каракалпакского народа и важность работы с художественными произведениями и историческими источниками в преподавании истории.*

Kalit so'zlar: *tarixiy va badiiy adabiyot, jonli tasavvur, og'zaki ijod asarlari, badiiy adabiyot, ma'naviy rivojlanish.*

Ключевые слова: *историческая и художественная литература, живое воображение, произведения устного творчества, художественная литература, духовное развитие.*

HUMANITIES SCIENCES

DEVELOPMENT OF INTERCULTURAL RELATIONS IN THE FIELD OF PHYSICAL CULTURE

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Summary: *The article talks about the formation of intercultural relations in the field of physical culture, which also presupposes mastering the following skills: to see in a representative of another culture not only what distinguishes us, but also what unites; change assessments as a result of comprehension of another culture; abandon stereotypes; to use knowledge about a foreign culture for a deeper knowledge of one's own.*
Keywords: *championship, competition, formation, intercultural, attitude, field, physical culture, foreign culture, coach, athlete, foreigner, student.*

Now physical culture has become one of the main areas of cooperation between the countries of the world. Physical culture makes it possible to develop broad sports ties with various countries of the world. Sports cooperation forms a person's intercultural competence. The formation of intercultural relations is associated with the world economy and politics. Intercultural relations are a linguistic means of culture, an area of mass culture, a conductor of the processes of globalization and intercultural contacts. Since a language is a mirror of culture, a piggy bank of culture, a transmitter, a tool and instrument of culture, the solution to the urgent problem of teaching a foreign language as a means of communication between representatives of different peoples is that languages should be studied in unity with the world and culture of the peoples who speak the given language. [2,8]

The process of globalization in the development of sports, which is currently developing, leads to the expansion of interactions between different countries, peoples and their cultures. Influence is carried out through cultural exchanges and direct contacts between social groups, social movements, through sports events, sports cooperation, etc. Communication with foreign athletes becomes a reality, and encounters with representatives of a different culture are included in our daily life. Increasingly, in sports cooperation, students, coaches, teachers participate in intercultural communication and dialogue of cultures.

Throughout its history, sport has been and still is one of the main components of human life, and since the second half of the XX century it has become an integral part of interstate relations. It was at this time that such a concept as sports diplomacy was born - "the official and unofficial activities of states, governments, special foreign policy bodies to implement the tasks of the foreign policy of the state through the organization, conduct and participation in international sports events with the participation of teams, athletes, coaches and their achievements" .[8]

Today, there is a process of formation of sports diplomacy as an instrument of traditional diplomacy for solving strategic tasks of the state, both on the internal and external arena. This is due to the fact that “in international sport there are great opportunities for a positive role in international relations. First of all, I mean its ability to fulfill an integrative and peacekeeping function in international relations, to contribute to the formation and implementation of the values of a culture of peace". [4, 253]

The social essence of sport is manifested in its functions. Sport actively participates in the socialization of the individual, the formation of his status, position in society, in preparing people for joint activities. Sport serves as a means of communication and regulation of joint activities, a means of distraction, recreation, and entertainment of people. A person, having won in any kind of sport, provides prestige, respect, authority to himself and his community, sports club, city, nation, country as a whole. His victory or defeat is identified with the community of which he is a representative. The main trend in the development of sports is its internationalization. [1]

Intercultural competence contributes to the achievement of mutual understanding in the process of intercultural relations in the field of physical culture. Intercultural competence is the ability to communicate in a foreign language, taking into account the difference in cultures and stereotypes of thinking. Currently, coaches and teachers at a sports university are facing an extremely difficult task - the maximum development of the communicative abilities of a modern university specialist as a widely educated person with fundamental training. [5, 40]

The study of the problems of intercultural communication involves acquaintance with the following phenomena and concepts: the principles of communication, the main functions of culture, the influence of culture on perception and communication in its various spheres and types, parameters for describing the influence of culture on human activity and the development of society. [6, 73]

Physical culture creates conditions for the formation of a tolerant multicultural society; it has a significant impact on the creation of a system of values, lifestyle, physical and moral appearance of a person. Sport and physical culture is a single socio-cultural space where common cultural values and values of physical culture and sports interact.

In the field of sports cooperation, a student, an athlete, a coach must master the material that demonstrates the functioning of the language in a natural environment, the speech and non-speech behavior of native speakers in different communication situations and reveals the features of behavior associated with folk customs, traditions, social structure of society, ethnicity. First of all, this happens with the help of authentic materials (original texts, audio recordings, videos), which are normative in terms of language design and contain linguistic and cultural information. [7, 152]

It is important to know the national and cultural characteristics of the behavior of a foreign athlete, a foreign coach in order to avoid possible conflicts in interethnic communication. Thus, an athlete must adequately respond to the remarks of native speakers, use facial expressions and gestures appropriately, use speech etiquette formulas and know the cultural and historical characteristics of the country of the target language. The implementation of intercultural communication presupposes a person’s readiness not only to accept a representative of a different culture with all his national and mental characteristics, but also the ability to change him.

Thanks to physical culture, we strengthen health, develop individually physically, harmoniously develop the bodily and spiritual qualities of a person, and also support physical and psychological well-being. Physical culture lessons are carried out through communication on the principles of trust and pedagogical support. Tolerant attitude towards the personality of another country is one of the principles of intercultural communication.

Interpersonal and intercultural relations in the sports field, which are closely, related to such problems as the value orientations of sports culture, the transformation of moral priorities in modern society, the education of tolerance. The basis of the intercultural component of the sports field is the transmission of moral and value orientations. The development of a value attitude towards the personality of another becomes one of the conditions for intercultural dialogue in the field of physical culture and sports. The ability to understand and adequately use them in socio-cultural competence presupposes the integration of the individual in the system of world and national cultures; - pragmatic competence - conveys communicative content in a communication situation; - self-educational competence - is the most relevant in modern conditions, which is explained by the following reasons: in modern conditions of the rapid development of science, updating information, it is impossible to teach a person for life, it is important to develop in him an interest in the accumulation of knowledge, in continuous self-education. [3, 92]

The formation of intercultural relations in the field of physical culture also presupposes the mastery of the following skills: a) to see in a representative of another culture not only what distinguishes us, but also what unites; b) change assessments as a result of comprehension of another culture; c) abandon stereotypes; d) use knowledge about a foreign culture for a deeper knowledge of one's own. Intercultural relations are created in the process of teaching foreign language communication, taking into account the cultural and mental differences of native speakers, and are a prerequisite for a successful dialogue of cultures. Awareness of possible problems arising in the intercultural communication of athletes of different cultures, understanding of values and generally accepted norms of behavior are quite significant factors in sports cooperation. And when athletes are prepared to address them appropriately, they can avoid misunderstandings, misperceptions of behavior, and potential conflicts. And the student-athlete's ability to refract cultural values in his behavior contributes to his becoming a good specialist in sports cooperation with representatives of the world community.

Intercultural attitude in the field of physical culture is the communication of the participants in physical culture and sports events, athletes, students, as well as representatives of the sports sphere, coaches, and teachers. The formation of readiness for intercultural relations becomes one of the components of competence, which includes a certain stock of knowledge, skills and communication skills and interpersonal interaction with representatives of other cultures, as well as the necessary qualities for their effective implementation. An important factor in the development of sports cooperation is to increase the level of readiness of student athletes for intercultural communication, including during participation in international sports competitions, world championships and the Olympic Games.

Thus, the main directions of the development of intercultural relations with the countries of the world in the field of physical culture are:

1. Orientation of students, athletes and teachers to tolerance and dialogue in intercultural terms.

2. Development of intercultural competence of students, the formation of their deep theoretical knowledge in the field of intercultural relations.

3. Research of the value attitude of future specialists of physical culture and sports to intercultural attitude.

So, at present, in the socio-economic development of society, a significant place is occupied by the improvement of international cooperation in the field of physical culture and sports. The importance of intercultural dialogue as a part of cultural and social communication allows us to consider the sports environment as an integral element of intercultural interaction.

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Rezyume: *Maqolada jismoniy madaniyat sohasida madaniyatlararo munosabatlarni shakllantirish haqida so'z boradi, bu esa quyidagi ko'nikmalarni o'zlashtirishni ham nazarda tutadi: boshqa madaniyat vakilida nafaqat bizni ajratib turadigan narsani, balki nimani birlashtirganini ko'rish; boshqa madaniyatni anglash natijasida baholarni o'zgartirish; stereotiplardan voz kechish; o'z madaniyatini chuqurroq bilish uchun chet el madaniyati haqidagi bilimlardan foydalanish.*

Резюме: . *В статье говорится о формировании межкультурных отношений в области физической культуры, которая предполагает также овладение следующими умениями: видеть в представителе другой культуры не только то, что нас отличает, но и то, что объединяет; менять оценки в результате постижения другой культуры; отказываться от стереотипов; использовать знания о чужой культуре для более глубокого познания своей.*

Kalit so'zlar: *chempionat, musobaqa, shakllanish, madaniyatlararo, munosabat, maydon, jismoniy madaniyat, chet el madaniyati, murabbiy, sportchi, chet ellik, talaba.*

Ключевые слова: *чемпионат, соревнование, формирование, межкультурный, отношение, область, физическая культура, чужая культура, тренер, спортсмен, иностранец, студент.*

COVERAGE OF LITERARY ISSUES IN THE DAILY PRESS IN THE WORK OF LITERARY CRITICS

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Summary: *The article follows the process of literary celebrities' anniversaries in the press (in the newspaper "Erkin Karakalpakstan"). The genre features of the jubilee articles and their content connections with the subject of literary criticism are checked. Analyzes and evidence show that these articles have become a another journalistic orientation.*

Keywords: *blood, literature, literary criticism, newspaper, anniversary, author, review, analyze*

During the years of independence, the works of our poets are freely discussed. This is the contribution of our scientists who conduct research on Karakalpak literature. The materials of our scientists, which thoroughly analyzed the works of our classics and writers, were published in the Karakalpak press.Along with the materials on this topic, the number of reviews by our scientists on other topics, such as literary criticism, analysis of literary processes, jubilee dates have increased slightly.

As an example, it can be given the article in the newspaper "Erkin Karakalpakstan" (The Freedom Karakalpakstan) by the scientist Perdebay Nurzhanov entitled "Multifaceted, talented literary figure." [1] The material is dedicated to the 100th anniversary of Musa Tashmuhammed's son Aybek. There are also important aspects to the presentation of jubilee art in newspapers. After all, in the materials on this topic, along with respect for our educators who contributed to the literature and contributed to its development, by returning to their education, students are formed new ideas, opinions, and the concept of historical memory is formed. The author begins the material, as usual, with a cheerful, prose, social activist Aybek's life, career, educational achievements. In the above-mentioned material, he notes that Aybek came to write the novel "Navoi", which is considered to be a masterpiece of Uzbek classical literature, and deeply studied the love and education of Alisher Navoi.

One of the most important aspects of the articles and jubilee articles is that in this type of material all the achievements of the educator, the way of work, the peculiarities of the educator are described in the form of compiled information for the readers of the newspaper. This is because many facts and works about the writer may not be known to the public, but only to those who are familiar with the biography of the author and who work in the field of literature.The newspaper, on the other hand, introduces and communicates to readers the peculiarities and achievements of the writer and his works. And in socio-political, mass publications there are no restrictions on the age or interests of the audience. That is why the material is presented to all group of society.

In the pages of the newspaper you can find materials dedicated to the lives of famous scientists who have left their mark on science. It should be noted that the newspaper "Erkin Karakalpakstan" published an article by Genjemurat Esemuratov, Candidate of Philological Sciences, entitled “Heros are born mothers”[2] This material is dedicated to the 100th anniversary of Nazhim Daukarayev, the founder of Karakalpak literary criticism, an outstanding literary critic and writer .In the article, the author tried to reveal the work of the scientist on the study of Karakalpak literature from different views. In this material, Nazhim Daukarayev's hard work in the revival of Karakalpak literature is presented with facts. The text emphasizes the order of preservation. Introduces the biography of the scientist. The author pays close attention to the social aspects of Nazhim Daukarayev's origin and his genealogical one.

Among the literary articles on the theme of the anniversary, K. Zharimbetov's article "It was good not to return to Karaozek"[3] aroused great interest among readers. The article provides interesting information about the scientific work of the famous writer, scientist, Doctor of

Philology, Professor, Honored Scientist of the Republic of Karakalpakstan, winner of the State Prize named after Beruniy, Sarygul Bahadyrova.

The ideological purpose of the author can be understood in the article as follows: to propagandate the achievements and successes of the science of Karakalpak literature to modern people through the provision of scientific services of S. Bahadyrova.

The author's journalistic skills are first of all reflected in the choice of topics that attract the attention and interest of readers. The article is in response to Sarygul Bahadyrova's April 1, 2014, article in the “Erkin Karakalpakstan” newspaper, "You are my Egypt, Karaozek".Sarygul Bahadyrova says she "catch" the depressing passages in her article, which prompted her to write her own article.

Compositional techniques enhance the value of a journalist's article. In this article, compositional actions are skillfully used. The author finds his own compositional way, abandoning the tradition of narrating the characters and their activities in chronological order, one after the other, which is characteristic of many jubilee articles. This article promotes fiction, literary studies, literary researchers, and their selfless service in a way that is understandable and interesting to the general public.

It is worthy to be notice that the newspaper "Erkin Karakalpakstan", which is the object of our research, regularly covers the topic of literature, as well as a group of active authors, i.e a group of scientists and journalists. It should be noted that J. Bazarbayev, A.Pakhratdinov, Y.Pakhratdinov, K.Zhariyabetov, K.Orazymbetov, K.Allambergenov, Z.Esenov, P.Nurzhanov,B.Genzhemuratov .These authors attract the attention of readers with their literary and interesting materials.

Unfortunately, most of the materials published in the newspapers in this direction are not well prepared. They contain a lot of dry information, well-known opinions.As an example, we can mention the material written by Sh.Paizullaeva under the title "Berdak - a symbol of our national culture."[4] The author pays special attention to the description and content of the selected exhibits and materials in the museum dedicated to Berdak, as it has been working here since its organized. However, as in most materials, the beginning of an article begins with long words, long-known information about the resin. In our opinion, these are poisonous ideas, there is nothing new. It is obvious that the reader of the newspaper looks at the topic and wants to know new facts about the contribution of Berdak resin to our national culture.

It should be noted that the main purpose of this material is to show the contribution of Berdak resin to culture. However, if you do not find concrete facts or arguments, opinions, which are blocked by a series of resin additions.

There are a lot of materials in our press that illuminate the fact that the works of our classical poets are based on national heritage, historical facts and other important ideas for society. One of such materials is N.Koptilevova's article "Reflection of the idea of national independence in the works of the poet Ajiniyaz "[5] In the article, the author notes that the beloved poet of the Karakalpak nation Ajiniyaz (1824-1878) tried to convey the idea of independence to the people through poetry . For example: “When we read the works of Ajiniyaz, we see that the theme of the country, the people, justice, national liberation is in the forefront. The author has found and discussed a number of hidden ideas. For us, opinions and facts are presented in a consistent manner in accordance with the topic. This also indicates that the material is attractive and, in turn, thought-provoking.

As an example, "How do we restore the stamped stick of Ajiniyaz?"[6] by Doctor of Philology Kyrykbay Bainiyazov. In fact, everything left by our beloved ancestor, product or tool is of historical significance. This is because these substances help to answer the question of how the resin lived and what it did.The author seeks answers to questions about the current state of the legacy of Azhiniyaz Shayir: The author uses official or unofficial data to make hypotheses in journalistic materials and to prove or disprove them. In this material, the author tries to prove his hypothesis with the help of his "Steppe inscriptions" and the opinions of the descendants of the poet.The author of the article pays special attention to the special role of Tamga hasa in the development of our literature and culture in the country. It pays special attention to the possibility of compiling a genealogical table of the descendants.

This scientist K. Bainiyazov's "Was Ajiniyaz a traveler?" [7] We see that the article in the title is also based on the query method. In this article, too, the author asks questions and tries to find answers to these questions. In the literature, there are issues, topics, and even problems that are waiting to be asked in the country. Organizing them and finding answers to some of them is one of the most pressing issues in the literature of today.

Question-type headlines are used by journalists as a technical tool to draw readers' attention to newspaper material and make it easier to read. Russian scientist . Commenting on the newspaper's headline,S.I.Vinogradov said: "The newspaper has all the means of speech, but more than four groups dominate: different questions, different language repetitions, appliques and composite-graphic differences."[8]

A number of Russian scientists have commented on the title. S.M. Gurevitch writes of the headline: “A newspaper headline is an integral part of design. From its character and decoration, the appearance of the publication stands out. One of its main tasks is to attract the attention of students. Headings help you to quickly get acquainted with the content of the issue, to find out what the materials are about and what is important in the information provided to him”.[9]

Also M.A.Shostak distinguishes headings by signs of intonation:

1. The call is annoying, irritating, joyful.

2. The question motivates the student to come to a decision on the issue. Sometimes, it can be rhetorical.

3.Three dots ... In this case, in most cases, deep reflection on the event helps to develop deeply thinking .

4. Quotes are used to draw the reader's attention to a word or phrase. Or in quotation marks it is placed on the words that have a variable meaning or have a predominant connotation in the spoken language.

5. The double-headed headline is impressive and develops enthusiasm.[10]

Although question-based headlines are common in science-oriented articles, headlines of this type increase the effectiveness of the topic and prevent the disclosure of scientific exercises or issues.

As an example of such headlines, Kyrykbay Bainiyazov's "When did S. Mazhitov and Kazy Maulik compete?" Here is an article on As noted by the above scientists, question-type headings motivate the reader to think, to concentrate, to answer the question. Especially in the literature, there is a lot of work to focus on historical issues that are open to the country. This is one of the most important issues for many scholars and students of Karakalpakstan.To find the essence of this problem, the scientist throws a hypothesis. In order to prove or disprove his hypothesis, the scientist notes in the article the role of writers K. Ayimbetov, I. Sagitov, M. Nizamatdinov, K. Allambergenov, who supported the idea that the poets Kazy Mavlik and S. Mazhitov spoke. A. Pakhratdinov, who disagreed with this opinion, noted that the duties of S. Bahadyrova were proved by the fact that Kazy Maulik and S. Mazhitov had a merry aitys.The author compares the various points of view presented in these scientific works and makes his own conclusions. This fact is a manifestation of a scientific principle.

The author also cites archival materials to reinforce his views. The aim is to find a way to solve the problem in the country by identifying the paths traversed by the two great educators. In addition, the author notes that some scientists have chosen the wrong path when discussing this issue.None of these assumptions correspond to the archival documents. Thus, as can be seen from these facts, the author, working closely with the archival materials, struck a blow at the unpredictable opinions that have studied this issue in detail and are not scientifically proven. Therefore, we come to the conclusion that scientific principles should be observed in newspaper materials as well.

There are many issues in the literature that are waiting to be revealed in the country. Bringing these issues to light and conveying the truth to the people is one of the most pressing issues facing scientists today. This is because the clarification of issues on the basis of historical data forms new ideas, new views, and this type of material develops students' thinking and worldview in the country.

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11. “Еркин Қарақалпақстан” 11.04.2002

Rezyume: *Maqolada matbuotda adabiy taniqli shaxslarning yubileylarini nishonlash jarayoni kuzatilgan ("Yerkin Qoragalpog'iston" gazetasida). Yubiley maqolalarining janr xususiyatlari va ularning adabiy tanqid mavzusi bilan mazmunan aloqasi tekshiriladi. Tahlillar va ma'lumotlar shuni ko'rsatadiki, ushbu maqolalar boshqa jurnalistik markazga aylangan.*

Резюме: *В статье прослеживается процесс празднования юбилеев литературных знаменитостей в прессе (в газете «Еркин Қарақалпақстан»). Проверяются жанровые особенности юбилейных статей и их содержательная связь с тематикой литературной критики. Анализ и данные показывают, что эти статьи стали другой журналистской направленностью.*

Kalit so’zlar: *mutaxassis, adabiyot, adabiyotshunos, gazeta, yubiley, muallif, tanqid, tahlil*

Ключевые слова: *специалист, литература, литературовед, газета, юбилей, автор, критик, аналитика*

TYPOLOGICAL CHARACTERISTICS OF PODCASTING IN KARAKALPAKSTAN

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Summary: *The article deals with the concept "podcasting", a new form of citizen communication. The paper describes some opinions about podcasts pointed out by the scholars working in this field. Also, explanations and the meaning of the term podcast is clarified, as well as related terms such as podcast, podcast-terminal, pod-listener, podcast-tape, and broadcasting.*

The author classified the podcasts in Karakalpakstan according to its genre and theme, and a comprehensive analysis of their timing, content, and speed of publication is provided.

Keywords: *podcasting, podcaster, podcast-terminal, pod-listener, podcast-feed, broadcasting, RSS (Rich Site Summary).*

Currently, podcasting, like blogs and social networks, is of great interest and is becoming one of the key centers of creative activity of professional and citizen journalists gaining great interest in audiences. The word Podcasting is borrowed from the English word "Podcasting", which means the process of creating and distributing audio and video files in the style of radio and television programs on the Internet, based on the addition of the words "iPod" (mp3 player from Apple) and "broadcasting" [1].

Furthermore, O.A. Petrenko and A.M. Gorbachev, pointing out "a certain trend in the use of the term podcast in the practice of modern journalism," write "Daily programs recorded in audio format for listening and downloading on the website or podcast terminals of a certain program" [2].

Thus, a podcast is an analogue of television and radio broadcasting posted on the Internet, or a digital recording of radio broadcasting on the Internet or a similar program for download into the audio player. Along with the term podcast, some related concepts started to be put into circulation. A person who deals with podcasting is called a Podcaster. A podcast-terminal is a website that supports hosting media files, to a certain extent, automates the placement of records and subscription to their news. A person who listens to podcasts is called a Podcast listener, and a group of audio files placed in chronological order, depending on the time on the Internet site, is called a podcast-tape. Radio programs began to be introduced on the Internet in the mid 90s [3], and the first podcast was created by Adam Curry in 2004 with the help of RSS [4]. Audiovisual diaries - are stories recorded by ordinary people, by the first person, the author of which is the hero himself, and the journalist serves as his assistant. The author can also write a diary in the genres of a monologue, report, interview, chronicle of stories. Also, space and time do not recede in audiovisual diaries. The concept of video and audio diaries arose in the United Kingdom in the 90s of the 20th century in the BBC media correspondent. The first broadcasts of the program "Videonation" featured videos shot by people in the camera, timing of which was 2-5 minutes.

Later, this idea was introduced on the radio BBC, and audio diaries appeared on the radio. In the mid 90s of the 20th century, the Radio-diaries project developed in America. The debut of the audio-book genre in Russia took place on January 1, in 2000, in the program "Ordinary History" of the radio channel "Radio of Russia" [5]. Thus, these audio-diaries are considered as a preliminary form of podcasts. Zhuravleva A. A. writes that "The audio-book documentary and artistic genre of radio appeared as a prototype of Russian podcasting, contributing to its formation and development" [6].

According to typology of podcasts, genre and thematic directions can be considered. By genre: *documentary, discussion, entertainment show, audio-book, radio performance, news*; in the thematic area: *political, musical, social, cultural, sports, scientific - mass problems* and others.

In the studies of this direction, the teacher of the Institute of Journalism and Literary Creativity and radio journalist V.Nekrasova divides the genres in the following way:

"documentary, comedy, investigative journalism, tok-shou, analytical programs". Executive producer D.Shapiro of Radiotopia, which is a modern podcast network that contributes to increasing audiences and incomes, writes about the existence of genres such as "infocast (computer science), backcast (about the past), crimecast (interrogation of crimes), chamcast (friendly podcast), humblecast (wonderful history), rialcast (live), fictioncast (about science fiction), howcast (life hacks), sikvelcast (history), vtf-cast (shit)" [7].

In addition, podcasts are analyzed in the works of a number of scientists and are divided into groups. For example, PhD, associate professors E.A.Voinov and E.V.Sivyakov believe that podcasts can be classified according to both information and format and plot. He divides informational content into two groups indicating the dependence of informational content on current events: eventual and timeless, that is, current (actual). Eventual podcasts are based on up-to-date topics and news of the day, which can be an analysis or innovation itself. Current podcasts are not related to specific information, but reveal a specific topic or a designated problem context [8].

In Karakalpakstan, among the podcasts produced by Karakalpak podcasters, the most common podcasts are video formats, not audio podcasts. A series of videos by the blogger and YouTuber Shukhrat Saidakhmadov, can be considered as podcasts. Because, they were filmed in a TV format and posted on the channel YouTube as "Saidakhmadov's blog". The channel was registered in November, in 2017, and it had posted more than 160 videos by October 2020. For example, the video "Interview with Timur Panaev" (June 12, 2020) features an interview with the entrepreneur and his activities in the business sphere.

Moreover, "Let's talk about the situation in Khanlikol, come on in!" (May 25, 2020), the podcast was prepared in the form of a monologue. "Ministry of Internal Affairs. What happened to the tortured Nukus citizen? " (June 17, 2020), the podcast sought to shed light on the incident, which caught the attention of the general public, and interviewed several respondents. After that, podcasts were created online using the "Zoom" platform. In a podcast called "Zoom Teahouse", the blogger asked, "Who put pressure on B. Kadirbergenov?", and a conversation was held on the topic. The podcast was posted on the Youtube channel on April 22, in 2020, and it was viewed 1,022 times as of October 2020.

Since then, online interviews have continued. For example, "How are China and South Korea overcoming the corona virus?", "Interview with Karakalpak Students Abroad" (April 14, 2020). Starting in 2020, the podcaster has implemented a new project named "Ochiqchasiga" (meaning: *Frankly*). The first podcast in the field was filmed on February 9, 2020, in which the podcast interviewed the hakim of the region Khojeli. In the 2nd issue of the project "Ochiqchasiga", an interview was held with the hakim of Khanlikol district with a farmer who was fighting for water (July 13, 2020), and opinions were expressed on the incident, which attracted public attention.

Additionally: "Do they want to demolish the mosque for 461 thousand sums?" (August 16, 2020); "The problem of "shashlik" at the cafe Alpamis, what really happened?" (September 13, 2020) podcasts have been released to the public. Starting from September, in 2020, podcasting has also started through the project "Walking…".

In his podcast on "The families in Need of Social Protection in Nukus" (September 2, 2020), he brought about the living conditions of one of the low-income and in need families. Podcasts prepared by "Saidakhmadov's blog" can be divided into the following groups:

1) By genre:

- News report: "In Nukus, a drunken man set fire to his own house"; "What happened to the poachers who killed 13 deer in the neck?"; "Uzbekistan was conquered in 123 days" and others;

- Interview: "Interview with Timur Panaev"; "Interview with the hakim of Khojeli district"; "Conversation with the hakim of Khanlikol district with a farmer who was arguing over water"; "The "shashlik" problem at the cafe Alpamis", "What really happened? "; "Families in need of social protection in Nukus" and others.

2) By the subject (topic):

- Socio-political: “How are China and South Korea overcoming the corona virus?”, “Interview with Karakalpak students abroad”; “Ministry of Internal Affairs. What happened to the tortured Nukus citizen?”; “Who put pressure on B. Kadirbergenov?”; “Let’s talk about the situation in Khanlikol, come in!”; “Do they want to demolish the mosque for 461,000 sums?” and others;
- Travel: “Impressions of a 110 day travelling on foot”; “Rest in the mountains. We were looking for a waterfall. But…” and others.

If we focus on the speed of broadcasting of podcasts “Ochiqchasiga”, the first issue of the project was aired in February, and then in July-August and September per podcast. In addition to this project, the podcaster posted a podcast per time in two weeks. Its timing ranged from 20 minutes to 2 hours.

Furthermore, blogger Bakhtiyar Kadirbergenov’s YouTube channel also have some podcasts. In particular, podcasts that aroused great interest in the audience “Open conversation with D. Tajimuratov” (December 18, 2020) [9], “Exclusive interview with the founder of “Makan.uz” Lalagul Kallikhanova” [10] (December 28, 2020). These podcasts are mostly filmed online, reflecting the respondents’ views on what is happening in our society. Unlike other podcasts, the identity of the respondent is announced in advance and the audience is given the opportunity to ask questions that they are interested in. The timing of the podcasts usually lasts around half and two hours.

In recent years, Karakalpak citizen journalism has not only published video podcasts, but also audio podcasts. An example of this statement, we can see an online podcast channel “Online_337” on the telegram messenger of the students of the specialty Journalism, at Karakalpak State University. The channel contained 4 or 5 socio-political news and reports per day. However, currently, this audio podcast channel has been suspended temporarily. All in all, we assume that podcasting as a new form of citizen communication has a special place in the Karakalpak segment of the Internet.

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Rezyume. *Maqolada fuqarolik kommunikatsiyaning yangi shakli bo’lgan podkasting tushunchasi haqida so’z etiladi. Ushbu sohada faoliyat olib borayotgan olimlarning podcastlar haqidagi fikrlari bayon qilinadi. Shuningdek, maqolada podkast termini bilan bir qatorda uning bilan bog’liq bo’lgan podkaster, podkast-terminal, pod-tinglovchi, podkast-lenta, broadcasting kabi terminlarning mazmun mohiyati ochib berilgan.*

Qoraqalpog’istondagi podkastlarning janrlari va tematikasi bo’yicha klassifikatsiya qilinib, uning xronometrajlari, mazmuni, e’lon qilinish tezligi bo’yicha kompleks tahlil qilinadi.

Резюме. *В статье рассматривается понятие «подкастинг», новая форма гражданского общения. В статье изложены некоторые мнения о подкастах, высказанные* *учеными, работающими в этой области. Кроме того, поясняются объяснения и значение термина подкаст, а также связанные с ним термины, такие как подкаст, подкаст-терминал, под-слушатель, подкаст-лента, и трансляция.*

В Каракалпакстане по жанрам и тематике, и дается всесторонний анализ их сроков, содержания и скорости публикации.

Kalit so'zlar: *podkasting, podkaster, podkast-terminal, pod-tinglovchi, podkast-lenta, brodkasting, RSS (Rich Site Summary).*

Ключевые слова: *подкастинг, подкастер, подкаст-терминал, под-слушатель, подкаст-лента, трансляция, RSS (Rich Site Summary).*

DIDACTIC PECULIARITIES OF FORMING LINGUOCULTURAL COMPETENCE

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Summary: *The article describes the concept competence, and its types. The article emphasizes the importance of developing the cultural competence of students through cultural-based assignments and activities. The factors that affect to the development of cultural competence are analyzed in the article. Also, the article defines the statement about factors and ways to enhance learners' cultural awareness skills. The author analyzes linguocultural aspects, methodologies, studies of proverbs and sayings, phraseologisms in the English and Karakalpak languages. Samples of activities and tasks of how to make use of paremias, phraseologisms in the teaching process are described in this article, using short extracts taken from the work by a national Karakalpak writer T.Qayipbergenov. Furthermore, the paper deals with the significance of forming linguocultural competence with the help of phraseological units and paremias in the English and Karakalpak languages.*

Key words: *cultural awareness skills, foreign language education, linguoculturological approach, linguocultural competence, paremia (proverb), phraseological units, sayings.*

The formation of linguocultural competence is due to the problem of inadequate understanding of linguoculturologically significant linguistic units, including paremias and incorrect use by students at higher educational institutions in the educational process of. Currently, linguoculturological approach to teaching English as a foreign language is in demand teaching linguoculturologically significant language material in the context of the formation of communicative competence as the main goal of language learning. Paremias (proverbs) are considered as complete anonymous sayings that are stable in language and reproduced in speech, suitable for didactic use. Paremias are accounted for language units that clearly reflect the characteristic features of not only the English language, but also the Karakalpak linguistic picture. These units are often used in fiction and public texts, and in colloquial speech. However, while paremias occupy a significant place in the conceptual sphere of a native speaker, this material is not given enough attention even in professional textbooks on the phraseology of Karakalpak language.

Thus, a contradiction has developed between the practice of teaching and the need to form linguocultural competence on the basis of paremias. We assume that the problem of the contradiction between the existing teaching practice and the importance of the formation of linguocultural competence of both philological and non-philological students necessitates defining didactic use and ways of developing linguocultural competence on the basis of paremias. Formation of linguoculturological competence based on the material of English paremias in comparison with the proverbs in Karakalpak langauage, in this case representing the concept of "labor", among Karakalpak students studying the English language.

1. A poor workman blames his tools – Tentek aspaz óz ásbabın ayıplar *(Meaning: It is not the tools we use that make us good, but rather how we employ them);*
2. A cat in gloves catches no mice – Islemeseń tislemeyseń *(Meaning: One cannot get what one wants by being cautious);*
3. He who would eat the nut must first crack the shell – Islegen tisleydi *(Meaning: If you want something desirable or appealing, you must put forth the effort required to obtain it);*
4. No sweet without some sweat – Miynetsiz ráhát joq *(Meaning: there is no shortcut to success; No pain no gain);*
5. Hard work never did anyone any harm – Qiymildaǵan qır asar *(Meaning: Doing hard work won't have any ill effects on a person, and, in fact, it is often beneficial to them);*

6. Many men make light work – Bir bastan eki bas jaqsı *(Meaning: A large number of people co-operating can perform tasks easily);*

7. The early bird catches the worm – Erte turǵannıń ırısqısı kóp bolar *(Meaning: Being first improves the chances of success);*

8. He who would search for pearls must dive below – Janıńdı qıynamay janana qayda *(Meaning: you can't expect to achieve anything if you never make an attempt);*

9. As the workman so is the work – Óneri joq kisiniń mazası joq isiniń *(Meaning: The work shows the workman);*

10. He works best who knows his trade – Qalawın tapsań qar jawar *(Meaning: if you are the master of your trade, it will not be a problem to make something great).*

Taking all the mentioned above into account, all proverbs, sayings and idioms can fall into three main categories:

1. English proverbs, sayings and idioms which are completely identical to their Karakalpak translations, such as their English variant completely coincides with the Karakalpak one. These are full equivalents coinciding in meaning, lexical structure, figurativeness, stylistic colouring, grammatical structure, and are based on mythological legends and historic facts: *Pandora's box – Pandora qutısı; In the seventh heaven – Jetinshi aspanda; Pyrrhic victory – Pyrrhic jeńisi;*

2. English and Karakalpak proverbs, sayings and idioms which have no onomastic elements in the other language, such as partial equivalents. Partial equivalents are not characterized by any incompleteness of the meaning conveyance; they contain only lexical or/and grammatical divergences while preserving identical meaning and stylistic colouring. Therefore, with regard to the degree of meaning conveyance adequacy, a partial equivalent can be equal to a full equivalent: *It's good fish it was caught* [9]*; Every man draws water to his own mill; Kúlshesi bar bala súymege jaqsı* [7, 12].

3. English and Karakalpak proverbs, sayings and idioms which have no equivalents in the other language, such as nonequivalent phraseological units: *Be Greek to someone; Bas jarılsa bórik ishinde.*

It is worth noticing that many English and Karakalpak proverbs and sayings are polysemantic, which makes them difficult to be interpreted. When searching for the Karakalpak equivalent of an English proverb the obligatory criterion must be the coincidence of one of the meanings (as a rule, the main meaning) [2, 8, 9]. Nevertheless, it is important to remember that English and Karakalpak proverbs are often not absolute equivalents as they were developed in various historical conditions and, consequently, they often employed different images for the expression of the same or similar thought that reflected the different social way and life of the two nations.

Different linguocultural concepts primarily on lexical material, grammatical categories and constructions in Karakalpak are studied, including in comparison with other languages in the works of J. Eshbaev, A. Bekbergenov, G. Aynazarova, Q. Qoshanov, T. Jumamuratov, B. Shaniyazov, S. Nawrizbaeva and others [1, 3, 4, 6, 7]. The methodological aspect of linguoculturological studies of Karakalpak proverbs and phraseological units has not been fully developed to date.

In the following, we made an attempt to develop a sample teaching materials in order to expand, deepen the understanding of the phraseology in the English and Karakalpak languages using the culturological approach. The purposes were the following: to describe the difference between linguistic and cultural analysis of phraseological units; to improve skills and abilities in various speech activities, mastering the culture of communication and the culture of speech behavior; to develop through the language, national, cultural and personal identity in the context of a dialogue of cultures.

Sample lesson: "Reflection of cultural and national traditions in phraseology". The purpose of the lesson is to define what a cultural analysis is; how cultural analysis helps to trace the reflection of some national and cultural traditions in phraseology. (Students write down the topic of the lesson).

Warm up questions:

1. What is culturology? Write down the interpretation of this word (on the blackboard). (For instance: Culturology is a theory of culture, a complex humanitarian science. Its formation expresses the general trend of integrating scientific knowledge about culture. It arises at the intersection of history, philosophy, sociology, linguistics, ethnology, art history synthesizing and systematizing the data of these sciences).

2. What does culture have to do with language? (For instance: Yes, the most direct. The world around us is encoded in language. It reflects not only the conditions, but also the social consciousness of the people, national character, customs, traditions, way of life, morality, the system of values, mentality of the people).

3. Write down the interpretation of the word *mentality*? (For instance: Mentality is the totality of the prevailing spiritual attitudes, traditions, habits related to social life).

4. What phraseological units are? What signs of phraseological units do you know? (For instance: phraseological units are stable, indivisible phrases, not every word has lexical meaning, but the whole phrase as a whole; it is one member of a sentence).

5. Name the groups of phraseological units according to their origin? (For instance: Originally Karakalpak, English, borrowed. Our language borrows not only words, but also phraseological units. We can perceive them in different ways. We are get used to some of them and consider them our own, (*suwıq urıs* - *cold war*), others are recognized as borrowed, and still others remained foreigners. But our language employs all borrowed words in different ways.

Therefore, language unites the realities of not only spiritual culture, but also material culture, lexical stock of the language, in other words, vocabulary. Features of national culture are remarkably reflected in phraseological units.

Task 1.

1. Determine their lexical meaning. (Phraseologisms exist in the language in connection with the vocabulary. They reflect the history and character of the people, its material and spiritual culture).

2. Take into account several groups of phraseological phrases from the point of view of cultural analysis and with its help we will extract information about the life, history, character and beliefs of the people from these linguistic units.

Thus, phraseological units not only enrich the language, make speech bright, figurative, but also reflect the human world and his culture. The world is the same for everyone, and people think similarly. However, each language reflects its own idea of the world, reflects the life and activities of each nation. One and the same thought is expressed by different linguistic units, which is based on the peculiarities of folk culture.

3. In English culture, diversity and freedom of views and tastes are highly valued. Provide examples of English phraseological units that reflect national specifics. For example: *Variety is the sprice of life – Hár túrlilik bul ómirdiń gózzalliǵı; Tastes differ Hár kimniń óz talǵamı boladı; When is Rome, do as Romans do – Hár eldiń úrpi basqa, Iytleri bar ala qasqa.*

Task 2.

Read the following short extracts from the Karakalpak folk writer T. Qayipbergenov's work ***"Mamanbiy ápsanası"*** (*The Legend of Mamanbiy*) [10] in the Karakalpak language. Then write the English translation of the phraseological expressions (or the meaning of the phraseological expressions) in the following lines.

1	"… Bul gáp áwelgi sıbırlılardıń ústine mala basıp jiberdi…"	
2	"Menińshe Mitriy tóreni aradan alaslaw kerek."	
3	"… Murnińizdıń tesigi tómenge qaramasın…"	
4	"… Bul ne degen dońızliq! Kózine may pitken…"	
5	"Xanniń túsi suwıdı. Biraq ózin aldırmawǵa tırıstı."	
6	"Junǵar keńesóyiniń júrisi tegin bolmasa kerek."	

7	"…Ǵayıp bahadırdıń dumalaq qońırı qayshı qulaǵın kerip quldırawı menen kózden ǵayıp boldı…"	
8	"…Apraksin degen úlken ásker basını joldan azdırǵanbısh…"	
9	"Shayıq tili menen mór bastı…"	
10	"… hasaǵa súyengen halında, eki iyninen dem alıp tur."	

Task 3.

Read the following proverbs related to animals in the English language. Find the translations of English proverbs in the Karakalpak language. Match the proverb from 1-10 to A-J.

1	To kill two birds with one stone	**A**	Shımshıqtan qorıqqan tarı ekpeydi (Shegirtkeden qorıqqan, Egin ekpeydi).
2	A bird in the hand is worth two in the bush	**B**	Alıstaǵı arbalıdan jaqındaǵı dorbalı (Alıstaǵı dostıńnan jaqınıńdaǵı qońsı artıq).
3	The Leopard cannot change its spots	**C**	Eshkiniń ájeli jetse shopannıń tayaǵına súykenedi.
4	The early bird catches the worm	**D**	Balıqshı balıqshını uzaqtan tanıydı.
5	Let sleeping dogs lie	**E**	Birewge gór qazsań óziń túserseń (Birewge etseń jamanlıq bolmaydı keyni amanlıq).
6	Birds of a feather flock together	**F**	Balıq basınan shiriydi.
7	Catch the bear before you sell his skin	**G**	Erte turǵannıń ırısqısı mol boladı (Erte jat ta, erte tur, Bir piskekti artıq ur).
8	A cat in gloves catches no mice	**H**	Qara qoydıń terisin, Sabınlap juwsańda aǵarmas (Búkirdi gór túzeydi).
9	Curses like chickens come home to roost	**I**	Bir oq penen eki qoyandı atıw.
10	Fish begins to stink at the head	**J**	Suwdı kórmey etik sheshpe.

Thus, the purpose of this study was to develop, substantiate and implement a system of activities for the formation of linguocultural competence of students of higher educational institutions, as well as to identify and check the pedagogical conditions of its effective functioning. Therefore, we have formulated the following hypothesis: the process of formation of linguocultural competence of students at higher educational institutions in Karakalpakstan will become more effective if it meets the requirements in the following: a model for the formation of linguocultural competence is developed and implemented on the basis of the system-activity, competence-based and process-culturological approaches, characterized by integrativeness, predictive adequacy and pedagogical validity; culturally related study of foreign and native languages, ensuring an international standard level of training and competence.

Also, a complex of pedagogical conditions will be identified and implemented including the followings: 1) the implementation of pedagogical support for the process of formation of linguocultural competence of students; 2) creation of an innovative linguocultural environment based on electronic educational resources; 3) orientation of linguocultural training of students according to professional types.

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Резюме: *Maqolada kompetentsiya tushunchasi tasvirlangan. Maqolada talabalarning madaniy kompetentsiyasini shakllantirish, madaniy xususiyatlarni aks ettiruvchi topshiriqlar va mashg'ulotlar yordamida rivojlantirish muhimligi qayd etilgan. Maqolada madaniy kompetentsiya rivojlanishiga ta'sir qiluvchi omillar tahlil qilingan. Shuningdek, maqola talabalarning madaniy xabardorlik ko'nikmalarini oshirish omillari va usullari to'g'risida bayon qiladi. Muallif ingliz va qoraqalpoq tillarining lingvomadaniy xususiyatlarini, metodologiyani, maqol va iboralarni o'rganishning ahamiyatini, va frazeologizmlarni tahlil qiladi. Ushbu maqolada, paremiyalar va frazeologizmlardan dars jarayonida foydalanishning usullari va vazifalari haqida so'z boradi, va misol tariqasida qoraqalpoq xalq yozuvchisi T.Qayipbergenovning asaridan olingan qisqa parchalar yordamida frazeologik birliklarning o'ziga xos xususiyatlari qiyosiy tahlil qilinadi va bayon etiladi. Bundan tashqari, maqolada ingliz va qoraqalpoq tillaridagi frazeologik birliklar va paremiyalar yordamida lingvomadaniy kompetensiyani shakllantirishning ahamiyati haqida so'z yuritiladi.*

Резюме: *В статье описывается понятие компетентности. В статье отмечается важность развития культурной компетентности студентов через культурно-ориентированные задания и занятия. В статье анализируются факторы, влияющие на развитие культурной компетентности. Кроме того, в статье дается определение факторов и способов повышения культурной осведомленности учащихся. Автор анализирует лингвокультурологические аспекты, методики изучения пословиц и поговорок, фразеологизмов в английском и каракалпакском языках. В статье описаны примеры занятий и задания по использованию паремий, фразеологизмов в учебном процессе с использованием коротких отрывков из произведения народного каракалпакского писателя Т.Кайыпбергенова. Кроме того, в статье рассматривается важность формирования лингвокультурной компетенции с помощью фразеологизмов и паремий в английском и каракалпакском языках.*

Калит сўзлар: *madaniy xabardorlik ko'nikmalari, chet tili ta'limi, lingvomadaniy yondashuv, lingvomadaniy kompetentsiya, paremiya (maqol), frazeologik birliklar, iboralar.*

Ключевые слова: *навыки культурной осведомленности, иноязычное образование, лингвокультурологический подход, лингвокультуртурная компетенция, паремия (пословица), фразеологизмы, поговорки.*

LINGUISTIC FEATURES OF THE SOURCES OF HOMONYMS IN THE MODERN KARAKALPAK LANGUAGE

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Summary: *The article is devoted to the problem of sources of homonymy in the modern Karakalpak language. Until now, there has been no special research in the field. Therefore, we are based on foreign researchers who have written about homonyms. We also offer our opinion on the source of homonyms. In this article, we will look at several examples, and this may possibly be the basis for the source of homonyms in the Karakalpak language.*

Keywords: *homonyms, sources of homonyms, Karakalpak language.*

INTRODUCTION.

The history of the development of the Karakalpak language shows that this language was particularly strongly subjected to lexical changes. Due to the gradual reduction of many syllables, it formed a significant number of monosyllabic words. Linguistic studies have found that the more short words in a language, the more cases of homonymy. The occurrence of homonyms is explained by various reasons.

Almost all sources of homonymy have one thing in common – homonyms develop from two or more different words and their sound and spelling match is random.

In the language of science, there is homonyms, which is the result of the semantic development of the word, when the polysemy diverges so much that it becomes a homonymy, while the meanings of a polysemous word lose their mutual linguistic motivation, the continuity of internal forms, as a result of which the word-formation series, the combinational possibilities of the word, etc. change. We can say that homonymy in the Karakalpak language, as in any language, is a very complex and interesting phenomenon.

Through to homonyms in the Karakalpak language, it is possible to trace the development of the language: with which languages the Karakalpak language interacted, what changes occurred in the writing system, and so on [1.,142-145].

Esemurat Berdimuratov believed that the connection of the derived value with the original one exists only at the stage of the formation of the derived value, and then the internal form fades away and the derived value separates from its source, turning into an independent unit-in essence, into a homonym.

MAIN PART

In the course of linguistic and etymological analysis, it was found that the increase in the number of homonyms in the Karakalpak language is significantly influenced by borrowing. These borrowings can be divided into two categories: historical and global. The historical categories include Arabic, Persian, and Russian words. And the global category includes loanwords that are from the 21st century.

In the historical category, more of the Arabic language. The structure of the borrowed word usually undergoes changes in accordance with the pronouncing norms of the borrowing language and the existing rules for combining forms in this language. The assimilated form may not be identical to any of the existing forms, but may accidentally coincide in form with some word of the recipient language, as, for example, happened with the word *talaq* 'divorce, divorce' borrowed from the Persian with the word *talaq* 'spleen' already existing in the Karakalpak language. In this case, the language has newer homonyms [2.,1-6].

The semantic characteristics of borrowed homonyms can vary significantly and even belong to different parts of speech. For example, ataman-shoot (verb) and ataman-Cossack position (nouns). Borrowings can become graphically identical to the original word. For example, *ton*, *bas*, *kiy* [3.,10-13].

As a result of borrowing foreign words, there may be a formal coincidence in the spelling of the word. Words that have entered the Karakalpak language from different languages may be consonant:

kran-Dutch. valve in the form of a tube for the release of liquid or gas,

kran-German. mechanism for lifting and moving loads,

The same-sounding words are borrowed from the same language:

nota - Latin. musical sound,

nota - a diplomatic appeal from one government to another.

Phonetic processes recorded in different periods of the history of the Karakalpak language. These are the so-called philological changes in diachrony. Other examples of homophones in the Karakalpak language that arose as a result of historically different notation on the letter of the same consonant or vowel sound: jazaladı – jaza aladı [6.,33-43].

As a result of these changes, words that were previously pronounced differently can acquire an identical sound form and become homonymous words. In the Karakalpak language, the phonetic process occurs especially in colloquial speech. For example, áke (bring) – áke (father), usta (catch) – usta (master), keme (boat) – keme (don't come). However, such a phonetic process is very rare in a language.

A qualitatively different source of homonyms formation is conversion, as a result of which a word that is a part of speech, for example, a noun, begins to denote action with this object. In the Karakalpak language, the noun and verb are often expressed in the same language form: jamaw-jamaw, qamaw-qamaw. These are lexical homonyms. Due to the conversion, there is a small number of complete homonyms in the Karakalpak language [4.,19-21].

Above, we have considered cases where words that are correlated by conversion are the same in their forms. This feature is characteristic of the Karakalpak language.

Homonyms can be formed from homonymous bases in a suffixal way, using the same suffix, for example, the nouns üydi ‘noun: house in the accusative case’ is formed from the noun base *úy*1 + suffix - di and the verb *úydi* in the meaning 'verb: to collect in the 3rd person' is formed from the base *úy*2 + suffix - di. However, sometimes a word resulting from word production becomes homonymous to another word with a non-derived basis, as, for example, in the case of the verb awdarma ‘don't translate’, formed from the basis awdar + -ma, which became a homonym in relation to the non-derived noun awdarma ‘a translation’. When new words are formed from the roots and affixes available in the language, homonyms also appear: *jılqıshı* - "wagtail", *jılqıshı* - herdsman. The appearance of homonyms as a result of the coincidence of a newly formed abbreviation with a long-known full-meaning word: *qar* - «snow», *QAR* - «Republic of South Africa» [5].

There is another source of homonymy that differs significantly from those listed above. This is the development of lexical and semantic variants of a single word when, for various reasons, the semantic structure of the word is branched. This type of homonymy development is called split polysemy. This factor contributed to the appearance of such homonyms as *kún* - ‘a day‘, *kún* - 'the sun' [7.,40-48].

The semantic structure of a polysemantic word is a system within which its constituent meanings are linked by logical connections or associations. In most cases, all lexical and semantic variants of a word are associated with one specific meaning, which is called an invariant.

As for the meaning, which is an invariant, as a result of changes in the language over time, it is able to get out of the semantic structure of the word, which leads, in turn, to a violation of the logical connections between the lexical and semantic variants of the word. As a result, the semantic structure of a word loses its unity and is divided into two or more parts, which are then perceived as separate, independent lexical units. An example is the word *kók*, which has five unrelated meanings that once had a close semantic connection [8].

We hypnotize the direct initial dependence of such homonyms: *kók*. Initially, the word expressed the concept of "sky". This concept was transferred to color and came to mean blue. In the future, the development of words went in different directions, there was a rethinking of their original meaning, there was a difference in their spelling, and by now the line of semantic dependence has been erased.

In the Karakalpak language, 40 % of homonymous words appeared as a result of word-forming processes, 20 % of homonymous units appeared in the language as a result of borrowing, 5 % of homonyms were formed from various phonetic changes, and only 20% of homonyms arose from the collapse of polysemy. About 15% of homonyms in the Karakalpak language are formed by the conversion method.

So, the homonyms in the modern Karakalpak language, which is very developed in comparison with other languages, are connected with the historical conditions of its development. The formation of homonyms in connection with the collapse of polysemy is an indisputable fact. Homonyms can also arise as a result of the development of polysemy of a word, some meanings of which may break away from the main one and form an independent word. Also, one of the reasons for the appearance of homonyms in the modern literary Karakalpak language are verb pairs: alısıw, alıw, artıw, asıw, awdarıw, baplaw, basıw, bórtiw, bórtiriw, buyırıw, bultıyıw, burqıldaw, burqıraw, búrisiw, bılǵaw, bılshıraw and e. t. c.

In the table, we will look at how homonyms appear between parts of speech.

Noun - noun *ay – «moon», ay – «month»*
Noun - verv *alma – «apple», alma – «don't take»*
Noun – adjective aqsha – «money», aqsha – «беловатый»
Noun - adverb *tap – "heat" tap – "straight"*
Noun– service words *ushın – "tip", ushın – "for"*
Noun – numeral *Altınshı – "A gold seller", altınshı – "sixth"*
Verb - verb *awdarıw – "flip", awdarıw – "translate"*
Verb - adjective *uzaqlaw – "retreat" uzaqlaw – «for away»*
Adjective – pronoun *qanday – «like blood» qanday? – «What?»*
Pronoun – noun *biz – «we» biz – "awl"*

CONCLUSION

As you know, in the course of its historical development, the sound structure of the Karakalpak language has undergone significant changes that have caused the monosyllabic nature of many words, most of which are simultaneously root words. A large group is represented by homonyms obtained as a result of affixation and the development of lexical and semantic variants. Philological changes in diachrony and conversion represent the least active ways of forming homonyms.

In conclusion, we can conclude that the appearance of homonyms in the language is explained by the following reasons:

1. As a result of borrowing foreign words, there may be a formal coincidence in the spelling.

2. Words that have entered the Karakalpak language from different source languages may be consonant.

3. When new words are formed from the roots and affixes available in the language, homonyms also appear.

4. Homonyms are native Karakalpak words that have undergone various changes as a result of phonetic and morphological processes occurring in the language.

5. The source of the appearance of homonyms can also be a gap in the semantic structure of polysemantic words, in which individual meanings diverge so much that they are no longer perceived as belonging to the same word.

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Rezyume: *Maqola hozirgi qoraqalpoq tilidagi omonimlarning manba masalasiga bag'ishlangan. Shu paytgacha bu sohada maxsus tadqiqot qilinmagan. Shuning uchun biz chet el tadqiqotchilarining omonim boyicha ishlariga asoslanamiz. Biz shuningdek omonimlarning manbasi boyicha o'z qarashlarimizni taqdim etamiz. Ushbu maqolada birqancha misollarni ko'rib chiqamiz va bu qoraqalpoq tilidagi omonimlar manbasining asosi sifatida xizmat qilishi mumkin.*

Резюме: *Статья посвящена проблеме источников омонимии в современном каракалпакском языке. До сих пор никаких специальных исследований в этой области не проводилось. Поэтому мы опираемся на зарубежных исследователей, которые писали об омонимах. Мы также предлагаем свое мнение об источнике омонимов. В этой статье мы рассмотрим несколько примеров, и это, возможно, послужит основой для источника омонимов в каракалпакском языке.*

Kalit so'zlar: *Omonimlar, omonimlarning manbalari, qoraqaloq tili.*

Ключевые слова: *омонимы, источники омонимов, каракалпакский язык.*

THE PAREMIOLOGICAL PICTURE OF THE WORLD IN LINGUISTICS

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Summary: *The article talks about the paremiological picture of the world, which is an inseparable part of the linguistic picture of the world. The linguistic picture of the world is a worldview, fixed in the language, and the paremiological picture of the world is a worldview, which we find in the study of the paremiological fund of an ethnos. The paremiological picture of the world is a part of the linguistic picture of the world and the linguistic consciousness of the ethnos.*

Key words*: paremiological, picture, linguistic, world studies, ethnos, consciousness, research, personality, people, culture, nation, parable, society.*

The paremiological reserve of each language has its own area in which the study of the historically formed personality of a representative of a certain community takes place. Paremia is an integral part of the culture of every nation. The term "paremia" itself is close to the concept of "proverb". "Paremia" comes from the Greek word "παροιμ чтоα", which means a special element of worship - a parable that in a metaphorical form interprets events as a source of moral lessons. The content of the ancient paremia is the events of the Old Testament [4].

Later, the term "paremia" began to be used in proverbs and sayings. Paremic constructions are separated from the phraseological corpus, however, the section of science that studies paremiology is defined as the section of phraseology. Accordingly, in the study of proverbs and sayings, they operate with the scientific apparatus of phraseology [7].

In modern linguistics, we often come across the term "paremiological picture of the world", which is understood as an invariant part of the linguistic picture of the world, "compression of the socio-cultural experience of the people", the result of its knowledge [10]. Paremias are special worlds, “they contain both a moral law and common sense, expressed in a short dictum, bequeathed by the ancestors, and guidance to descendants” [2].

The pictorial interpretation of all sorts of concepts in the paremiological picture of the world occurs through the understanding of paremias by native speakers. Consequently, the linguistic picture of the world of each nation conveys its cognitive, cultural and national characteristics.

Proverbs and sayings contain the information of any ethnic group and its views on the world, which gives us the opportunity to talk about the paremiological picture of the world. The paremiological picture of the world is an inseparable part of the linguistic picture of the world. So, the linguistic picture of the world is a worldview, fixed in the language, and the paremiological picture of the world is a worldview, which we find in the study of the paremiological fund of an ethnos. The analysis of the paremiological picture of the world carries out two directions of the analysis of the linguistic picture of the world:

1. proverbs and sayings give the ability to explore concepts for a particular people;
2. paremia form a complete part of the linguistic system, reconstructing the necessary fragment of the linguistic picture of the world and accurately describe the views of the world, because the reconstruction of the linguistic picture of the world as a whole through its complicativity is almost impossible [5].

Moreover, paremiological pictures of the world “express, together with sentries, universal for any era, to a certain extent archaic views, vestiges of the world” [3]

Outdated sayings and proverbs cannot be ignored. Outdated proverbs and sayings must be attributed to the periphery of the paremiological picture of the world. Proverbs and sayings of this kind manifest ancient views of the world and reflect the unchanging features of the national character. In addition, the interconnection of the national characteristics of specific peoples with their paremiological fund is, oddly enough, the problems of translating the paremias of this people into other languages. The absence of phraseological equivalents in translation emphasizes the national specificity and great national value of these phraseological units, because “relations of onesided interconnectedness and interdependence are established between the nature of the phraseology of a certain people and the cultural-historical features of its development," as L. I. Roizenson emphasized. "Only this can, for example, explain why in one language there are many phraseological units associated with such concepts as nomadic life, yurt, camel, etc. (in Mongolian languages), while for other languages such features are not relevant or at all absent "[8].

The national linguistic worldview is expressed in the axiological characteristics of the same universal concepts. In the paremiological fund, universality is manifested at the level of the thematic classification of paremias, and the national originality of linguoculture is manifested in various figurative and motivational sources of the semantics of these expressions. "Ethnocultural difference in the system of world outlook of different peoples is revealed in the process of comparative linguo-cognitive and linguoculturological research of linguistic units, including phraseological units" [11].

In general, the composition of the paremias in old collections is rather heterogeneous, stylistically "not smoothed", clear boundaries between their varieties, as a rule, are not drawn, but this is also their peculiar advantage for research, since such a presentation of the material allows one to see all the structural diversity of statements with a similar subject. It should also be taken into account the fact that even if today there are no unambiguous criteria for distinguishing between proverbs, sayings, catchphrases, figurative aphorisms, etc., then at the time of the first collectors and researchers of paremias, even more so they did not exist. By no means all the authors of the first collections, when fixing paremias, pursued purely linguistic goals, writing down, as a rule, what they found interesting. Nevertheless, these records are of exceptional value for historians of the language, for researchers of the dynamics of the paremiological composition of the language, etc. [9].

The old collections of paremias differ from the earlier ones, first of all, in that when selecting the material, their compilers are guided not only by living folk speech, but also by earlier fixations taken from old sources.

The ability of paremias to implement the functions of language and culture is based on a certain conjugation of two systems - culture and language. The functions of culture, like the functions of language, are considered in their hierarchical relations. The leading function of culture as a system is most often recognized as a humanistic, or human-creative, function, since culture as a product and method of human activity determines anthropologism as such and establishes a specific human environment [9].

A significant part of the proverbs that have come down to us developed in the era of the dominance of the natural economy and the patriarchal way of life" [1].

For the speaker, the meaning of the paremia lies in the abstract model of the utterance, which depends on the metaphorical image taken as the basis for creating the paremia. In the truce, animalistic components vary, proving that representatives of different ethnic groups have different associations when they perceive the same phenomenon.

Consequently, the paremiological picture of the world is part of the linguistic picture of the world and the linguistic consciousness of the ethnos. There are more than ten types of paremias. The first type is a greeting, that is, well-established cliché expressions that are used when meeting a familiar person. A separate group is made up of holiday greetings, or well-established phrases with which they greet each other only on certain holidays. Wishes are verbal miniatures of the desire for good, happiness, material prosperity, and toasts are table wishes expressed to the owners of the house or guests.

Researchers come to a consensus that proverbs and sayings should be attributed to paremias, which will be analyzed in our work. Considering the linguistic specifics of paremias, it should be noted that the features of the language are expressed, in addition to other factors, through proverbs and sayings. A large number of them denote specific national features, and they are rooted in the long history of the people, their way of life, customs, and traditions. Therefore, proverbs and sayings are the boundless linguistic wealth of the people, which has been created over the centuries, since they contain the centuries-old experience of public reason [6].

The peculiarities of linguistic features in the speech of proverbs include brevity, syntactic isolation, euphonicity and intonational wholeness. Any nation has its own culture, which was born from time immemorial, and each subsequent generation retained the vision of the world of its nation, that unique worldview and perception of the surrounding reality, which constitutes the inner essence of this nation. As a result, the emerging picture of the world for each individual nation taken by the synthesis of elements of the surrounding reality. The interaction of reality is reflected in the linguistic picture of the world, with the help of linguistic expression. Thus, the totality of verbal and non-verbal communication means that describe the surrounding reality is the language of culture. So, let us conclude that the linguistic picture of the world is an invariant part of the linguistic picture of the world, the result of its cognition. And the reflection of reality with the help of images of paremias is a paremiological picture. Observing the speech of a modern person of any nationality, we can notice paremias, which are actively used units of the language.

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Rezyume: *Maqolada dunyoning paremiologik tasviri haqida gap boradi, bu dunyoning lingvistik rasmining ajralmas qismi. Dunyoning lingvistik surati - bu tilda mustahkamlangan dunyoqarash, dunyoning paremiologik tasviri - bu dunyoqarash, biz uni etnosning paremiologik fondini o'rganishda topamiz. Dunyoning paremiologik manzarasi bu dunyoning lingvistik rasmining va etnosning lingvistik ongining bir qismidir.*

Резюме: . *В статье говорится о паремиологической картине мира которая является неотделённой частью языковой картины мира. Языковая картина мира является мировидением, закрепленным в языке, а паремиологическая картина мира есть мировидение, которое мы обнаруживаем при исследовании паремиологического фонда этноса. Паремиологическая картина мира является частью языковой картины мира и языкового сознания этноса.*

Kalit so'zlar: *paremiologik, rasm, lingvistik, dunyoshunoslik, etnos, ong, tadqiqot, shaxs, odamlar, madaniyat, millat, masal, jamiyat.*

Ключевые слова: *паремиологическая, картина, языковая, мироведение, этнос, сознание, исследование, личность, народ, культура, нация, притча, общество*

ENVIRONMENTAL REQUIREMENTS TO ENSURE THE RIGHT OF THE POPULATION TO CLEAN DRINKING WATER.

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Summary: *In this article has been analysed the environmental needs of the population for access to drinking water. Issues of rational use of water were considered. Issues of improving water legislation were covered.*
Keywords: *population, law, ecology, law, water.*

Introduction. 26 article of the Law of the Republic of Uzbekistan "On Sanitary and Epidemiological Welfare of the Population" [1] sets out the environmental requirements for the provision of drinking and drinking water, according to which the quality of water supplied by legal entities engaged in economic and drinking water supply , norms and standards of hygiene, as well as state standards. In a centralized manner, special sanitary protection zones are established for water pipes supplying household and drinking water and their sources, which are approved by local state authorities. Legal entities and individuals must ensure that the water in water bodies used for economic and domestic purposes, as well as for decentralized water supply, complies with sanitary rules, norms and hygiene standards.

Ensuring the right of the population to clean drinking water today does not mean that it fully meets environmental requirements. In our opinion, the shortcomings are due to the following reasons:

a) water quality UzDSt 950: 2011 “Drinking water. Hygienic requirements and quality control ”;

b) the lack of technology at the old terminals and, as a result, the inadequate treatment of natural water;

c) water wastage, secondary microbial contamination as a result of emergency water supply networks;

g) inflow and contamination of improperly treated and untreated wastewater into water bodies as a result of lack of capacity of old technological schemes in the pumping system (or the complete absence of treatment facilities);

d) gradual introduction of technological processes in the field, which will reduce the volume of wastewater; e) in the absence of high-tech warehouses and landfills for solid and liquid waste discharges.

As rightly pointed out in the specialized scientific literature, in any case, the water intake must meet the following requirements:

1) there is no risk of contamination from a sanitary point of view;

2) sufficient supply of water to the water supply network in any case;

3) water intake facilities and water intake are protected;

4) the location of water intake from open water basins is higher than the residential area, the area of wastewater flow;

5) when constructing a water supply system, not only the current boundary of the city or towns, but also the boundary of the general design should be considered [2,100].

The article 40 of the Law of the Republic of Uzbekistan “On Water and Water Use” [3] stipulates that water quality must meet established sanitary and hygienic requirements and state standards to meet the needs of the population for clean drinking water, household and other needs. water bodies are separated. The norm strictly stipulates the allocation of water bodies that meet the established sanitary and hygienic requirements and state standards for water quality to meet the needs of the population for drinking water, household needs and other needs, without using the term "possible", which is widely used in the legislation.

The Law of the Republic of Uzbekistan "On sanitary and epidemiological well-being of the population [1]" plays an important role in determining the requirements for the use of water bodies for consumption, household and other needs of the population. In particular, the article 26 of the law strengthens the "Requirements for household and drinking water supply." According to it, legal entities operating in the field of economic and drinking water supply must ensure that the quality of supplied water complies with sanitary rules, norms and hygiene standards, as well as state standards.

In a centralized manner, special sanitary protection zones are established for water pipes supplying household and drinking water and their sources, which are approved by local state authorities. Legal entities and individuals must ensure that the water in water bodies used for economic and domestic purposes, as well as for decentralized water supply, complies with sanitary rules, norms and hygiene standards.

According to the article 12 of this law, officials carrying out state sanitary control are given the following rights within their competence: new types of raw materials, chemicals, technological equipment, processes, etc., not registered with the Ministry of Health of the Republic of Uzbekistan or recognized as dangerous to human life and health. tools, food raw materials and food products, industrial products, construction materials, sources of ionizing radiation, biological agents, containers used for food raw materials, food products and medicines, plastic, polymeric materials and other materials, Prohibition of production, use and sale of products made from them and other consumer goods; chemicals used in agricultural and drinking water supply practices, in the development and processing of food, agricultural crops and livestock accelerators and regulators, pesticides, perfumes and cosmetics in the event of adverse effects on human health , prohibit the use of tools and methods until the developer has provided scientifically sound information about the safety of these substances, tools and methods; prohibiting the use of water deemed unfit for use for domestic and drinking water supply.

In order to protect the water used for drinking, household and medical needs of the population, sanitary protection zones of water bodies shall be established in accordance with the legislation. Depending on the function, location and technical characteristics of water bodies, a special regime of economic activity is established in water protection zones, coastal zones and sanitary protection zones of water bodies.

105-106 articles of the Law of the Republic of Uzbekistan "On water and water use" [3] protect, prevent and eliminate harmful effects of water, which also applies to the use of water for drinking, household, medical, spa and health purposes and economic measures for the rational use of water, the rational use of water and the protection of water. Determining the quantity and quality of water, which forms a single water fund, information on water use for the needs of the population and sectors of the economy is carried out through the state accounting of water and its use. Water use planning should, first of all, meet the drinking and domestic needs of the population, ensure the scientific distribution of water among water users, protect water and prevent harmful effects of water.

A person should consume clean quality drinking water to feel good. Quality drinking water is water that does not contain harmful compounds for human health. It should be colorless, odorless and safe to consume. According to the World Health Organization, the number of water-borne diseases is the highest, and the impact of the water factor on the health of the population is confirmed by more than a hundred years of water supply practice. Thus, drinking water should be not only bacteriologically clean and free of harmful substances for the human body, but also contain useful minerals.

Chapter 12 of the Law of the Republic of Uzbekistan "On Water and Water Use" [3] deals with the use of water bodies for therapeutic, spa and health purposes, which states in Article 44 that water included in the list of medicinal waters in the prescribed manner. The plants are used primarily for therapeutic and spa purposes. Discharge of wastewater into water bodies included in the list of medicinal waters is prohibited (Article 45).

Ensuring the right of the population to the required amount of clean drinking water In many respects, comprehensive measures to improve the condition of sanitary protection zones of drinking water supply sources, including: inspection of the condition of the first layer of the sanitary protection zone; implementation of works on elimination of filtration of discharge and sewage of the second and third layers of the sanitary protection zone with wastes of livestock complexes; removal of hazardous contaminants from the second layer of the sanitary protection zone (landfills, solid waste landfills, sand and slag dumps, etc.).

The Law of the Republic of Uzbekistan “On Water and Water Use” [3] establishes sanitary-epidemiological requirements for drinking water and drinking water supply to the population (Article 40). According to him, drinking water should be epidemiologically and radiation-safe, chemically harmless and have optimal properties. However, the problem of providing clean drinking water in the Republic of Uzbekistan remains acute, and the low quality of drinking water has a negative impact on public health. The situation in the lower reaches of the Amudarya, on the shores of the drying Aral Sea, is particularly dire.

It is known that wastewater treatment is often carried out by the chlorination method. From the experience of foreign research, chlorination of wastewater has a toxic effect on aquatic hydrobnots, and when ingested into drinking water, it becomes dangerous to human health. All this makes it expedient to replace chlorination with purer ozonation [4,10], and in modern conditions with UV-irradiation [5,12].

Since 2010, the national standard UzDSt 951: 2011 "Centralized sources of drinking water supply" has been applied in our country [6]. the standard defines the hygienic and sanitary requirements for the selected sources for centralized water supply. The most important thing, of course, is the health of the population as a criterion for their selection. Taking into account the many factors that determine the quality of drinking water, a “safe” water supply can be defined by five key indicators: quality, quantity, continuity, coverage, and price.

Environmental quality standards are established to assess the state of the environment in order to preserve natural ecosystems. Environmental quality standards include standards established in accordance with the chemical, physical, biological indicators of the state of the environment. It is known that environmental quality standards are set in the form of standards for the maximum allowable concentration of harmful substances in the air, soil and water bodies [6]. Traditionally, the highest allowable concentrations have been set for only two types of water use - drinking and domestic water supply and fisheries.

In the field of water use, the maintenance of surface and groundwater in compliance with environmental requirements is ensured by setting and adhering to the highest permissible standards of harmful effects on water bodies. These standards are based on the following: the long-term impact is due to the maximum allowable anthropogenic load that does not lead to changes in aquatic ecosystems, as well as the allowable mass of harmful substances that can enter the water body and its catchment areas [7].

In summary, the current water legislation provides for the status of specially protected water bodies for drinking and domestic water supply sources, the development of special rules for the special use of water from drinking and domestic water supply sources, the regulation of water supply and sewerage organizations in their production activities. it is necessary to introduce rules governing the relationship between the obligation to use global and national best practices, taking into account the interests of advanced technologies and public health and environmental protection.

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Rezyume: *Bu maqolada aholining ichimlik suvga ega bo'lishining ekologik talablari tahlil qilingan. Suvdan oqilona foydalanish masalalari ko'rib chiqilgan. Suv qonunchiligini takomillashtirish masalalari yoritilgan.*

Резюме: *В статье проанализирована экологические потребности населения в доступе к питьевой воде. Были рассмотрены вопросы рационального использования воды, освещены вопросы совершенствования водного законодательства.*

Kalit so'zlar: *aholi, huquq, ekologiya, qonun, suv.*

Ключевые слова: *население, право, экология, закон, вода.*

DIFFERENCES OF ETHNOGRAPHISMS IN KARAKALPAK FOLKLORE ON THE FUNCTIONAL AND SEMANTICAL POINT OF VIEW

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Summary. *In this article the application of ethnographisms on functional and semantic features in Karakalpak folklore is analyzed.*

Key words: *: Karakalpak folklore, archaism, historical vocabulary, ethno linguistics.*

The vocabulary of the modern Karakalpak language consists of a rich vocabulary that covers all aspects of life. It develops and expands in accordance with the rules of internal development of the language through the existence and formation of the word, as well as the exchange of words as a result of communication with other peoples [1, 61].

It is a natural phenomenon that the vocabulary of a language changes, some words become old or are replaced by other words, some words disappear from the vocabulary over time, and they are not widely used. This, of course, is influenced by certain regulations. Everyday legal phenomena between society and nature are clearly reflected in language. As a result of daily necessity, new words begin to be used in connection with the emerging concept. That is, the lexical structure of the language gets richer. The study of the lexicon of all languages by dividing into terminological lexical-semantic groups is currently one of the most difficult scientific methods.

In this regard, K.M Musaev noted that "the study of vocabulary by dividing into thematic groups is the most effective method of studying the vocabulary of the Turkic peoples" [2, 55].

Basically, language is the eternal means of communication with the people who gave birth to it. Therefore, language, like an organism, is a living phenomenon that becomes obsolete, renewed, grows and develops. In this regard, one of the problems in the development of the language - its individual lexical unit in the vocabulary - is the fact that the lexemes become obsolete, meaningless, out of everyday use and old words which seldom used by users, and, some words are received which are necessary to the language, or reforms and replenishes in the basis of its language. Thus, in the development of language there are two identical phenomena: the development, becoming out of date, change or renewal of the language. It is an internal regularity that the language always tries to hold such a rich vocabulary in a certain state, in a certain extent, which it has always kept in mind during the captivity.

In our article, primarily, we will pay attention on the archaisms. Archaism is a lexical unit of obsolete words. However, the product or phenomenon which is called with this word is still used in real life, but it takes on a different name or is filled with new synonyms. The main reason for the emergence of archaisms is the development of language, the change of vocabulary: if one word disappears, another appears.

It should also be noted that the words that are missing from the vocabulary do not disappear at all: these words are still used in the old literature and in various old concepts, that is, in some situations; they are indispensable for historical novels and essays, because through these words one can give the breath of the epoch, the color.

Archaisms occur as a result of becoming obsolete of some words and the emergence of other synonyms instead. Either, the word, which was previously used as a synonym, gradually began to be seldom used, firstly, and gradually ceased to be used. Such words are very common in Karakalpak folklore. After all, the words of the ancient times, when folklore appeared and began to be formed, have been obsolete and replaced by other words. That is, it has become archaic. For example,

Dindi kozge ilmedin,
Din jolynin kudayy,
Paygambarym demedin,

Alty ayda, jylynda,
Bir gamyndy jemedin,
Tort tulik malynnan,
Usir, zakat bermedin,
Jasym uzak bolgay dep,
Bir kudayy bermedin [5, 17].

The words tort tulik, usir, and zakat in the above lines are almost non-existent today. The term "tort tulik" is a compound term for four types of livestock [4, 415].

And, usir, in ancient times, when the threshing floor was red, the tenth after nine kepshiks (strainers) was given to the mullah as alms. This was called usir [4,238]. Nowadays, the word usir is used in some cases, but not in the own meaning. That is, giving the one-tenth of the grain to the mullah as alms was not kept. As for the word zakat [4,185], this word is out of the vocabulary of the Karakalpak language. This is because the original meaning of the word zakat is a tax on livestock. Although this type of tax now exists, it is called a property tax, not a zakat.

Alkyssa Gulayymday periyzat,
Khalykka jar saldyrdy,
Elatyn khabarlandyrdy,
Kaldyrmay tolyk jyydyrdy,
Jetpis **orda** kurdyrdym,
Khalayykty jam etip,
Daradan tabak koydyrdy,
Khalayykty awzyna karatty,
Atasynyng hakkynda,
Zhuz sarpay taratty,
Atamyrza bolsyn dep,
Neshening waktyn khoshladi,
Adalap barin sap etip,
Zheti kunde Gulayym,
Bul zhagyn da ada etti [5, 360].

The **orda** ethnography is a national ethnographic term. This means "living place, place of gathering, place, occasion". In Turkology, the etymology of ordu-orda is connected with ordu-orta. In recent years, it can be found in G. Dörfer's book “the elements of Turkish and Mongol in the new Persian language”.

In medieval Persian sources, in historical and lexical plan, it can be noted as follows: 1) ordu in Persian sources - "royal tent, camp", which basically means military”, 2) according to the philological data collected by the author, the ethnography of ordu is called “royal camp” and not “tent”, 3) This word refers to a set of tents and buildings which the king and his wives and servants live. In Turkmen, Kipchak, and Uzbek, orda which means the synonym of khan's residence is not met in ordu [9,468].

Toykhananing biyligin,
Koblanlyga beredi,
Akshakhannan zharshylar,
Zharkyshkyryp keledi,
Zhardyn sestina tynglasa,
Atshabysyna bolady,
Barlyk zherden at kelip,
Esabyn diywanalady,
Mollasy khatka salady [6, 427]

Zharshy (herald), in ancient times, was a man who proclaimed official messages, orders, and decrees of the khan to the people. The second meaning of the zharshy is that he is the one who informs and announces about the thing that has been lost to all the marketers on Sunday. Third, the variable meaning is to support something. (Explanatory dictionary of the Karakalpak language).

Definitely, this word has become archaic as a result of period changes and the emergence of various technical devices. Because, today we have the radio and television, the press which announce the orders and decrees, in recent years the Internet have joined them. Nowadays, if a person loses something in the market or loses his child, there is no need to announce it. This is because the market administration can announce this to the public through a microphone.

The word "zhar salyw, zhar (announce)" is also present in related nations. There are almost no differences in the meaning and function of the word "zhar". For example, in the Kazakh dialect - zhar, zhar sal, shakyr, in the Uzbek dialect - zhar, zhar sal, zhar et, in the Altai dialect - dar, in the Tatar dialect - yar [10, 18].

However, they all have the same meaning and function. It is a shout, a call.

The composition of the Karakalpak language, like any other language, is always changing. Some words become obsolete and fall out of the language, and others replace them. Every year, new words appear in the media, but not all of them appear in the vocabulary. Some of them can be used once, in any text, or in the spoken language, and some of them are used many times by different people, are got into the dictionary but do not become a new word. The obsolete words are a process; different words can be in any state. Words that haven't fell out of everyday use yet, but are less used than before, are obsolete words.

The obsolete lexicon is in turn divided into historical and archaic words.

Historical words are words and words that have been left out of the vocabulary due to the loss of words and the thing which words mean. Also, they are the names of lost elements and phenomena, which are not used today. Historical words can be used only in articles and works on historical topics.

The first difference from archaism is that they have no other variants or synonyms.

Some historical words can be used in another language, even if the word denoting the subject or phenomenon is obsolete for that language.

Many linguists claim that historical words have a stylistic function in the literary works - they create a historical color, but some say that in the scientific literature, historical words are used to convey the meaning of the subject and the phenomenon of that period.

Sometimes, historical words can be re-incorporated into the language by the reappearance of the phenomenon, the subject. For this hakim, murap and others can be example.

Kasyma jyynap kyryk kyzdy,
Arman- berman jurgizip,
Togyz kabat **sawytty**,
Hap zamatta kiygizip [7, 50].

The word sawyt (armor) in these lines is a historical word. Today, sawyt (armor), kylysh (swords), kalkan (shields) and other old tools are the exhibits of the museum. We can see that they were used only in historical works to give the color of that period. Sawyt [4,185] is an obsolete word. It's a cloth which is made of iron or steel wire to prevent bullets from passing through the bodies of heroes. Kara shashym besten tallap tuyeyin, atam Bergen ak sawytty kiyeyin. (The Epic "Kyryk kyz").

As mentioned above, although some words become obsolete in one language and are no longer part of the vocabulary, they remain understandable and usable for the second language.

For example:
Wayran etip kalasyn,
Kanga bylgap dalasyn,
Kuni – tuni shapkanda,
Sagyraning kanlary [7,50].

However, today the word sagyra is almost not used in the Karakalpak language. Instead, baby and infant synonyms are used. Although the child was called as sagyra in the Karakalpak people in ancient times, this word seems confusing to the representatives of today's generation. However, one of the related peoples, the Kazakhs, did not stop using the word sagyra.

Kiyip **melle** arman menen **shaylaydy**,
Piring men dep baska sale baylaydy,
Shap ta oltir kyyametlik piringdi,
Sen ketkende kol uzatyp oynaydy [7,190].

Pir is a man who has lived longer, an old man. The second meaning is a religious word. He's a supportive religious leader, supporter, and helper [4,112]. Today, the word pir is almost non-existent. Although it is used rarely by the old people, the younger generation is not aware that the word pir is not a religious word, and it is an old synonym for the word the old, the old man. The above-mentioned words melle, shaylaydy can be interpreted in the same way. This is because the modern generation thinks that the word melle means yellow and orange, which came from the Uzbek language. Of course, not. This word is defined in the explanatory dictionary of the Karakalpak language as follows: melle - white, blue, gray, orange, colorless, colorless, orange, dull, soft. Ustinde sary mellesi. Bir kulash bolyp sallesi. (Berdak). Shaylaydy is the same. On the contrary, mainly the meaning of shaylaydy in our language is obesity. Tort tulik mal semizligin shaylagan. Buny kopshilik bile bermeydi.

Toy anzhamyn koredi, ameldarlar ortada, kusbegi de ortada, zhasaul basy, juzbasy, meter, kalender, toydy baslap jiberdi, at shapty, gures tusti, aradan bes kun otti, dunyada ne tamasha bolsa, bari otip ketti [8, 277].

Zhasaul was a man who obeyed the orders of the rulers during the Khiva khanate. Kusbegi, zhasaul basy, and meters are the officials of the Khiva khanate. Kusbegi, meter is the names of the officials of the Khiva khanate, zhasaul is also met in Kazak lexicon. "Zhasaulbasy – zat. Zhasaulbasy sherikterdi bastap ilgeri jurip ketti"[3,197]. (J. Turlybay, Raimbekbatyr, 2, 253).

There are also words that have entered in history and are no longer used today, but that subject or phenomenon is called by another name. These include:

Batpan is an old unit of measurement.

Karshin – is a basket for clothes.

Haykel- is jewelry adorned with pearls and silver.

Sabayiq- is a wooden table-like object.

These words were formed according to the life of the people in ancient times, their livelihood, living conditions, and so on. However, over time, it has become a historical word with the emergence of synonym or the other products instead of these products. Therefore, it is expedient to use the above-mentioned words in the works that reflect the historical epoch, to illuminate our history, to give a breath of that epoch.

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Rezyume. *Ushbu maqolada qoraqalpoq folьklorida etnografizmlarning funktsional-semantik xususiyatlari bo'yicha qo'llanishili tahlil qilingan.*

Резюме. *В этой статье анализированы использования этнографизмов функционально-семантическим способом.*

Kalit so'zlar: *Qoraqalpoq folьklori, arxaizm, tarixiy leksika, etnolingvistika.*

Ключевые слова: *Каракалпакский фольклор, архаизм, историческая лексика, этнолингвистика.*

JUDICIAL POWER IN THE SYSTEM OF SEPARATION OF AUTHORITIES

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Summary: *The article is devoted to the legal analysis and features of the implementation of the principle of separation of powers in the Republic of Uzbekistan. The authors consider the concept of the principle of separation of powers, its international and national legal sources for ensuring compliance with this principle, as well as the problems and shortcomings of the system of separation of powers in national constitutional theory and practice. In addition, this article analyzes the scientific materials of the researchers on this topic and exchanged views with these scientists.*

Key words: *Power, politics, doctrine, law, constitution, democracy, principle, state, legislative power, executive power, judicial power, monopolization, usurpation, punishment, protection, sovereignty, freedom, encroachment, reform.*

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The separation of powers is a political and legal doctrine, a constitutional principle that underlies the organization of the power of a democratic state and is “one of the main principles on which political democracy is based” [1.76]; This is a theory about the correlation of powers in the state, according to which for the effective functioning of the state it is necessary to have independent branches of power: legislative, executive, judicial. Monopolization and the penetration of state power into all spheres of public life are often presented as strengthening power, affirming its stability. However, the monopolization of state power not only negatively affects the life of society, but also does not contribute to the power itself, its bodies to effectively manage public and state life [2.93].

It is the theory of separation of powers that offers a mechanism to prevent the usurpation of power. This mechanism provides for the division of a single power into several independent but interconnected powers that could cooperate and control each other. The purpose of the theory of separation of powers is to exclude the possibility of concentration of all power in the hands of one person or body, which would turn into an unlimited and omnipotent ruler who issues laws, ensures their implementation, punishes disobedience [3,17].

The implementation of the principle of separation of powers is "an institutional way of limiting state power in the name of protecting people's sovereignty, preserving the rights and freedoms of citizens." The separation of powers in the state mechanism should serve as a guarantee against the dictatorship of arbitrariness, ensure the balance of power, that is, such a “mutual balance of government bodies that none of them can gain dominance over the others, so that each of them is guaranteed against encroachments on its independence". At the same time, the independence of each branch of state power should not be equated with its autonomy in the state mechanism or with the absolutization of the powers of its bodies The meaning of the principle of separation of powers is not in isolation, but in the interaction of all three branches of government, since "ensuring the interests of the state is achieved ... not by opposition ... but by close mutual cooperation, the exact execution of each of the branches of government of its functions." The Constitution of the Republic of Uzbekistan establishes the principle of separation of powers as one of the foundations of the constitutional system of our state. Article 11 of the Constitution contains a provision on the delineation of powers between different branches of government, establishes the independence of their bodies in the implementation of their activities and the inadmissibility of interference in the sphere of jurisdiction and competence of each other. One of the main goals of the democratization of modern society was proclaimed the idea of creating a rule of law, in which the judiciary should become one of the most important elements of the structure of state power, along with the legislative and executive. Without the judiciary, the rule of law cannot perform the functions of protecting law and order, protecting the rights and freedoms of citizens, therefore, the recognition by the state of the value of the judiciary, the adoption of the idea of the independence of the latter means that the state recognizes the need for self-restraint of power [4,].

This self-restraint is realized through a system of separation of powers. The principle of separation of powers in the Republic of Uzbekistan is legally recognized, constitutionally enshrined and, to one degree or another, applied in the construction and functioning of state institutions, however, to what extent the constitutional postulate of the independence of the judicial branch of government corresponds to objective reality is a debatable question and is very relevant among scientists studying the phenomenon of judicial power. ... Objective reality, the state of society at the present time, is "a complex multifaceted phenomenon in the interaction of social and political conditions" [5,17].

The judiciary can be spoken of as "a basic characteristic of any human society", as "a necessary element of social organization, without which the viability and functioning of society are impossible." The judiciary regulates the relationship between people, public and state-legal institutions, therefore, modern society and the state feel the need for such a judicial power, which, regardless of political preferences, priorities of other branches of the "state tree" could carry out its activities "in accordance with the essence and state goals of achieving and preserving social peace by legal methods, to restrain other branches of power and control the maintenance of the balance of power and personality, the finding of the state power itself in the legal space ”.

The judiciary, which realizes its potential for independence and impartiality, inherent in it by the principle of separation of powers, gives the public confidence that judicial decisions will be based on the Constitution and laws of the country, and not be the result of a change in political power or influence from state structures. The judicial power vested with such independence is necessary to resolve disputes or conflicts on the basis of the rules of law in a situation of encroachment on the established order in the state, but at the same time, “the judicial power cannot be tasked with judging expediency, ideas, biases or benefits, political views if it does not affect the legal relationship. " This means that the judiciary “legitimately relieves emerging social tensions” through superiority in knowledge of law and impartiality. In the system of separation of powers, the judiciary provides such directions of the state mechanism as resolving social and legal conflicts, ensuring social peace, overcoming social contradictions, and achieving social compromise on the basis of law. At present, the foundations of the organization and functioning of the judiciary as an independent and independent branch of state power are enshrined in the Republic of Uzbekistan at the highest - constitutional level, which indicates the recognition of its significance and potential, a unique role in the life of the state and society. In the process of the ongoing judicial reform, certain successes have been achieved in establishing the judiciary as an influential independent force. In turn, an independent judiciary makes it possible to ensure the practical implementation of the principle of separation of powers in Uzbekistan.

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Rezyume: *Maqola O'zbekiston Respublikasida hokimiyatlar bo'linishi printsipini huquqiy tahlil kilish va uni amalga oshirishdagi asosiy xususiyatlarni aniklashga karatilgan. Mualliflar hokimiyatlar bo'linishi printsipi tushunchasini, uning mazkur tamoyilga rioya yetilishini ta'minlash bo'yicha xalqaro va milliy huquqiy manbalarini, shuningdek, milliy konstitutsiyaviy nazariya va amaliyotda hokimiyatlar bo'linishi tizimining muammo va kamchiliklarini ko'rib chiqadilar. Bundan tashqari, ushbu maqolada tadqiqotchilarning ushbu mavzuga oid ilmiy materiallari tahlil qilinib, ushbu olimlar bilan fikr almashildi.*

Резюме: *Статья посвящена правовому анализу и особенностям реализации принципа разделения властей в Республике Узбекистан. Авторы рассматривают понятие принципа разделения властей, его международные и национальные правовые источники по обеспечению соблюдения данного принципа, а также проблемы и недостатки системы разделения властей в национальной конституционной теории и практике. К тому же, в данной статье проанализированы научные материалы исследовавших учёных на эту тему и обменялись мнениями с этими учеными.*

Kalit so'zlar: *Xukumat, siyosat, doktrina, huquq, qonstitutsiya, demokratiya, printsip, davlat, qonun chiqaruvchi xokimiyat, ijro etuvchi xokimiyat, sud xokimiyati, monopolizatsiya, zo'ravonlik, jazo, himoya, suverenitet, erkinlik, tajovuz, isloxot.*

Ключевые слова: *Власть, политика, доктрина, право, конституция, демократия, принцип, государство, законодательная власть, исполнительная власть, судебная власть, монополизация, узурпация, наказание, защита, суверенитет, свобода, посягательство, реформа.*

ISSUES OF CIVIL LIABILITY FOR VIOLATION OF THE LEGISLATION ON FAMILY BUSINESS

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Summary: *The article provides a detailed analysis of the legal description, content, specifics of civil liability for violation of the legislation on family business.*
Keywords: *entrepreneurship, fraudulent business, civil liability, civil law.*

While participating in any type of civil-legal relationship, in particular a business relationship, certain legal liability is inevitable for family entrepreneurs as well as for other types of legal entities. This is one of the descriptions of the legal characteristics of all types of legal entities, according to which the liability of a legal entity can be focused on three substantive rights (property law, business law, operational management law).

From this point of view, it is difficult to imagine the participation of legal entities in property relations, including business activities, without their responsibility. In particular, the legal regulation of the legal liability of the family entrepreneur as a participant in certain forms of entrepreneurial activity has changed radically with the adoption of the new Civil Code. This is because in a market economy, the state has also become an equal participant in civil law relations, and their participation in this type of relationship is carried out directly through its bodies. Consequently, the subjects of family business activities have become the subject of certain obligations and legal relations, which give rise to civil liability, respectively.

In our opinion, the civil liability of family business entities includes the types of legal liability provided by the state coercive measures and, in the end, the application of measures of liability for which the property is collected or confiscated for the offense committed by the offender. one is understood. The legal liability of family business entities that may participate in certain types of business activities is determined mainly by the occurrence of liability for obligations related to the circulation of funds at their disposal. If these funds are insufficient, the owner of the property belonging to the family business may also be subject to subsidiary liability for the obligations of this legal entity (Article 76, Part 3 of the Civil Code).

As a general rule, the property of family businesses is purchased mainly from the funds reflected in the budget, from the property provided by the owner (founder) of the legal entity, or from the funds allocated under the budget. - cash received from the property, as well as from the implementation of income-generating activities (if the family business entities are allowed to carry out these activities in accordance with the constituent documents) and property purchased at the expense of these funds finds. In this regard, it is also important to know exactly which family business entities (allocated by the owner according to the budget or generated from income-generating activities by the family business entities themselves) and how (from the main activity or income-generating activity) There are also questions about the possibility of being independently liable for the obligations arising, as well as the fact that the levy can be directed to the property of the family business entity, purchased at the expense of funds received from income-generating activities.

According to M. Braginsky and K. Yaroshenko, the recovery of a legal entity's debt can be directed to the funds allocated by the owner and generated by him, as well as to the property received from the activity that generates income [1.,15].

Consequently, the subjects of family business activity should be held independently liable for the obligations related to the conduct of business activities with the property taken into its independent possession and recorded in a separate balance sheet.

As a general rule, the founders (participants) of a legal entity are not liable for its debts. There are cases when the law imposes liability. Such liability, that is, of an additional nature, is determined within the scope of the property of the legal entity, which is insufficient for its release from liability (Article 48 of the Civil Code). Subsidiary liability of the founders (participants) (sometimes referred to as limited liability in the literature) is also applied to the performance of the institution [2., 71].

In addition, the specific nature of the civil liability of family businesses is reflected in the fact that this liability is limited to the funds at the disposal of the legal entity, which is responsible for its obligations. does not comply with the characteristics of a legal entity recognized as a legal liability with all the property belonging to it. In the event of liquidation of a family business, which is a separate type of family business, at the request of creditors, debt collection may also be directed to its property after the funds. Family businesses can be held liable for their obligations with the funds at their disposal. If the pub funds of family business entities are insufficient, the responsibility is focused on the budget allocated for the provision of family business entities in accordance with the legislation. In addition, the peculiarity of the civil liability of family businesses is that they are limited to the funds at the disposal of the legal entity, which is enshrined in the first part of Article 48 of the Civil Code of the Republic of Uzbekistan. does not conform to the mark of liability relating to all property belonging to him in respect of his obligations. Such a situation, which occurs in the implementation of the main charter activities of family businesses, is not acceptable in the application of liability measures for obligations of family businesses in connection with the implementation of business activities. Such a situation makes the counterparties in a more favorable position, given that the charter of family business entities arises from the subsidiary liability of the owner in the conduct of commercial activities.

In this regard, it is proposed to amend Article 76 of the Civil Code of the Republic of Uzbekistan as follows: "The family business shall be liable for the obligations associated with the conduct of business with all its property, which is derived from the implementation of these activities and is recorded in a separate balance sheet."

It is worth noting that the forms of civil liability of family business entities for non-performance or inadequate performance of their obligations while participating in certain types of business activities can be seen in the following:

1) indemnification (Article 324 of the Civil Code), in turn, this form of liability is divided into two types, namely: direct indemnification (real damage) and additional damage (lost) compensation;

2) compensation for moral damage (Article 1021 of the Criminal Code);

3) contractual liability that does not contradict the current legislation;

4) other less common types of liability.

In any case, the civil liability of the subjects of family business as a legal entity while participating in entrepreneurial activity is the main condition for the existence of the damage caused by it. This is because a loss is a loss or reduction of property by the creditor as a result of the debtor's incomplete or improper performance of the obligation. The civil liability of a family business entity in the form of indemnification for damages implies an obligation to carry out its actions to indemnify such damages.

In this regard, N. Egamberdieva believes that only direct damages should be recovered, and indirect damages should not be recovered, because the causal link between the offense and their occurrence is not sufficient to be taken into account by law [3., 161].

Therefore, the decision of the Plenum of the Supreme Economic Court of the Republic of Uzbekistan also determines that the existing damage includes not only the actual damage caused by the person concerned, but also the costs incurred or to be incurred by the person to restore the violated right. At the same time, the necessity of such costs and their approximate amount is confirmed by other evidence, such as an estimate (calculation) of deficiencies in goods, works and services, which determines the amount of liability and the level of liability for breach of obligations you also need. The amount of lost income (lost profit) is determined by taking into account the reasonable costs that the creditor must incur if the obligation is fulfilled [4].

The subjects of family business as a commercial legal entity are the subjects of civil law relations, and it participates in civil transactions on an equal footing with other entities, to carry out business activities for purposes not contrary to the content of the charter (founding) documents is right. Consequently, family business entities involved in certain business activities may be subject to both contractual and non-contractual civil liability in these relationships.

Generally, depending on the nature of the distribution, legal entities may be subject to individual (primary), equity, joint and subsidiary liability. In this regard, if the subjects of family business are, as a rule, held liable to an individual, its owner may be held subsidiary. However, the first condition for bringing family businesses to civil liability in the form of compensation is the existence of real damage, that is, as the lawyer IBZokirov noted, "one of the most important features of civil liability is the amount of damage. or proportionate to the extent of the damage" [5., 21].

Special attention should be paid to family businesses as a basis for liability when applying civil liability measures. Because guilt is a subjective condition of civil liability. Because in civil law, guilt is explained by the specific nature of civil legal relations, often commodity-money and compensatory-infringed rights restoration functions. Therefore, in order to apply the civil liability between the owner and the institution in connection with the fault of the offender, it is necessary to take into account the fault.

In general, as in other organizational and legal forms, family business entities can be held jointly and severally subsidiary, both contractual and non-contractual.

In addition, contractual liability is determined not only by law, but also independently by the parties to the contract. In this case, the measures of civil liability for violation of the obligations established by the imperative norms of the law shall apply regardless of whether they are specified in the contract. Referring to the dispositive norms established by law, it should be noted that the parties may, by agreement, remove or change the conditions reflected in these norms.

In modern civilization, little attention has been paid to the contractual liability of family business entities in relation to tort liability. Concerning the contractual liability of a family business entity, it is worth noting that the violation of the law that gave rise to this liability arises from the actions or omissions of the debtor.

In this case, contractual liability may also arise for the violation of the subjective rights of the parties to this relationship. An act or omission of a debtor is an objective event that may violate the subjective rights of the other party. It follows that the contractual liability of a family business entity arises from the non-performance of its obligations by the debtor, and that these obligations may be performed in other ways that do not violate the subject of the obligation.

Examining the contractual liability of family business entities involved in the conduct of business activities, it is worth noting that its occurrence can be caused by the actions or inactions of the debtor. At the same time, one of the first problematic issues in bringing family businesses to contractual liability is to identify the relevant aspects of this property liability. For example, in order to determine the relevant subject of civil law relations related to the supply of goods, the counterparty in whose favor the dispute is resolved may be held liable for non-compliance with the relevant contractual conditions.

As a general rule, family business entities financed by the owner are liable for their obligations in accordance with the procedure and conditions provided for in the fifth part of Article 72 and the third part of Article 76 of the Civil Code of the Republic of Uzbekistan.

The founder (participant) of the legal entity or the owner of its property shall not be liable for the obligations of the legal entity, and the legal entity shall not be liable for the obligations of the founder (participant) or owner, except as provided by law or the constituent documents of the legal entity .

Usually, as a type of family business, the civil liability of family businesses is also associated with the fact that it operates directly on behalf of the owner, ie the owner and the person he represents are liable for their obligations in the manner prescribed by law. they give. Such liability is of a property nature and applies to state and municipal property that is not attached to the relevant legal entities. The state is liable for its civil obligations with its own funds (Article 79, Part 3 of the Civil Code). When a family business entity participates in a civil law relationship, it must, in accordance with the general rules of civil liability, properly perform its obligations, if as a result of violation of the civil law obligations If the other party to the relationship has suffered damage, he must compensate it. Such liability occurs in the event of a breach of contractual obligation. However, liability may also arise from a non-contractual obligation. Family businesses are not often held accountable in such cases. This is due to the fact that most of the owner's property is attached to family businesses, so they are primarily responsible for non-contractual damage. Therefore, in such cases, it is inappropriate to talk about the personal responsibility of the owner. As a general rule, the owner is not liable for the obligations of the legal entity created by him. However, the law stipulates that the state is personally liable for damage caused outside the contract [6., 145].

Concerning the non-contractual liability of family business entities, it can be said that they can be held civilly liable for any damage caused to other persons in a relationship directly related to their participation in business activities. In this case, the non-contractual civil liability of the family business entity is clearly reflected in the fact that it compensates for the damage caused to the life and health, property of other persons in the conduct of business. For example, according to the "Rules for the sale of medicines and medical supplies in pharmacies of the Republic", payment for medicines provided by pharmacies on preferential terms or free of charge is made by local authorities or health care institutions on a contractual basis. Pharmacy establishments and their employees shall be held liable in accordance with the legislation for violation of these requirements [7].

In general, when family business entities participate in the legal relationship of doing business, their civil liability for violation of the relevant obligations is directly related to the contractual, non-contractual and subsidiary of the legal entity or its founders (owners, founders). types of liability.

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Rezyume: *Maqolada oilaviy tadbirkorlik faoliyatiga doir qonunchilikni buzganlik uchun fuqarolik huquqiy javobgarlikning yuridik tavsifi, mazmuni, o'ziga xos hususiyatlari atroflicha tahlil qilingan.*

Резюме: *В статье подробно анализируются юридическая характеристика, содержание, особенности гражданско-правовой ответственности за нарушение законодательства о семейном предпринимательстве.*

Kalit so'zlar: *tadboirkorlik, oylaviy tadbirkorlik, fuqarolik-huquqiy javobgarlik, fuqarolik qonunchilik.*

Ключевые слова: *предпринимательство, семейное предприниметльство, гражданская ответственность, гражданское законодательство.*

CULTURE OF PEACE, DIALOGUE AND TOLERANCE

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Summary: *The article talks about the use of the principle and method of the culture of peace and tolerance in interethnic relations, which presupposes deliberate social behavior based not only on the consciousness that cultural diversity contributes to the development of mutual understanding, a real vision of cultural identity, but also their application, which is a contribution to the solution of global problems of the modern world. These problems should be resolved on the basis of new ethical principles and increased responsibility not only of those who make decisions about the fate of humanity, but also of scientists and cultural figures.*

Key words: *culture, peace, tolerance, interethnic, attitude, society, behavior, mutual understanding, application, contribution, solution, principle, responsibility, humanity, science.*

In modern society, we are connected by such concepts as a culture of peace, tolerance and dialogue, which are, in a sense, instruments for its implementation. Over the past twenty years, together with concepts such as globalization, global society, global economy, global problems and global development, concepts such as a culture of peace, dialogue and tolerance have been used very often. The use of these concepts in the study and solution of social problems testifies to their relationship with the first group of concepts. Indeed, the contradictions that globalization entails require new ways and tools to resolve them. Requirements for new methods and tools have arisen and new concepts: a culture of peace, dialogue and tolerance.

Thus, globalization unites humanity, forms a world, global community. The way to increase the boundaries for multiplying capital through the development of new markets is globalization. In the history of mankind, the market has been mastered without the use of force, without war. Money in society acquires motivation and regulates life activity. Whole states and territories are being transformed into social communities, functioning according to the laws of powerful monetary systems and huge capital. Globalization leads to close integration of states and peoples of the world, reducing the cost of transport and communication, destroying artificial barriers to the movement of goods, services, capital, knowledge and people across borders, increasing the number of transnational corporations and their growing domination over national economies. All this suggests that there is a self-destruction of the "legalized" order of the world, in which national states dominate, and the point is not in the clash of civilizations, but in the struggle for the culture of mankind, in which the coexistence of different traditions is possible "[2].

With globalization “set by the powerful against the poor” (Beck, U), the world is becoming a dangerously heterogeneous space, dramatically increasing poverty in the underdeveloped areas of the planet. “While Western statesmen are animated by a decade of unexpected peace and wealth, an increasing number of countries are facing rising debt, unemployment and ruin. What is beneficial to Western concerns, such as the strict implementation of deregulation, privatization and flexibilization, turns out to be death for developing countries” [2]. Indeed, the global economy is nothing more than the development of the planet by Western transnational companies in the interests of these companies, but not in the interests of the peoples of the planet. Big business has created a huge playing field for money, and in return requires freedom of action, subject to only one law: the right of the strong side. “Globalization needs tough, decisive competition without mercy, big profits and big investments, it needs tough selection, because it plays a rough game in which there is no room for weaknesses. Clearly and loudly: it needs a playing field on which only one rule is valid: the strongest wins” [4].

At present, with the diversity, which in the context of the main contradictions has many manifestations, there is a need to rethink the ways and possibilities of resolving contradictions in the context of globalization from the point of view of the objective and natural development of civilization. Consequently, globalization creates not only various types of interdependence, but also generates opposing interests in many societies.

The prospect of peace requires a new balance of power and influence, which must be based on open and fruitful dialogue and full respect for the dignity of others, or, in other words, respect for the cultural specificity of each people. In this sense, it should be borne in mind that the idea that "modern society can exist without its own field of established traditions is a utopia and, like any other utopia, has repressive-totalitarian implications" [5].

To prevent discord and bring peace to the world, a whole set of rules is needed to ensure that one can coexist alongside another, despite all the differences between individuals and groups. To resolve disputes peacefully, you need rules. There are ways to resolve disputes without the use of force, peacefully. These include a culture of peace and tolerance. Thanks to them, disputes between states are resolved peacefully, without the use of violence. However, their acceptance and use does not exclude the need for critical comprehension, primarily of their content and the achievement of social goals, which with their help are achieved or can be achieved.

In the social sciences, culture of peace is a new term. In fact, the culture of peace is aimed at the moral and ethical regulation of international and interethnic relations. The purpose of this relationship is to protect a man-made civilization from man himself.

The term "tolerance" (from the Latin "tolerantia" - patience) is interpreted as the body's ability to endure the adverse effects of one or another environmental factor and as tolerance for other people's opinions, beliefs, behavior [3].

Ethnic tolerance is considered as a personal education that is part of the structure of social attitudes. Tolerance is expressed in tolerance for a different way of life, foreign cultural customs, traditions, morals, feelings, opinions and ideas expressed by representatives of other ethnic groups and cultures. Ethnic tolerance of a person manifests itself in various critical situations of interpersonal and intrapersonal choice when ethnic stereotypes and norms for solving problems faced by a person, developed in a different socio-cultural way of life, do not work, and new norms or stereotypes are in the process of their formation [1]. Ethnic tolerance of an individual is usually formed in problem-conflict situations of interaction with representatives of other ethnic groups.

When using dialogue to peacefully resolve public conflicts, including interethnic and related conflicts, there is a close relationship between a culture of peace and tolerance. Their connection is an essential prerequisite for the establishment of good civilized relations between ethnic communities, whose interests are not only different, but also opposite and requires a solution. But in order for theoretical reality to become possible, it is necessary that all interested parties, especially when it comes to interethnic relations, adhere to the principles of the culture of peace in their relationships and show tolerance, resorting to dialogue. The implementation of a culture of peace and tolerance in resolving conflicts at the global, regional and interstate levels must be considered in the context of existing historical circumstances.

The use of the principle and method of a culture of peace and tolerance in interethnic relations presupposes a deliberate social behavior based not only on the consciousness that cultural diversity contributes to the development of mutual understanding, a real vision of cultural identity and "the search for what is common to most civilizations" [8], but also on the fact that their application is a contribution to the solution of global problems of the modern world. These problems should be resolved on the basis of new ethical principles and increased responsibility not only of those who make decisions about the fate of humanity, but also of scientists and cultural figures. This idea is confirmed by the statement that it is necessary to undertake "a huge joint effort of the best minds of one nation in order for the existing social reality to be transformed and rise to the level of its optimal historical capabilities." not just science, but also not something other than science. "It is not only knowledge or something that can be created without knowledge. It represents the effort of the human spirit to soar to heights from which it would be possible to see the world as holistically as possible" [7].

During the period of its life, any culture should rely on its past, or on the experience of other cultures. This attention to other cultures is called "cultural interaction." Many reasons contribute to the formation of relationships between cultures. For these reasons, more and more people are crossing cultural boundaries that previously separated them. At the same time, new cultural phenomena are formed, in which the barriers between self and alien are erased.

Thus, the interaction of cultures suggests that the content and results of diverse intercultural contacts largely depend on the ability of their participants to understand each other and reach agreement, which, in turn, is determined by the ethnic culture of each of the parties, the values prevailing in a particular culture.

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Rezyume: *Maqolada millatlararo munosabatlarda tinchlik va bag'rikenglik madaniyati printsipi va uslubidan foydalanish haqida so'z yuritiladi, bu nafaqat madaniy xilma-xillik o'zaro tushunishni rivojlantirishga hissa qo'shadigan ongga asoslangan madaniy xatti-harakatni, madaniy o'ziga xoslikning haqiqiy ko'rinishini nazarda tutadi. , shuningdek, ularni qo'llash, bu zamonaviy dunyoning global muammolarini hal qilishga hissa qo'shadi. Ushbu muammolar yangi axloqiy tamoyillar asosida hal etilishi va nafaqat insoniyat taqdiri to'g'risida qaror qabul qilganlar, balki olimlar va madaniyat arboblarining ham javobgarligini oshirishi kerak.*

Резюме. *В статье говорится о использовании принципа и метода культуры мира и толерантности в межэтнических отношениях который предполагает обдуманное общественное поведение, основанное не только на сознании того, что культурное разнообразие содействует развитию взаимопонимания, реальному видению культурной идентичности но и их применение, представляющие собой вклад в решение глобальных проблем современного мира. Эти проблемы должны решаться на основе новых этических принципов и повышенной ответственности не только тех, кто принимает решения о судьбе человечества, но и деятелей науки и культуры.*

Kalit so'zlar: *madaniyat, tinchlik, bag'rikenglik, millatlararo munosabat, jamiyat, xulq-atvor, o'zaro tushunish, dastur, hissa, echim, printsip, mas'uliyat, insonparvarlik, ilm.*

Ключевые слова: *культура, мир, толерантность, межэтнический, отношение,общество, поведение, взаимопонимание, применение, вклад, решение, принцип,ответственность, человечество, наука.*

THE SUPREME LEGISLATIVE BODY OF THE REPUBLIC OF KARAKALPAKSTAN

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Summary: *This article describes the legal status of the Supreme Legislative Body of the Republic of Karakalpakstan - the Joqari Kenes, its role in the system of state bodies and its role in building the rule of law, based on the Constitution of the Republic of Karakalpakstan and other normative acts.*

Key words: *Constitution, authority, budget, law, prosecutor, court, oversight, parliament, deputy, status.*

The highest legislative body plays an important role in the political life of democracies. The purpose of this body is not just to create the laws, but first and foremost, the supreme legislative body is a broad representative forum in which the people's representatives formulate public policy and determine the legislative system. It is the parliament that must establish and maintain the necessary order in the country through legislation and affirm the rule of law. It is no coincidence that citizens associate their ideas of democracy with the ability to influence the parliament, not only through the legislative process, but also by participating in the governance of the state.

In our opinion, in the absence of a permanent body of the Joqari Kenes, the Presidium and committees of the Joqari Kenes of the Republic of Karakalpakstan, as well as deputies, should be admitted to the subjects of legislative initiative. It optimizes and increases the activity of deputies and deputy associations on the initiative of laws. It is known that President Shavkat Mirziyoyev said in his speech at the video conference with the representatives of the chambers of the Oliy Majlis, political parties and the Ecological Movement of Uzbekistan

"Democracy begins from Parliament" [1, 541].

The powers of the Joqari Kenes are various and broad. Thus, according to Article 70, the absolute powers of the Joqari Kenes include:

1) Adoption of the Constitution of the Republic of Karakalpakstan, changes and additions to it

2) Adoption, changes and analyze of the laws of the Republic of Karakalpakstan

3) Establishment of state strategic programs of economic and social development

4) Election of the Chairman and the deputy of the Joqari Kenes of the Republic of Karakalpakstan

5) Formation of the Presidium of the Joqari Kenes of the Republic of Karakalpakstan

6) Appointment and dismissal of the Chairman of the Council of Ministers of the Republic of Karakalpakstan in coordination with the President of the Republic of Uzbekistan on the proposal of the Chairman of the Joqari Kenes of the Republic of Karakalpakstan

7) Appointment and dismissal of Deputy Chairmen of the Council of Ministers of the Republic of Karakalpakstan, members of the Council of Ministers of the Republic of Karakalpakstan, formation and liquidation of ministries, state committees and other public administration bodies of the Republic of Karakalpakstan

8) The Committee on Constitutional Control of the Republic of Karakalpakstan, the Chairman and Deputy Chairman of the Civil Court of the Republic of Karakalpakstan, the Chairman and Deputy Chairman of the Criminal Court of the Republic of Karakalpakstan, the Republic of Karakalpakstan election of the chairmen of the Economic Court and the Administrative Court of the Republic of Karakalpakstan

9) Appointment and dismissal (removal) of judges of inter-district, district and city courts on civil and criminal cases

10) Appointment and dismissal of the Prosecutor of the Republic of Karakalpakstan in coordination with the Prosecutor General of the Republic of Uzbekistan on the proposal of the Presidium of the Joqari Kenges of the Republic of Karakalpakstan

11) Appointment and dismissal of the Chairman of the Committee for Ecology and Environmental Protection of the Republic of Karakalpakstan

12) Suspension and annulment of decisions of local Councils of People's Deputies

13) Legal regulation of administrative-territorial issues

14) Determination of the system and representations of the republican and local state authorities

15) Approval of the state budget of the Republic of Karakalpakstan and reports on its implementation on the proposal of the Council of Ministers of the Republic of Karakalpakstan

16) Establishment of state awards and honorary titles of the Republic of Karakalpakstan

17) Formation of the Central Election Commission for the appointment of elections to the Supreme Kenes of the Republic of Karakalpakstan and local representative bodies

18) Submission of proposals to the Constitutional Court of the Republic of Uzbekistan on the compliance of acts of the supreme state power and administration of the Republic of Uzbekistan with the Constitution of the Republic of Uzbekistan

19) to perform the control of parliament and other authorities intended in the Constitution [2.11].

Along this, from our point of view, this article is supposed to consist of several additions. Thus, the second paragraph of the 70th article the words “The interpretation of the laws of the Republic of Karakalpakstan” must be followed by “ to control of their performance”. On the constitutional level, it gives an opportunity to accept the laws of the legislature and ensure the right of execution.

The Constitution of the Republic of Karakalpakstan and the Law about Joqari Kenes regulates legislation. According to the Article 75 in Joqari Kenes of the Republic of Karakalpakstan deputies of Joqari Kenes of the Republic of Karakalpakstan, Council of Ministers, Constitutional supervisory committee of the Republic of Karakalpakstan, civil court of the Republic of Karakalpakstan, criminal court of the Republic of Karakalpakstan, economic court of the Republic of Karakalpakstan, administrative court of the Republic of Karakalpakstan, the Prosecutor of the Republic of Karakalpakstan has the right of legislative initiative.

The analysis of the legislature of a series of foreign countries shows that this right is given to trade unions (Mordaviya, Tataristan), parties and public associations(Kabardin, Balkariya), local government organs(Boshirtiston) [3,24].

The Joqargi Kenes of the republic of Karakalpakstan is personalizing the representation of the people and mainly performs legislative functions.

The representative body of the Republic will be elected on the basis of universal, equal and direct suffrage by secret ballot.

Citizens of the Republic of Uzbekistan who have reached the age of 25 before the election day have the right to be elected to the Joqari Kenes of the Republic of Karakalpakstan.

In accordance with Part 2 of Article 69 of the 1993 Constitution of the republic of Karakalpakstan, the Joqari Kenes of Republic of Karakalpakstan consists of deputies elected from territorial constituencies on a multy-party basis for a term of five years.

In our opinion, to this part of Article 69 of the Basic Law of Republic must be changed in terms of requirements for candidates and deputies. In particular, it should be noted that the citizens of the Republic of Uzbekistan and Karakalpakstan have rights to be elected to the Joqari Kenes of Karakalpakstan that are 25 years old who live permanently in the target territory until election day. [4,37]. I This will allow us t resolve a number of controversial issues that arise in practice, including the deputies living outside the Republic of Karakalpakstan in the Joqari Kenes elected I December 2019.

It is known that referendum and orders’ appointment in the republic of Karakalpakstan, the date of transfer, belongs to the authority of the Joqari Kenes. However , Article 70 of the Constitution does not specify this important authority. It is necessary to remove the gap.

In our opinion, this article of Constitution should necessarily be supplemented by three paragraphs. First of all, the meeting of the Oliy Majilis of the Republic Uzbekistan should be indicated in the legislative chamber .It is known that in the Constitution of Republic of Uzbekistan, the President of the Republic of Uzbekistan, the supreme representative body of its power, the Republic of Karakalpakstan, the Cabinet of Ministers of Uzbekistan, the Constitutional court, the Supreme court is carried out the right to legislative initiative . Secondly, Council of Ministers of the Republic Karakalpakstan and Public Prosecutor of the Republic of Karakalpakstan are to announce annual reports on the results of their activities.

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Rezyume: *Ushbu maqola Qoraqalpog'iston Respublikasi Konstitutsiyasidan kelib chiqqan holda Qoraqalpog'iston Respublikasi Oliy Qonunchilik organi – Joqarg'i Kengesining huquqiy maqomi, uning davlat organlari tizimidagi o'rni va qonun ustuvorligini barpo etishdagi o'rni haqida ma'lumot beradi. va boshqa normativ hujjatlar.*

Резюме: *В статье описывается правовой статус высшего законодательного органа Республики Каракалпакстан - Джокари Кенес, его роль в системе государственных органов и его роль в построении законности, основанной на Конституции Республики Каракалпакстан. и другие нормативные акты.*

Kalit so'zlar: *Konstitutsiya, hokimiyat, byudjet, qonun, prokuror, sud, nazorat, parlament, deputat, maqom.*

Ключевые слова: *Конституция, власть, бюджет, закон, прокурор, суд, надзор, парламент, депутат, статус.*