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**НАЦИОНАЛЬНОЙ АКАДЕМИИ НАУК
РЕСПУБЛИКИ КАЗАХСТАН**

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NEW FORMS OF THE PERTURBED MOTION EQUATION

Abstract. Real celestial bodies are neither spherical nor solid. Celestial bodies are unsteady, in the process of evolution their masses, sizes, shapes and structures are changes. The paper considers a model problem proposed as an initial approximation for the problems of celestial mechanics of bodies with variable mass. Based on this model problem, perturbation theory methods are developed and new forms of the perturbed motion equation are obtained. The model problem as the problem of two bodies with variable mass in the presence of additional forces proportional to speed and mutual distance is a class of intermediate motions. This class of intermediate motions describes an aperiodic motion along a quasiconical section. In this paper, on the basis of this class of aperiodic motion over a quasiconical section, various new forms of the perturbed motion equation in the form of Newton's equations are obtained. Based on the known equations of perturbed motion for the osculating geometric elements p, e, ω, i, Ω, θ in the form of the Newton equation, we obtained the equations of perturbed motion for the following system of osculating elements p, e, i, π, Ω, $\Phi(\tau)$ and a, e, i, π, Ω, λ. Oscillating variables involving a dynamic element $\Phi(\tau)$ are suitable in the general case. A system of variables, where instead of the dynamic element $\Phi(\tau)$ is introduced λ - the average longitude in orbit is used in the quasielliptic case $e(t)<1$. The obtained new forms of the equation of perturbed motion, in the form of Newton's equations, in various systems of osculating variables can be effectively used in the study of the dynamics of non-stationary gravitating systems.

Key words: aperiodic motion along a quasiconical section, variable mass, unperturbed motion, equations of perturbed motion in the form of the Newton equation, perturbation theory, unsteady gravitational systems.

1. Introduction. Observational astronomy suggests that real celestial bodies are neither spherical nor solid. Celestial bodies are unsteady, in the process of evolution their masses, sizes, shapes and structures are changes [1-6]. On the basis of the model problem proposed as an initial approximation for the problems of celestial mechanics of bodies of variable mass [5], new forms of the equation of perturbed motion are obtained. The model problem as the problem of two bodies with variable mass in the presence of additional forces proportional to speed and mutual distance is a class of intermediate motions. This class of intermediate motions describes an aperiodic motion along a quasiconical section. In this paper, on the basis of this class of aperiodic motion over a quasiconical section, various new forms of the perturbed motion equation in the form of Newton's equations are obtained.

2. Aperiodic motion along a quasiconical section.
Some astronomical problems of non-stationary binary systems are described by equations of the form

$$\ddot{\vec{r}} = -fm\frac{\vec{r}}{r^3} - a\dot{\vec{r}} - b\vec{r}\,, \tag{2.1}$$

where $m = m(t) = m_1(t) + m_2(t)$, $m_1(t)$ is the mass of the central body, $m_2(t)$ is the mass of the satellite, f is the gravitational constant, a and b are some quantities, constants or functions of time, determined by

the nature of the corresponding forces, $\vec{r} = \vec{r}(x,y,z)$ is the relative radius of the vector in the coordinate system *Oxyz*. In connection with the actual non-stationarity of gravitating systems, the issue of solving an equation of the form (2.1) becomes relevant. In the general case, the dynamics of non-stationary systems is difficult; solutions of equations such as (2.1) are unknown. Therefore, we study the dynamics of difficult non-stationary systems by the methods of perturbation theory based on aperiodic motion over a quasiconic section.

We turn to the equation

$$\ddot{\vec{r}} = -fm\frac{\vec{r}}{r^3} + \left(\frac{\dot{m}}{m} + \frac{\dot{\gamma}}{\gamma}\right)\dot{\vec{r}} + \left[\frac{\ddot{\gamma}}{\gamma} - \frac{1}{2}\left(\frac{\dot{m}}{m} + \frac{\dot{\gamma}}{\gamma}\right)\frac{\dot{\gamma}}{\gamma}\right]\vec{r}\,, \tag{2.2}$$

where $\gamma = \gamma(t)$ is the dimensionless low differentiable time function, independent of zero, which is due to simplified differential equations or the condition of simplified differential equations of perturbed motion in osculating elements [5]. Equation (2.2) implies the integration of areas (the orbit is a flat curve)

$$\vec{r} \times \dot{\vec{r}} = \vec{c}\sqrt{m\gamma}\,,\ \vec{c} = \overrightarrow{const}\,. \tag{2.3}$$

In polar coordinates, equation (2.2) - (2.3) can be written in the form [7]

$$\frac{d^2}{dt^2}\left(\frac{r}{\gamma}\right) - \frac{r}{\gamma}\dot{\theta}^2 = -\frac{fm/\gamma^3}{(r/\gamma)^2} + \frac{1}{2m/\gamma^3}\cdot\frac{d}{dt}\left(\frac{m}{\gamma^3}\right)\frac{d}{dt}\left(\frac{r}{\gamma}\right), \tag{2.4}$$

$$\left(\frac{r}{\gamma}\right)^2 \dot{u} = \frac{c}{\gamma^2}\sqrt{m\gamma}\,. \tag{2.5}$$

From equations (2.4)-(2.5) we obtain

$$\frac{d^2}{d\theta^2}\left(\frac{\gamma}{r}\right) + \frac{\gamma}{r} = \frac{1}{c^2}\,. \tag{2.6}$$

Equation (2.6) for any initial conditions determines the aperiodic motion along the quasiconical section [8]. Therefore, solutions of equations (2.6) have the form

$$\frac{r}{\gamma} = \frac{p}{1 + e\cos\theta}\,,\quad \theta = u - \omega\,, \tag{2.7}$$

where *p, e,* ω are constants determined by the initial conditions; *u* is the polar angle. The analogs of the integral of areas, energy and the Laplace vector are as follows:

$$p = c^2\,,$$

$$\frac{\gamma^3}{fm}\left[\left(\frac{d}{dt}\left(\frac{\vec{r}}{\gamma}\right)\right)^2 - 2\frac{fm}{\gamma^2 r}\right] = h = const\,, \tag{2.8}$$

$$\frac{\gamma^3}{fm}\left[\frac{d}{dt}\left(\frac{\vec{r}}{\gamma}\right) \times \left[\frac{\vec{r}}{\gamma} \times \frac{d}{dt}\left(\frac{\vec{r}}{\gamma}\right)\right]\right] - \frac{\vec{r}}{r} = \vec{q} = const\,,\ |\vec{q}| = q\,, \tag{2.9}$$

$$e = q\,,\quad e^2 - 1 = hp\,. \tag{2.10}$$

We write down the radial and transverse components of the velocity

$$V_r = \frac{\dot{\gamma}}{\gamma}r + \left(\frac{fm}{p\gamma}\right)^{1/2} e\sin(u - \omega)\,, \tag{2.11}$$

$$V_n = \left(\frac{fm}{p\gamma}\right)^{1/2}\left[1 + e\cos(u - \omega)\right]. \tag{2.12}$$

Equation (2.7) describes aperiodic motion along a quasiconical section, which in coordinate form can be written in the form

$$\begin{aligned} x &= \gamma\rho\left[\cos u\cdot\cos\Omega-\sin u\cdot\sin\Omega\cdot\cos i\right],\\ y &= \gamma\rho\left[\cos u\cdot\sin\Omega+\sin u\cdot\cos\Omega\cdot\cos i\right], \\ z &= \gamma\rho\left[\sin u\cdot\sin i\right], \qquad r=\gamma\rho, \qquad u=\theta+\omega, \end{aligned} \tag{2.13}$$

where θ is the true anomaly

$$\rho=\frac{p}{1+e\cos\theta}. \tag{2.14}$$

The quantities *p, e, i,* ω, Ω are analogues of the known Keplerian elements. In the case of quasielliptical motion $\left(e(t)<1\right)$, according to the standard transformation

$$tg\frac{\theta}{2}=\sqrt{\frac{1+e}{1-e}}tg\frac{E}{2},\ e<1, \tag{2.15}$$

we get the equation that matches the Kepler equation

$$E-e\sin E=M\ . \tag{2.16}$$

However, in aperiodic motion along a quasiconic section, the time dependence of the eccentric $E=E(t)$ and average anomalies $M=M(t)$ is determined taking into account the laws of change in the masses of the bodies under consideration.

$$M=n\left[\Phi(t)-\Phi(\tau)\right],\ n=\frac{\sqrt{\mu_0}}{a^{3/2}}=const,\ \mu_0=f\left[m_1(t_0)+m_2(t_0)\right]=const, \tag{2.17}$$

where t_0 is the initial moment of time. Accordingly, $\Phi(t)$ the primitive function of

$$\left(\frac{m(t)}{m(t_0)\gamma^3}\right)^{1/2}=\left(\frac{m_1(t)+m_2(t)}{m_1(t_0)+m_2(t_0)}\cdot\frac{1}{\gamma^3}\right)^{1/2}, \tag{2.18}$$

$\Phi(\tau)$ a dynamic element of aperiodic motion along a quasiconical section, an analog of the Keplerian dynamic element of the $\tau-$moment of passage through the pericenter [1, 5, 9]. In undisturbed motion, respectively, we have

$$\dot{M}=n\left(\frac{m(t)}{m(t_0)\gamma^3}\right)^{1/2}=n\left(\frac{m_1(t)+m_2(t)}{m_1(t_0)+m_2(t_0)}\cdot\frac{1}{\gamma^3}\right)^{1/2}. \tag{2.19}$$

In other words, in an unperturbed aperiodic motion along a quasiconical section, the average motion (the rate of change of the average anomaly) is not constant, but depends on the laws of changing the mass of the bodies and on the chosen specific function $\gamma=\gamma(t)$. In particular, when (in the unperturbed motion (2.2) there is no force proportional to the radius of the vector)

$$\gamma=\gamma(t)=const=1, \tag{2.20}$$

we have a well-known aperiodic motion along a conical section [1, 10]. Another special case is when (in unperturbed motion (2.2) there is no force of proportional speed)

$$\gamma(t)=\frac{\mu(t_0)}{\mu(t)}=\frac{m(t_0)}{m(t)}, \tag{2.21}$$

we have widely used as an unperturbed motion in studying the dynamics of unsteady gravitating systems [11, 12, 13].

3. Equations of perturbed motion for osculating geometric elements in the form of Newton's equation. Let's consider the aperiodic motion along the quasiconical section (2.2), in the presence of a perturbing force

$$\ddot{\vec{r}} = -fm\frac{\vec{r}}{r^3} + \left(\frac{\dot{m}}{m} + \frac{\dot{\gamma}}{\gamma}\right)\dot{\vec{r}} + \left[\frac{\ddot{\gamma}}{\gamma} - \frac{1}{2}\left(\frac{\dot{m}}{m} + \frac{\dot{\gamma}}{\gamma}\right)\frac{\dot{\gamma}}{\gamma}\right]\vec{r} + \vec{F}\,, \tag{3.1}$$

$$\vec{F} = \vec{F}\left(t, \vec{r}, \dot{\vec{r}}\right) = \vec{F}\left(F_r, F_\tau, F_n\right) = F_r \cdot \vec{e}_r + F_\tau \cdot \vec{\tau} + F_n \cdot \vec{n}\,. \tag{3.2}$$

The perturbing force $\vec{F}$ and, accordingly, its components $\left(F_r,\ F_\tau,\ F_n\right)$, in the general case, depend on time, coordinates and velocities. In this case F_r the radial (directed along the radius of the vector), F_τ transversal (perpendicular to the radius of the vector, lying on the plane of the instantaneous orbit) and F_n normal (perpendicular to the plane of the instantaneous orbit) components of the disturbing force, the $\vec{e}_r,\ \vec{\tau},\ \vec{n}$ corresponding unit vectors [1, 14, 15, 16, 17] .

For osculating geometric elements of aperiodic motion along a quasiconical section

$$p,\ e,\ \omega,\ i,\ \Omega,\ \theta, \tag{3.3}$$

equations of perturbed motion in the Newton equation form were obtained earlier in [7, 8]. Here p, e, ω, i, Ω, θ are analogs of Keplerian dynamic elements, p is an analog of the orbit parameter, e is an analog of eccentricity, ω is an analog of the pericenter angular distance of the from the node, i is an analog of the orbit inclination of the on the plane, Ω is an analog of the ascending node longitude, θ is an analog true anomaly. The corresponding Newton equations have the form

$$\dot{p} = \frac{2p}{1 + e\cos\theta} \cdot \tilde{F}_\tau\,, \tag{3.4}$$

$$\dot{e} = \sin\theta \cdot \tilde{F}_r + \left(\cos\theta + \frac{e + \cos\theta}{1 + e\cos\theta}\right) \cdot \tilde{F}_\tau\,, \tag{3.5}$$

$$\dot{\omega} = -\frac{\cos\theta}{e} \cdot \tilde{F}_r + \frac{1}{e}\left(\sin\theta + \frac{\sin\theta}{1 + e \cdot \cos\theta}\right) \cdot \tilde{F}_\tau - \frac{\sin u \cdot \mathrm{ctg} i}{1 + e \cdot cos\,\theta} \cdot \tilde{F}_n\,, \tag{3.6}$$

$$\frac{di}{dt} = \frac{\cos u}{1 + e \cdot \cos\theta} \cdot \tilde{F}_n\,, \tag{3.7}$$

$$\dot{\Omega} = \frac{\sin u}{\left(1 + e \cdot \cos\theta\right)\sin i} \cdot \tilde{F}_n\,, \tag{3.8}$$

$$\dot{\theta} = \frac{\sqrt{\mu_0}}{p^{3/2}}\left(\frac{m}{m_0\gamma^3}\right)^{1/2}\left(1 + e \cdot \cos\theta\right)^2 + \frac{\cos\theta}{e} \cdot \tilde{F}_r - \frac{1}{e}\left(\sin\theta + \frac{\sin\theta}{1 + e \cdot \cos\theta}\right) \cdot \tilde{F}_\tau\,, \tag{3.9}$$

$$\tilde{F}_r = F_r \cdot \frac{\sqrt{p}}{\sqrt{\mu_0}}\left(\frac{\gamma m_0}{m}\right)^{1/2}, \qquad \tilde{F}_\tau = F_\tau \cdot \frac{\sqrt{p}}{\sqrt{\mu_0}}\left(\frac{\gamma m_0}{m}\right)^{1/2}, \qquad \tilde{F}_n = F_n \cdot \frac{\sqrt{p}}{\sqrt{\mu_0}}\left(\frac{\gamma m_0}{m}\right)^{1/2}, \tag{3.10}$$

$$\gamma = \gamma(t),\ m = m(t), \qquad m_0 = m_1(t_0) + m_2(t_0) = const\,, \qquad \mu_0 = fm(t_0) = const\,, \tag{3.11}$$

where t_0 is the initial moment of time. However, for practical applications, when studying the dynamics of non-stationary gravitating systems, other systems of osculating elements are more convenient.

4. The equations of perturbed motion for a system of osculating elements p, e, i, π, Ω, $\Phi(\tau)$. In some applications of the equations of perturbed motion based on aperiodic motion along a

quasiconic section in the Newton's equations form, the following system of osculating elements is preferably

$$p,\ e,\ i,\ \pi,\ \Omega,\ \Phi(\tau), \tag{4.1}$$

where π is the analog of the pericenter longitude. The corresponding equations of perturbed motion in the form of Newton's equations are derived from equations (3.4) – (3.9) taking into account formulas (2.5), (2.7), (2.17), as a result, we have

$$\dot{p} = \frac{2p}{1+e\cos\theta}\cdot\tilde{F}_\tau, \tag{4.2}$$

$$\dot{e} = \sin\theta\cdot\tilde{F}_r + \left(\cos\theta + \frac{e+\cos\theta}{1+e\cdot\cos\theta}\right)\cdot\tilde{F}_\tau, \tag{4.3}$$

$$\frac{di}{dt} = \frac{\cos u}{1+e\cdot\cos\theta}\cdot\tilde{F}_n, \tag{4.4}$$

$$\dot{\pi} = -\frac{\cos\theta}{e}\cdot\tilde{F}_r + \frac{\sin\theta}{e}\left(1+\frac{r}{\gamma p}\right)\cdot\tilde{F}_\tau + \frac{r}{\gamma p}\sin u\cdot\mathrm{tg}\frac{i}{2}\cdot\tilde{F}_n, \tag{4.5}$$

$$\dot{\Omega} = \frac{\sin u}{(1+e\cdot\cos\theta)\sin i}\cdot\tilde{F}_n, \tag{4.6}$$

$$\frac{d\Phi(\tau)}{dt} = \frac{p\sqrt{p}}{e\sqrt{\mu_0}}\left\{\left[eN\sin\theta-\cos\theta\right]\cdot\tilde{F}_r + \frac{\gamma p}{r}N\cdot\tilde{F}_\tau\right\}\frac{r^2}{\gamma^2 p^2}, \tag{4.7}$$

$$N = \frac{p^2\gamma^2}{r^2}I_1, \tag{4.8}$$

$$I_1 = 2\int_0^\theta \frac{r^3}{\gamma^3 p^3}\cos\theta d\theta = 2\int_0^\theta\left(\frac{1}{1+e\cdot\cos\theta}\right)^3\cos\theta d\theta. \tag{4.9}$$

The derived equations of perturbed motion (4.2)-(4.7) we use in the study of the restricted three-body problem with variable masses that changes non-isotropically in the presence of reactive forces [18].

5. The system of osculating elements in quasi-elliptical motion. In the dynamics of gravitationally coupled systems, during evolution, the eccentricity perturbed analog of the of the aperiodic motion along the quasiconic section for a long time remains less than unity $e(t)<1$ [19-21]. In this case, it is convenient to use the following system of osculating elements

$$a,\ e,\ i,\ \pi,\ \Omega,\ \lambda, \tag{5.1}$$

where *a* is the analog of the semimajor axis, $\lambda = M+\pi$ is the analog of the average longitude in the orbit, *M* is the analog of the average anomaly, π is the analog of the pericenter longitude. In this case, the equations of perturbed motion in the Newton's equations form have the form

$$\dot{a} = \frac{2a^2 e\sin\theta}{p}\cdot\tilde{F}_r + \frac{2a^2}{r}\cdot\tilde{F}_\tau, \tag{5.2}$$

$$\dot{e} = \sin\theta\cdot\tilde{F}_r + \left(\cos\theta + \frac{e+\cos\theta}{1+e\cdot\cos\theta}\right)\cdot\tilde{F}_\tau, \tag{5.3}$$

$$\frac{di}{dt} = \frac{\cos u}{1+e\cdot\cos\theta}\cdot\tilde{F}_n, \tag{5.4}$$

$$\dot{\pi} = -\frac{\cos\theta}{e}\cdot\tilde{F}_r + \frac{\sin\theta}{e}\left(1+\frac{r}{\gamma p}\right)\cdot\tilde{F}_\tau + \frac{r}{\gamma p}\sin u\cdot \mathrm{tg}\frac{i}{2}\cdot\tilde{F}_n, \tag{5.5}$$

$$\dot{\Omega} = \frac{\sin u}{(1+e\cdot\cos\theta)\sin i}\cdot\tilde{F}_n, \tag{5.6}$$

$$\dot{\lambda} = n\left(\frac{m_1(t)+m_2(t)}{m_1(t_0)+m_2(t_0)}\cdot\frac{1}{\gamma^3}\right)^{1/2} - 2\frac{r}{\gamma p}\sqrt{1-e^2}\cdot\tilde{F}_r + \frac{r}{\gamma p}\sin u\cdot\mathrm{tg}\frac{i}{2}\cdot\tilde{F}_n + \\ + \frac{1}{1+\sqrt{1-e^2}}\left[-\tilde{F}_r\cdot\cos\theta + \left(1+\frac{r}{\gamma p}\right)\tilde{F}_\tau\cdot\sin\theta\right], \tag{5.7}$$

where $n = \sqrt{\mu_0}/a^{3/2}$ is the average orbital movement. We will use the obtained new forms of the equation of perturbed motion, based on aperiodic motion along a quasiconic section, in the study of the dynamics of non-stationary gravitating systems [22].

6. Conclusion

In the present work, new forms of the Newton equation of perturbed motion based on aperiodic motion along a quasiconic section are obtained. Based on the known equations of perturbed motion for osculating geometric elements p, e, ω, i, Ω, θ in the form of the Newton equation, we obtained the equations of perturbed motion for the following system of osculating elements:

$$p,\ e,\ i,\ \pi,\ \Omega,\ \Phi(\tau), \tag{6.1}$$

$$a,\ e,\ i,\ \pi,\ \Omega,\ \lambda, \tag{6.2}$$

Osculating variables (6.1), including a dynamic element $\Phi(\tau)$, are suitable in the general case. The system of variables (6.2), where instead of a dynamic element $\Phi(\tau)$ is introduced λ - the average longitude in orbit is used in the quasielliptic case $e(t)<1$.

The obtained new forms of the equation of perturbed motion, in the form of Newton's equations, in various systems of osculating variables can be effectively used in studying the dynamics of non-stationary gravitating systems.

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ҰЙЫТҚЫҒАН ҚОЗҒАЛЫС ТЕҢДЕУЛЕРІНІҢ ЖАҢА ТҮРЛЕРІ

Аннотация. Классикалық аспан механикасында кеплер қозғалысы негізінде ұйытқу теориясы жақсы дамыған. Ұйытқыған қозғалыс теңдеулерінің түрлері конондық теңдеулермен, Лагранж және Ньютон теңдеулерімен сипатталған. Сонымен қатар массалары тұрақты денелер нүкте ретінде немесе сфералық дене ретінде қарастырылады. Көптеген астрономиялық мәселелерді зерттеуде классикалық ұйытқу теориясы басты құрал болып саналады. Заманауи бақылау астрономиясы нақты ғарыштық денелердің массалары уақыт өте өзгеретінін растайды. Шынайы ғарыштық денелер – сфералық емес және қатты емес. Аспан денелері – бейстационар, эволюция кезеңінде олардың массалары, өлшемдері, пішіндері және құрылымы өзгереді. Қазіргі таңда айнымалы массалы аспан механикасы бойынша бірқатар ауқымды зерттеулер, библиографиялық жұмыстар бар. Алайда бейстационар ғарыштық жүйелер үшін ұйытқу теориясы жеткілікті дәрежеде дамымаған. Аталған жұмыста аспан механикасындағы айнымалы массалы денелер мәселесінің

алғашқы жуықтауы ретінде ұсынылған модельдік есеп қарастырылды. Осы модельдік есептің негізінде ұйытқу теорияларының әдістері дами түсті және ұйытқыған қозғалыс теңдеулерінің жаңа түрлері алынды. Модельдік есеп қосымша күштерді ескере отырып, айнымалы массалы екі дене есебі ретінде, жылдамдыққа және өзара арақашықтыққа пропорционал аралық қозғалыс класы болып табылады. Аталған аралық қозғалыс класы квазиконустық қима бойынша апериодтық қозғалысты сипаттайды. Бұл жұмыста аталған квазиконустық қима бойынша апериодтық қозғалыс класы негізінде Ньютон теңдеулері түрінде ұйытқыған қозғалыс теңдеулерінің жаңа түрлері алынды. Ньютон теңдеулері түріндегі оскуляциялаушы геометриялық элементтер – $p, e, \omega, i, \Omega, \theta$ үшін белгілі ұйытқыған қозғалыс теңдеулері негізінде келесідей оскуляциялаушы элементтер жүйесі үшін ұйытқыған қозғалыс теңдеулері алынды: $p, e, i, \pi, \Omega, \Phi(\tau)$ және $a, e, i, \pi, \Omega, \lambda$. Құрамында $\Phi(\tau)$ динамикалық элементі бар оскуляциялаушы айнымалылар жалпы жағдайға пайдаланылады. Дербес жағдайда аталған аралық қозғалыс класы танымал Омаров-Хаджидеметриу конустық қимасы бойынша периодты қозғалысты қамтиды. Сонымен қатар барлық оскуляциялаушы геометриялық элементтер Армелинни-Джинс түріндегі кеплер элементтерімен сәйкес келеді. Эллипс бойынша апериодты қозғалыс пен Армелинни-Джинс негізіндегі кеплер элементтерінің бір-бірінен айырмашылығы динамикалық элемент τ перицентр арқылы өту моментінде. Қозғалыс жылдамдығы, сонымен қатар массалардың уақыт бойынша өзгеру қарқындылығы сияқты пропорционал «үйкеліс» ұйытқытушы күштер бар кезде, конустық қима бойынша апериодтық қозғалыс есебі ретіндегі Гюльден-Мещерский мәселесі түсіндіріледі. Айрықша көңіл бөлетін жәйт – жалпы жағдайда, конустық қима бойынша апериодтық қозғалыстың барлық элементтері және квазиконустық қима бойынша апериодтық қозғалыстың барлық элементтері массалардың өзгеру заңдылығы арқылы уақыт бойынша байланысады. Ұсынылған аралық қозғалыс класының Армелинн-Джинс түріндегі кеплер элементтерінен түбегейлі айырмашылығы осында. Алайда квазиэллиптикалық қозғалыстағы Кеплер теңдеулерінің аналогы массалары тұрақты классикалық екі дене есебін қатарға жіктеуді математикалық тұрғыдан қолдануға мүмкіндік береді. Сонымен қатар бұл айнымалылардың физикалық (динамикалық) мағынасы кеплер элементтерінен ерекшеленеді. Гравитациялы байланысқан жүйелер динамикасында, эволюция процесі кезеңінде, квазиконустық қима бойынша апериодты қозғалыстың ұйытқыған эксцентриситет аналогы ұзақ уақыт бойы бірден кем болады: $e(t)<1$. Әртүрлі жүйедегі оскуляциялаушы айнымалыларда Ньютон теңдеулері түрінде алынған ұйытқыған қозғалыс теңдеулерінің жаңа формаларын бейстационар гравитацияланатын жүйелердің динамикасын зерттеуде тиімді пайдалануға болады.

Түйін сөздер: Квазиконустық қима бойынша апериодты қозғалыс, айнымалы масса, ұйытқымаған қозғалыс, Ньютон теңдеулері түріндегі ұйытқыған қозғалыс теңдеулері, ұйытқу теориясы, бейстационар гравитацияланушы жүйелер.

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НОВЫЕ ФОРМЫ УРАВНЕНИЯ ВОЗМУЩЕННОГО ДВИЖЕНИЯ

Аннотация. В классической небесной механике хорошо развита теория возмущения на базе кеплеровского движения. Различные виды уравнения возмущенного движения описаны каноническими уравнениями, уравнениями Лагранжа и уравнениями Ньютона. При этом массы тел считается постоянными, тела точечными или сферическими. Классическая теория возмущения являются основными инструментами в изучении многих астрономических проблем. Современная наблюдательная астрономия свидетельствует о том, что массы реальных космических тел со временем меняются. Реальные небесные тела несферичные и нетвердые. Небесные тела нестационарные: в процессе эволюции меняются их массы, размеры, формы и структуры. В настоящее время существует ряд исследований с общиной библиографией работ по небесной механике тел переменной массы. Однако теория возмущения для нестационарных космических систем не достаточна развита. В работе рассмотрена модельная задача, предложенная в качестве исходного приближения для проблем небесной механики тел переменной массы. На основе этой модельной задачи развиты методы теории возмущений и получены новые формы уравнения возмущенного движения. Модельная задача как задача двух тел переменной массы при наличии дополнительных сил, пропорциональных скорости и взаимному расстоянию представляет собой класс промежуточных движений. Этот класс промежуточных движений описывает апериодическое движение по квазиконическому сечению. В настоящей работе на основе этого класса апериодического движения по квазиконическому сечению получены различ-

ные новые формы уравнения возмущенного движения в виде уравнений Ньютона. Исходя из известных уравнений возмущенного движения для оскулирующих геометрических элементов p, e, ω, i, Ω, θ в форме уравнении Ньютона, нами получены уравнения возмущенного движения для следующих системы оскулирующих элементов p, e, i, π, Ω, $\Phi(\tau)$ и a, e, i, π, Ω, λ. Оскулирующие переменные, включающие динамический элемент $\Phi(\tau)$, пригодны в общем случае. В частном случае, этот класс промежуточных движении содержит широко известное периодическое движения по коническому сечению Омарова-Хаджидеметриу. При этом все оскулирующие геометрические элементы совпадают с кеплеровскими элементами в смысле Армелинни – Джинса. Разница апериодическое движение по эллипсу и кеплеровских элементов в смысле Армелинни – Джинса заключается в динамическом элементе – τ момента прохождения через перицентр. На базе периодического движение по коническому сечению Омаров-Хаджидеметриу дали трактовку проблеме Гюльдена-Мещерского как задачу об апериодическом движении по коническому сечению при наличии возмущающей силы «трения», пропорциональной как скорости движения, так и темпу изменения массы со временем. Мы подчеркиваем, что в общем случае все элементы апериодического движения по коническому сечению и все элементы апериодического движения по квазиоконическому сечению связаны со временем через законы изменения масс. Это принципиальное различие представленного класса промежуточных движений от кеплеровских элементов в смысле Армелинны-Джинса. Однако аналог уравнений Кеплера в квазиэллиптическом движении дает возможность формально математически использовать широко известные разложения в ряд классической задачи двух тел с постоянными массами. При этом физический (динамический) смысл этих переменных отличаются от кеплеровских элементов. В динамике гравитационно связанных систем, в ходе эволюции, возмущенный аналог эксцентриситета апериодического движения по квазиоконическому сечению в течении длительного времени остается меньше единицы $e(t)<1$. Полученные новые формы уравнения возмущенного движения в виде уравнений Ньютона, в различных системах оскулирующих переменных можно эффективно использовать при исследовании динамики нестационарных гравитирующих систем.

Ключевые слова: апериодическое движение по квазиоконическому сечению, переменная масса, невозмущенное движение, уравнения возмущенного движения в форме уравнения Ньютона, теория возмущения, нестационарные гравитирующие системы.

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DIFFERENTIAL EQUATIONS OF PLANETARY SYSTEMS

Abstract. In this article will be considered many spherical bodies problem with variable masses, varying non-isotropic at different rates as celestial-mechanical model of non-stationary planetary systems. In this article were obtained differential equations of motions of spherical bodies with variable masses to reach purpose exploration of evolution planetary systems. The scientific importance of the work is exploration to the effects of masses' variability of the dynamic evolution of the planetary system for a long period of time. According to equation of Meschersky, we obtained differential equations of motions of planetary systems in the absolute coordinates system and the relative coordinates system. On the basis of obtained differential equations in the relative coordinates system, we derived equations of motions in osculating elements in form of Lagrange's equations and canonically equations in osculating analogs second systems of Poincare's elements on the base aperiodic motion over the quasi-canonical cross- section.

Keywords: non-stationary star, planetary systems, variable mass, the many-body problem, osculating elements.

1. Introduction. Modern astronomical observations show, that the central star and the planetary system around it, in many cases, are genetically mutually associated [1-3]. With this regard, exploration of evolution of planetary systems with it's central star are represented the interests. The evolution of planetary systems in its non-stationary stage is special interesting, when main factor of dynamical evolution is variable masses of planets and the central star [4-7].

With this regard, we investigate as a celestial-mechanical model of the planetary system, $n+1$ body problems ($n \geq 3$) with masses, varying non-isotropic at different rates [1-5]. Bodies are considered as spherical bodies, and also with spherical distributions of masses. For this reason, they can be considered as Newtonian interaction of pointedly bodies, which positioned in the center of these spherical bodies. Based on the equation of Meschersky, we obtained equations of motions of many planetary problems with variable masses. In this case, masses of bodies varying non-isotropic at different rates with the presence of reactive forces in the absolute rectangular Cartesian reference frame. Further, we obtained equations of motions of considering the problem in the relative coordinates system. The center of the relative coordinates system is located in the center of the most massive body – parent star. Bases on obtained equations of motions in the relative coordinates system, we derived equations of perturbative motions in the various osculating systems. Unperturbed motions are accepted as aperiodic motions over a quasi-canonical cross-section [7].

2. Differential equations of motions of problem.

2.1 Statement of problem and differential equations of motions in the absolute coordinates system.

Let us consider the planetary system, which consists of $n+1$ inter-gravitating spherical celestial bodies with variable masses. The central body is denoted by T_0. Denoted body T_0 has mass m_0, alongside this, it is considered as parent star of the planetary system. Planets are designated by T_i, and corresponding masses of planets are represented by m_i, here $(i = 1, 2, ..., n)$. Locations of planets are such, that T_i is internal planet relative to planet T_{i+1}, and is external planet relative to planet T_{i-1}. Masses of bodies vary non-isotropically, as presented in the following form

$$m_0 = m_0(t), \quad m_1 = m_1(t), \quad ..., \quad m_n = m_n(t) \tag{2.1}$$

Let rates of masses variation are different [7-8]

$$\frac{\dot{m}_i}{m_i} \neq \frac{\dot{m}_k}{m_k}, \qquad i = 0,..,n, \qquad k = 0,...n, \qquad i \neq k, \tag{2.2}$$

Mass of the parent star is more than the mass of certain planet in the considered system

$$m_0 \gg m_i \quad (\mathrm{i} = 1,...,n). \tag{2.3}$$

On the basis of the Meschersky equation and following by L.G. Lukyanov [9], we obtained differential equations of motions in the absolute coordinates system

$$m_i \ddot{\vec{R}}_i = f m_i \sum_{k=0}^{n}{}' \frac{m_k \vec{R}_{ik}}{R_{ik}^3} + \dot{m}_i \vec{V}_i, \quad i = 0,1,...n, \tag{2.4}$$

where f – the gravitational constant, $\vec{R}_i$ – radius-vectors of centers of spherical bodies, $\vec{R}_{ik}$ – mutual distances of the center of spherical bodies, sign "stroke" when summing denotes, that $i \neq k$, $\vec{V}_i$ – the relative velocity of separated particles

$$\vec{V}_i = \vec{u}_i - \dot{\vec{R}}_i, \tag{2.5}$$

when $\vec{u}_i$ – the absolute velocity of separated particles.

Usually, in observational astronomy, of celestial bodies are defined the law of varying mass, which presented by ratios (2.1)-(2.2), also the relative velocity of separated particles (2.5). For example, the relative velocity of separated particles from Wolf-Rayet star (WR) is 1000 km/s, at the same time, the rate of decrease of masses due to star wind is $\dot{M} \approx -10^{-5} M_\odot / год$. Stars of spectral class M shed mass at the rate $\dot{M} \approx -10^{-6} M_\odot$ / year [10]. For this reason, we will consider, that magnitudes (2.1)-(2.2) and (2.5) known.

2.2 Differential equations of motions in the relative coordinates system.

Let's introduce enter the relative coordinates system with beginning in the center of parent star T_0, axes which parallel corresponding axes of the absolute coordinates system.

Let's introduce following notations

$$\vec{R}_{0i} = \vec{R}_i - \vec{R}_0 = \vec{r}_i \,. \tag{2.6}$$

where $\vec{R}_i$ and $\vec{R}_0$ – correspondingly radius-vectors of spherical bodies and of the parent star relative to the center of the absolute coordinates system, $\vec{R}_{0i}$ – radius-vectors of bodies T_i from the center of the relative coordinates system.

Thus, equations of motions of n planets (2.4) in the relative coordinates system may be written the following

$$\ddot{\vec{r}}_i = -f \frac{(m_0 + m_i)}{r_i^3} \vec{r}_i + \frac{\dot{m}_i}{m_i} \vec{V}_{0i} + f \sum_{k=1}^{n}{}' m_k \left(\frac{\vec{r}_{ik}}{r_{ik}^3} - \frac{\vec{r}_k}{r_k^3} \right) \tag{2.7}$$

Taking into consideration ratio (2.6) may be rewritten differential equations of motions of n bodies (2.7) in the following way

$$\ddot{\vec{r}}_i = -f \frac{(m_0 + m_i)}{r_i^3} \vec{r}_i + \frac{\dot{m}_i}{m_i} \vec{V}_i - \frac{\dot{m}_0}{m_0} \vec{V}_0 + f \sum_{k=1}^{n}{}' m_k \left(\frac{\vec{r}_{ik}}{r_{ik}^3} - \frac{\vec{r}_k}{r_k^3} \right) \tag{2.8}$$

Differential equations of motion of n body (2.8) may be represented as following

$$\begin{aligned}
\ddot{x}_i &= -f\frac{(m_0+m_i)}{r_i^3}x_i + \frac{\dot{m}_i}{m_i}V_{ix} - \frac{\dot{m}_0}{m_0}V_{0x} + f\sum_{k=1}^{n}{}' m_k\left(\frac{x_k-x_i}{\Delta_{ik}^3} - \frac{x_k}{r_k^3}\right)\\
\ddot{y}_i &= -f\frac{(m_0+m_i)}{r_i^3}y_i + \frac{\dot{m}_i}{m_i}V_{iy} - \frac{\dot{m}_0}{m_0}V_{0y} + f\sum_{k=1}^{n}{}' m_k\left(\frac{y_k-y_i}{\Delta_{ik}^3} - \frac{y_k}{r_k^3}\right) \qquad (2.9)\\
\ddot{z}_i &= -f\frac{(m_0+m_i)}{r_i^3}z_i + \frac{\dot{m}_i}{m_i}V_{iz} - \frac{\dot{m}_0}{m_0}V_{0z} + f\sum_{k=1}^{n}{}' m_k\left(\frac{z_k-z_i}{\Delta_{ik}^3} - \frac{z_k}{r_k^3}\right)
\end{aligned}$$

where distance between bodies Δ_{ik} are presented in as

$$\Delta_{ik} = \sqrt{(x_k-x_i)^2 + (y_k-y_i)^2 + (z_k-z_i)^2} \qquad (2.10$$

In that way, differential equations of motions of n bodies are reduced in the relative coordinates system.

3. Equations of motions in osculating elements of aperiodic motion over a quasi-canonical cross-section.

3.1 Highlighting perturbed functions. Equations of motions (2.8) are rewritten as following

$$\ddot{\vec{r}}_i + f\frac{(m_0+m_i)}{r_i^3}\vec{r}_i - \frac{\ddot{\gamma}_i}{\gamma_i}\vec{r}_i = \vec{F}_{i,возм} \qquad (3.1)$$

where

$$\gamma_i = \frac{m_0(t_0)+m_i(t_0)}{m_0(t)+m_i(t)} \qquad (3.2)$$

$$\vec{F}_{i,возм} = \vec{\Phi}_{ri} + \vec{F}_{gi} + \vec{\Pi}_i \qquad (3.3)$$

$$\vec{\Phi}_{ri} = \frac{\dot{m}_i}{m_i}\vec{V}_i - \frac{\dot{m}_0}{m_0}\vec{V}_0, \qquad (3.4)$$

$$\vec{F}_{gi} = f\sum_{k=1}^{n}{}' m_k\left(\frac{\vec{r}_{ik}}{r_{ik}^3} - \frac{\vec{r}_k}{r_k^3}\right) \qquad (3.5)$$

$$\vec{\Pi}_i = -\frac{\ddot{\gamma}_i}{\gamma_i}\vec{r} \qquad (3.6)$$

In the case, when the perturbative force (3.3) equals to zero, equations (3.1) describe aperiodic motion over a quasi-canonical cross-section.

We can also rewrite the perturbative function (3.3) in another way

$$\vec{F}_{i,возм} = grad_{\vec{r}_i} W_i \qquad (3.7)$$

$$W_i = W_{ri} + W_{ci} + W_{gi} \qquad (3.8)$$

where components of force function have view

$$W_{ri} = \left(\frac{\dot{m}_i}{m_i}\vec{V}_i - \frac{\dot{m}_0}{m_0}\vec{V}_0\right)\cdot\vec{r}_i \qquad (3.9)$$

$$W_{gi} = f\sum_{k=1}^{n}{}' m_k\left(\frac{1}{r_{ik}} - \frac{\vec{r}_i\cdot\vec{r}_k}{r_k^3}\right) \qquad (3.10)$$

$$W_{ci} = -\frac{\ddot{\gamma}_i}{2\gamma_i} r_i^2 \tag{3.11}$$

In this way, by use designations (3.7)-(3.11) we can write equations of motions n planet (3.1) in following way

$$\ddot{\vec{r}}_i + f\frac{\left(m_0 + m_i\right)}{r_i^3}\vec{r}_i - \frac{\ddot{\gamma}_i}{\gamma_i}\vec{r}_i = grad_{\vec{r}_i} W_i \tag{3.12}$$

Obtained equations of motions (3.12) convenient for using theories of perturbation, which formulated for such non-stationary systems [7].

3.2 Differential equations of motions for systems of osculating elements in form of Lagrange's equations

According to equation of the relative motion of n planets (3.12) with beginning in the center of the parent star, we can write different differential equations of motions in different systems of osculating elements, on the basis of aperiodic motion over a quasi-canonical cross-section. We consider equations of perturbative motions in osculating elements $\left(a_i, e_i, i_i, \Omega_i, \pi_i, \varepsilon_i\right)$ in the form of Lagrange's equations

$$\dot{a}_i = \frac{2}{n_i a_i}\frac{\partial W_i}{\partial \varepsilon_i}, \tag{3.13}$$

$$\dot{e}_i = \frac{\sqrt{1-e_i^2}}{n_i a_i^2 e_i}\frac{\partial W_i}{\partial \pi_i} - \frac{e_i\sqrt{1-e_i^2}}{1+\sqrt{1-e_i^2}}\frac{1}{n_i a_i^2}\frac{\partial W_i}{\partial \varepsilon_i}, \tag{3.14}$$

$$\frac{di}{dt} = -\frac{\operatorname{cosec} i_i}{n_i a_i^2\sqrt{1-e_i^2}}\frac{\partial W_i}{\partial \Omega_i} - \frac{\operatorname{tg}(i/2)}{n_i a^2\sqrt{1-e_i^2}}\left(\frac{\partial W_i}{\partial \pi_i} + \frac{\partial W_i}{\partial \varepsilon_i}\right), \tag{3.15}$$

$$\dot{\Omega}_i = \frac{\operatorname{cosec} i_i}{n_i a_i^2\sqrt{1-e_i^2}}\frac{\partial W_i}{\partial i_i}, \tag{3.16}$$

$$\dot{\pi}_i = \frac{\operatorname{tg}(i/2)}{n_i a_i^2\sqrt{1-e_i^2}}\frac{\partial W_i}{\partial i_i} + \frac{\sqrt{1-e^2}}{n_i a_i^2 e_i}\frac{\partial W_i}{\partial e_i}, \tag{3.17}$$

$$\dot{\varepsilon}_i = -\frac{2}{n_i a_i}\frac{\partial W_i}{\partial a_i} + \frac{\operatorname{tg}(i/2)}{n_i a_i^2\sqrt{1-e_i^2}}\frac{\partial W_i}{\partial i_i} + \frac{e_i\sqrt{1-e_i^2}}{1+\sqrt{1-e_i^2}}\frac{1}{n_i a_i^2}\frac{\partial W_i}{\partial e_i}, \tag{3.18}$$

where a_i – analog of a semimajor, e_i – analog of a eccentricity, i – analog of an angle of inclination of orbit plane, Ω_i – analog of a longitude of acsending angle, π_i – analog of a longitude of pericenter, ε_i – analog of a longitude of epoch. In the case, when masses of considering bodies are constants, all of these elements will turn into corresponding Kepler elements.

In equations (3.13)-(3.18) the force function (3.8)-(3.11) must be represented in explicit form

$$W_i = W_i\left(t_i, a_i, e_i, i_i, \Omega_i, \pi_i, \varepsilon_i\right). \tag{3.19}$$

Expressions of perturbative functions (3.19) via osculating elements, are cumbersome and laborious work. Such work, on today's day, as a rule, are implemented with using of method of computer algebra [11, 12].

3.3 Equations of perturbative motions in analog of second systems of canonical elements of Poincare

In some cases, it is convenient to use the canonical theory of perturbation for considerative non-stationary gravitational systems. For our purposes, analogs second systems of canonical elements Poincare $\left(\Lambda_i, \lambda_i, \xi_i, \eta_i, p_i, q_i\right)$ are preferable, which are introduce by [7].

$$\begin{aligned}
\Lambda_i &= \sqrt{\mu_{i0}}\sqrt{a_i} \\
\lambda_i &= l_i + \Omega_i + \omega_i \\
\xi_i &= \sqrt{2\sqrt{\mu_{i0}}\sqrt{a_i}\left(1-\sqrt{1-e_i^2}\right)}Cos\pi_i \\
\eta_i &= -\sqrt{2\sqrt{\mu_{i0}}\sqrt{a_i}\left(1-\sqrt{1-e_i^2}\right)}Sin\pi_i \\
p_i &= \sqrt{2\sqrt{\mu_{i0}}\sqrt{a_i}\sqrt{1-e_i^2}\left(1-Cosi_i\right)}Cos\Omega_i \\
q_i &= -\sqrt{2\sqrt{\mu_{i0}}\sqrt{a_i}\sqrt{1-e_i^2}\left(1-Cosi_i\right)}Sin\Omega_i
\end{aligned} \tag{3.20}$$

The system of differential equations of canonical osculating elements of n body in analogs of second systems of Poincare variables has the form [7]

$$\begin{aligned}
\dot{\Lambda}_i &= \frac{\partial R_i^*}{\partial \lambda_i}, \qquad \dot{\xi}_i = \frac{\partial R_i^*}{\partial \eta_i}, \qquad \dot{p}_i = \frac{\partial R_i^*}{\partial q_i}, \\
\dot{\lambda}_i &= -\frac{\partial R_i^*}{\partial \Lambda_i}, \quad \dot{\eta}_i = -\frac{\partial R_i^*}{\partial \xi_i}, \quad \dot{q}_i = -\frac{\partial R_i^*}{\partial p_i},
\end{aligned} \tag{3.21}$$

where

$$R_i^* = \frac{\mu_0^2}{2\Lambda_i^2}\cdot\left[\frac{m_0(t)+m_i(t)}{m_0(t_0)+m_i(t_0)}\right]^2 + W_i\left(t,\Lambda_i,\xi_i,p_i,\lambda_i,\eta_i,\mathrm{q}_i\right). \tag{3.22}$$

Canonical equations of perturbative motions (3.21) are very convenient to describe to dynamical evolution of planetary systems, when inclinations of orbital planes and analogs of eccentricities are quite small.

4. Conclusion

In this article we obtained different forms of differential equations for non-stationary planetary systems, which contains n planet. Perturbative function is alloted, equations of perturbative motions are leaded in form of Lagrange's equations and in analogs of second systems of Poincare's canonical elements. In the further, we plan to obtain decompositions of perturbative function via osculating elements with using of systems of analitical calculations "Wolfram Mathematica". Obtained equations will use for exploration to effects of variable of masses during of evolution of ekzoplanety systems. At the same time, effects of decreases of masses of the parent star and increases of masses of planets will be taken into account due to accretion of particles from residues of the protoplanetary disk.

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ПЛАНЕТА ЖҮЙЕЛЕРІНІҢ ДИФФЕРЕНЦИАЛДЫҚ ТЕҢДЕУЛЕРІ

Аннотация. Экзопланета жүйесінің пайда болуын және эволюциясын зерттеу – аспан механикасы мен астрономияның өзекті мәселелерінің бірі. 1950 жылы экзопланета жүйелерінің ашылуы болды. Экзопланета жүйелері анықталған кезден бастап, олардың пайда болуы мен динамикалық эволюциясы әртүрлі әдістермен зерттеліп келеді. Қазіргі таңда экзопланета жүйелерін табудың сегіз әдісі қолданылады. Бірінші әдіс – сәуле жылдамдығы әдісі, осы әдісті қолдану арқылы орталық жұлдыз төңірегіндегі экзопланеталық жүйелер ашыла бастады. Екінші әдіс – «Кеплер» ғарыш телескопы миссиясының пайда болуына байланысты транзиттер әдісі. Бұл әдістерде, денелердің массалары тұрақты ретінде қарастырылады және классикалық кеплерлік қозғалыс формулалары, классикалық аспан механикасы қолданылады. Алайда шынайы ғарыштық жүйелер – стационар емес. Бейстационар гравитацияланатын денелердің массаларының айнымалылығы, өлшемдерінің

айнымалылығы және пішіндерінің айнымалылығы сияқты динамикалық әсерлердің комбинациясы гравитацияланатын жүйелердің эволюция жолдарының мол түрін анықтайды. Аспан механикасы аспектінде осы құбылыстарды зерттеу планета жүйелерінің динамикалық эволюция табиғатын түсіну үшін қажет. Қазіргі таңда астрономияның бейстационар динамикалық мәселелері қарқынды өңделіп келеді. Аспан денелері массаларының өлшемдерінің, пішіндерінің және басқа да физикалық параметрлерінің уақыт бойынша өзгерісі эксперименттік анықтама беруге алып келеді. Сондықтан осы физикалық параметрлерді негізге ала отырып, динамикалық мәселелерді құру және зерттеу қажеттілік тудырады. Көптеген белгілі экзопланеталар F, G, K және M спектральді кластарға кіретін жұлдыздар төңірегінде қозғалыс жасайды. Бұл жұлдыздардың массалары айнымалы және планета қозғалысына орталық жұлдыз массасының айнымалылық әсері аз зерттелген. Алайда орталық жұлдыз массасының айнымалылығын ескерген жағдайдағы дифференциалдық қозғалыс теңдеуі интегралданбайды, сондықтан мәселе ұйытқу теориясы әдістерімен зерттеледі. Бұл тұрғыдан, ұйытқыған қозғалыстың канондық теңдеулері және Лагранж теңдеулері түріндегі квазиконустық қима бойынша, апериодтық қозғалыс негізіндегі ұйытқыған қозғалыс теңдеулері қолайлы. Бейстационар планета жүйелерінің аспан-механикасы моделінде, әртүрлі қарқынмен изотропты емес өзгеретін, айнымалы массалы, сфералық көп дене мәселесі жұмыста қарастырылған. Бейстационар планета жүйелерінің эволюциясын зерттеу мақсатында, айнымалы массалы сфералық денелердің дифференциалды қозғалыс теңдеуі алынған. Жұмыстың ғылыми мәні планета жүйелерінің ұзақ уақыт периодындағы динамикалық эволюциясының айнымалы массалар әсерлерін зерттеумен байланысты. Сонымен қатар бөлшектердің аккрециялануына байланысты орталық жұлдыздың массасының азаюы қалай ескерілсе, планеталардың массасының көбеюі де ескеріледі. Планета жүйелерінің дифференциалдық теңдеуі, Мещерскийдің теңдеуі арқылы, абсолютті координаталар жүйесінде және салыстырмалы координаталар жүйесінде алынған.

Салыстырмалы координаталар жүйесінде алынған дифференциалдық теңдеулер негізінде, квазиконустық қима бойынша, апериодты қозғалысты назарға ала отырып, Пуанкаре элементтерінің екінші жүйесіндегі лездік аналогтарындағы канондық теңдеулерде және Лагранж теңдеулері түріндегі лездік элементтерінде қозғалыс теңдеуі қорытылып шығарылды.

Түйін сөздер: бейстационар жұлдыз, планета жүйесі, айнымалы масса, көп дене мәселесі, оскуляция элементтері.

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ДИФФЕРЕНЦИАЛЬНЫЕ УРАВНЕНИЯ ПЛАНЕТНЫХ СИСТЕМ

Аннотация. Исследование происхождения и эволюции экзопланетных систем – одна из актуальных тем небесной механики и астрономии. В 1950 году была сделано открытие экзопланетных систем. С момента обнаружения экзопланетных систем разными методами изучаются их появления и динамическая эволюция. В настоящее время используется восемь методов обнаружения экзопланетных систем. Из них наиболее популярные – два метода. Первый метод – метод лучевых скоростей, с использованием этого метода начались открытия экзопланетных систем около родительской звезды. Второй метод – это метод транзитов с появлением миссии космического телескопа «Кеплер». В этих методах используется классическая небесная механика, где массы тел считается постоянными и используются формулы классического кеплеровского движения. Однако реальные космические системы нестационарные. Различные комбинации динамических эффектов нестационарных гравитирующих тел, таких как переменность массы, переменность размеров и переменность формы, предопределяют богатое разнообразие эволюционных путей гравитирующих систем. Исследования этих явлений в небесно-механическом аспекте необходимы для понимания природы динамической эволюции планетных систем. В настоящее время интенсивно разрабатываются нестационарные динамические задачи астрономии. Изменение со временем массы, размеров, формы и других физических параметров небесных тел допускает экспериментальное определение. Поэтому необходимо формулирование и исследование динамических задач, принимая во внимание изменение со временем этих физических параметров. Большинство известных экзопланет вращаются вокруг звезд спектральных классов F, G, K и M. Массы этих звезд переменные и эффект переменность центральной звезды на движение планет мало изучены. Однако дифференциальное уравнение движения с учетом переменности масс центральной звезды не интегрируемые, поэтому проблема обычно исследуется методами теории возмущений. При этом предпочтительны уравнение возмущенного движения на базе апериодического движения по квазиконическому сечению в форме уравнения Лагранжа и канонические уравнения возмущенного движения.

В работе рассматривается задача многих сферических тел с переменными массами, изменяющимися неизотропно, в различных темпах как небесно-механическая модель нестационарных планетных систем. В статье получены дифференциальные уравнения движения сферических тел с переменными массами с целью исследование эволюции нестационарных планетных систем. Научная значимость работы заключается в исследовании эффектов переменности масс динамической эволюций планетной системы в длительный период времени. При этом учитывается как убывание масс родительской звезды, так и рост масс планет из-за аккреции вещества. Исходя из уравнений Мещерского, получены дифференциальные уравнения движения планетных систем в абсолютной системе координат и в относительной системе координат. На базе полученных дифференциальных уравнений в относительной системе координат, выведены уравнения движения в оскулирующих элементах в форме уравнения Лагранжа и канонические уравнения в оскулирующих аналогах второй системы элементов Пуанкаре на базе апериодического движения по квазиконическому сечению.

Ключевые слова: нестационарная звезда, планетная система, переменная масса, задача многих тел, оскулирующие элементы.

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MODERN METHODS OF DIAGNOSIS AND TREATMENT OF CHRONIC ENDOMETRITIS, IN PREPARING PATIENTS FOR ASSISTED REPRODUCTIVE TREATMENT TECHNOLOGIES (LITERATURE REVIEW)

Abstract. Since the chronic endometritis often leads to impaired reproductive function causing infertility, failed IVF attempts, miscarriage, and complicated pregnancy and childbirth, it has become not only medically relevant but also socially significant. For successful embryo implantation, the thickness of the endometrium should be at least 7 cm. Even though there is always a chance for embryo implantation, despite the endometrial hypoplasia, the attachment may be fragile, and such pregnancy may cease its development further on. Recently, in connection with an increase in the rate of developing allergic reactions, dysbacteriosis, and the emergence of drug-resistant strains of microorganisms, a search for new treatment methods to avoid these complications has begun. One of such methods in treating chronic endometritis, satisfying several requirements (efficiency, comfort, accessibility, safety), is the ultrasonic cavitation of the uterine cavity.

Key words: ART, infertility, chronic endometritis, hypoplasia of endometrium, failed IVF attempts, ultrasonic cavitation.

Despite tremendous successes achieved in recent decades in the field of reproductive medicine, embryology, and genetics, the problem of infertile marriage is still far from being solved. According to world statistics, the effectiveness of Assisted Reproductive Technologies (ART) in overcoming infertility per transfer of one embryo does not exceed 25-40 %.

Infertility is the inability of a sexually active couple, who do not use contraception, to achieve pregnancy within one year. According to the World Health Organization (WHO), the infertility rate fluctuates between 15 and 18 % and does not tend to decrease [1].

The beginning of the age of reproductive medicine has revealed new possibilities for preservation of fertility in both women and men. Today, the world uses such technologies as IVF, ICSI, epididymis and testis biopsy, gamete donation, surrogacy, preservation of fertility in cancer patients by cryopreservation of gametes - sperm and egg cells, cryopreservation of ovarian tissue for the future autotransplantion, preimplantation genetic testing of the embryo, and recently, experimental modification of human embryo genome [2, 3, 4]. Nevertheless, the development of new methods that can improve the effectiveness of ART is still ongoing.

In Kazakhstan, according to various sources, infertility rates reach 20 %. Thus, this has led to increased use of ART as the most effective way to overcome infertility, as well as the implementation of ART into the state program [4].

Disruption of proper implantation during the transfer of good quality embryos due to non-receptive endometrium is the most significant cause of reproductive failure in ART, taking up to 70 % of their structure. Successful implantation requires a receptive endometrium, a functional embryo at the stage of

blastocyst, and a synchronized “dialogue” between maternal and embryonic tissues [5, 6]. The problem of repeated implantation failure is considered to be one of the most difficult to overcome in the practice of reproductive medicine and infertility specialists.

The processes required for conception, such as trophoblast invasion and further fetus development, occur in the endometrium during certain days [7]. Due to the formation of connective tissue, as a result of prolonged inflammation in the endometrium, blood circulation is disturbed, and sensitivity to hormones decreases; thus, changes in normal functioning cause chronic endometritis [8].

Chronic endometritis (CE) is a clinicopathologic syndrome where as a result of prolonged damage to the endometrium by an infectious agent, morphofunctional changes take place, disrupting the cyclic transformation and receptor apparatus of the uterine mucosa [5]. This pathology occurrence rate varies from 3 to 73 %, giving rise to primary infertility in 24.8 %, secondary infertility in 35.6 %, unsuccessful IVF attempts and embryo transfers in past medical history in 30 % of cases, as well as miscarriage, complicated pregnancy, and childbirth [9, 10, 11].

Risk factors for the development of CE in patients of reproductive age with menstrual dysfunction are age group of women older than 30 years, the presence of urinary system diseases, history of abortion and premature birth, chronic salpingo-oophoritis and endometrial polyps, history of uterine fibroids, surgical interventions on the reproductive system organs, prolonged use of intrauterine contraceptives [8, 12, 13].

In 95 % of cases, endometritis is exogenous (primary), caused by sexually transmitted infections, or occurred as a result of intrauterine diagnostic and treatment procedures. In the other 5 % of cases, endometritis is endogenous (secondary) and develops when infection from extragenital sources gets through hematogenous, lymphogenous, or descending pathways [5, 8, 12].

CE has typical characteristic features such as a change in the etiological structure, drug-resistant bacterial flora growth, long periods of therapy, changes in clinical symptoms towards weakened or barely perceptible forms and atypical course of a disease. CE clinical presentation includes disruption of menstrual and reproductive functions. A persistent inflammation area existing in the small pelvis results in disruption of the menstrual cycle in 45-55% of patients, manifesting in the form of meno- and metrorrhagia, oligo- and opsomenorrhea, algodismenorrhea, and amenorrhea. 21% of patients experience chronic pain [14, 15]. 80-90 % of patients suffering from CE present with symptoms as intermenstrual bleeding, menorrhagia, and contact-spotting [5, 12].

In 60 % of cases of typical miscarriages, there is a close link to CE. Endometrial stromal fibrosis takes the main part in the pathogenesis of this problem, resulting in a significant decrease in blood flow due to the reduction of the capillary bed. This, in turn, leads to inadequate secretory transformation of the endometrium and disrupts pregravid restructuring of the mucosa of the uterine body [5, 12, 13].

The CE diagnosis is based on a comprehensive assessment of a number of clinical, morphological, and instrumental data.

A comprehensive method for the diagnosis of CE allowed to improve verification of this pathology by 64.6 % compared to histological confirmation of CE only after a biopsy of the endometrial tissue [16].

Ultrasound examination of pelvic organs is a screening method for chronic endometritis. Sonographic signs of CE include the following: irregular form areas and reduced echogenicity of the endometrium; changes in the endometrium structure; identification of gas bubbles, sometimes with the typical “comet tail” acoustic effect; clear hyperechoic formations 0,1-0,2 cm in diameter, visualized in the basal endometrium layer and being sources of fibrosis, calcinosis; expansion of the uterine cavity up to 0,3-0,7 cm due to fluid contents. Dopplerometric studies show hemodynamic disturbances in the vessels of the uterus and the vascular basin of the pelvis and asymmetry of the myometrium vascularization [8, 12, 13, 17].

During hysteroscopy, the uneven color and hyperemia of the endometrium are observed. Morphological examination of the endometrium on the 7-10th day of the menstrual cycle is the "golden standard" for the CE diagnosis [13, 5]. Diagnostic signs of CE detected during hysteroscopy are revealed only in 82,6 % of patients, which is verified by the morphological method and immunohistochemical CD138 studies [8, 18, 19, 20, 21]. These data coincide with the results of studies accomplished by other authors, demonstrating that only 30% of female patients have the most informative CE signs, such as uneven thickness of the endometrium, polypoid growths, uneven color and hyperemia of the mucous membrane. At the same time, the sensitivity of this method is only 40 % and specificity is 80 %

(for comparison, the corresponding morphological indexes of endometrial aspirates are 93 and 100 %) [22]. Therefore, in cases of suspected CE, hysteroscopy is an important step to exclude the entire spectrum of intrauterine pathology, but not to verify the diagnosis.

Comprehensive treatment of chronic endometritis should include antibacterial, metabolic, antioxidant, immunomodulating and physiotherapy. The therapy effectiveness criteria present as relief of clinical symptoms, restoration of the endometrium echographic picture, elimination or reduction of the infectious agent activity, restoration of the morphological structure of the tissue, as well as restoration of fertility.

Despite the recent innovations in stimulation protocol schemes, reproductive immunology, culture medium, technical equipment, and application of preimplantation genetic testing, implantation and genetic health of embryos remain the leading cause behind the effective implementation of IVF programs [15, 23, 24].

The issues of pregravid preparation of married couples, taking into account microflora status and dysbiosis of the vagina and uterus, are being discussed [19].

The problem of relatively ineffective results in ART programs leads one to consider various aspects of increasing the frequency of implantation and childbirth.

The effectiveness of IVF programs directly correlates with the age of female patients; according to various authors, embryo implantation takes place more often in patients of a younger age [25].

During the initial implantation stages, the endometrium is invaded by trophectoderm cells; thus, cytoplasmic characteristics of invading cells play a significant role. Probable genetic abnormalities during further embryo growth might lead to a developmental arrest. Perhaps, this sequence of events leads to a high incidence of clinical pregnancy, along with a high frequency of pregnancy interruption in female patients of young age. The low rate of progressive pregnancy after embryo transfer (ET) within a group of women over 40 years old allows doctors to recommend these patients the use of donor oocytes [25, 26].

Among the variety of causes for failed embryo implantation, endometrial thickness remains one of the most important factors affecting pregnancy rate in ART. Good quality embryo and receptive endometrium are the main factors for achieving a successful pregnancy. That is why thin endometrium significantly reduces the pregnancy rate. Endometrium thickness of less than 7 mm is believed to give minimal chances for successful conception [27].

The study of American scientists regarding the effects of endometrial thickness on pregnancy rate in 897 female patients with embryo transfer in IVF programs revealed that high pregnancy rate is observed in women with an endometrial thickness of 9 mm or more, making it 39 % of females tested, whereas in patients with an endometrial thickness of less than 9 mm it was 16 % [27, 28].

The use of technologies, such as hyperbaric oxygenation therapy (HOT), in patients preparing for IVF programs in both men and women, leads to oxygen deficiency elimination, regional hemodynamics improvement, biosynthesis activation; moreover, it has an anti-inflammatory and immunomodulating effect [28] for embryo transfer and treatment of “thin endometrium” [30, 31, 32]. The procedure can be performed not only during ovarian stimulation but also before and after embryo transfer.

On a 20-21st day of the cycle, endometrial scratching by pipelle-biopsy carried out using a special catheter, and a sample is sent for histological and immunohistochemical studies if necessary. According to modern data, there are conflicting opinions about the effectiveness of endometrial scratching. Some studies provide information that confirms an increase in implantation rate, pregnancy, and childbirth [33, 34]. At the same time, other studies have not shown a significant increase in the positive outcome of embryo transfer programs [30, 31, 32, 35, 36].

To improve the receptivity and thickness of the endometrium, in 2011, researchers proposed the use of granulocyte colony-stimulating growth factor (G-CSGF) for the first time. The mechanism of action consists of colony-stimulating factors taking part in the repeated modeling of endometrial vessels, local immune modulation, and cell pathways of adhesion [30, 37].

Studies regarding the use of peripheral blood mononuclear cells show that, within the implantation site, maternal blood containing peripheral blood mononuclear cells (PBMC) surrounds the embryo. The number of maternal immune cells dramatically increases during the decidualization process. PBMCs directly interact with trophoblast and then return to the mother’s bloodstream. There is a suggestion that PBMCs, along with human chorionic gonadotropin (HCG), contribute to the interaction between the embryo and the endometrium. Therefore, intrauterine administration of mononuclear cells from

autologous blood cells suggests an increase in endometrial receptivity of female patients with repeated embryo transfer failure [21, 30, 38].

As of today, there are several studies on the use of platelet-rich plasma; the first studies were published in 2015 by Y. Chang et al. [29, 38]. With intrauterine administration of plasma, the release of biologically active substances, cytokines, and growth factors takes place. Among those growth factors are fibroblast growth factor, platelet growth factor, vascular endothelial growth factor, transforming growth factor, IGF-1, IGF-2, connective tissue growth factor, and interleukin-8. S. Zadehmodarres et al., and A. Molina et al. in their studies noted the positive impact of this technique on outcome results in female patients with thin endometrium and RIF [27, 40, 41].

The individual implantation window is a short period, corresponding to the 7-8th day after the luteinizing hormone peak, during which adhesion and invasion of the blastocyst into the endometrium becomes possible. In 2011, a group of researchers developed a transcription ERA signature, which makes it feasible to determine the susceptibility of the endometrium to embryo implantation based on an integrated algorithm for assessing the expression levels of matrix RNA-238 genes [41, 42]. In the natural cycle before ET, on the 7th day after ovulation or on the 5th day of taking progesterone, in cycles with cyclic hormonal therapy, endometrial pipelle-biopsy is performed. After receiving the results that the endometrial receptivity status corresponds to the stage of the implantation window, preparations for the ET procedure begin, performing it on the same day of the cycle with the established endometrial receptivity. In the case of detecting a non-receptive status of the endometrium, the procedure is repeated, changing the day of material sampling, sometimes repeating the study in several cycles, until a positive result is obtained. Thus, the authors proposed an individual approach to choosing the day for ET [41, 42, 43].

Treatment of the uterine cavity with a mixture of CO2 and N2 gases improves blood circulation in the endometrium and increases the thickness of basal and functional endometrial layers [44, 45].

Gynecological massage is a scientifically proved therapeutic method that is widely used in gynecological practice in Russia but has not yet found proper application in preparing women for IVF [27].

Physiotherapeutic procedures are important methods for treating female reproductive system disorders, as well as acute and chronic pathologies. Modern, technologically advanced techniques of physiotherapeutic treatments include ultrasonic (US) cavitation of the uterine cavity. This method can be used in both complex treatments, in combination with drug therapy, and also as monotherapy. There are two possible ways to perform this procedure: contact (through a liquid medium) and non-contact. The finely-dispersed cavitated solution is used as a liquid medium to irrigate the tissue.

Ultrasonic irrigation methods are based on the effect of low-frequency ultrasonic vibrations (up to 50 kHz) on a solution, passing through a 2 mm diameter hole in the working part of the waveguide. In this case, the process of cavity formation, called cavitation, takes place in the areas of rarefaction of the medium. The resulting cavity is filled with vapors of liquid and gas, soluble in the mentioned fluid. During the formation of cavitation bubbles, the medium is compressed, and the previously formed cavities burst, accompanied by sharp hydraulic impacts [12, 13, 46].

Treatment of the uterine cavity with antiseptic solutions, cavitated by low-frequency ultrasound, is characterized by the following therapeutic effects: antibacterial, immunological, potentiating, trophic, microcirculatory, and antioxidant [8].

Antibacterial and immune therapeutic effects manifest in a direct antimicrobial action due to the disintegration of the microbial wall, the destruction of bacterial biofilms, and the activation of local immune reactions; while inactivation of viruses occurs due to their oxidation by free radicals and peroxidation compounds that briefly form in the intercellular space. The potentiating effect can be seen in increasing sensitivity of microorganisms to the action of antibiotics and antiseptics, which leads to their rapid elimination with small doses of drugs. Microcirculatory and antioxidant effects are achieved by improving local blood flow due to myometrium micro-massage, resulting in an increase in endometrium thickness during its hypoplasia (thin endometrium), prevention of scarring tissue changes, and development of adhesions [47, 48, 49, 50, 51]. In preparation for ART and treatment during pregnancy, combined use of uterine cavity irrigation with medicinal solutions, cavitated by low-frequency ultrasound, as well as mud therapy in women after termination of non-developing pregnancy, results in a significant

decrease in the level of pro-inflammatory cytokines and normalization of the genital tract microbiocenosis and anaerobic vaginal dysbiosis [50, 51, 53, 54, 55, 56]. The scope of possible usage for ultrasound cavitation varies; some of the cases are endometritis, myometritis, purulent wounds, postpartum ulcers, vaginitis, cervical insufficiency, preparation for intrauterine interventions. The technique shows good clinical results and may come to be a real alternative to multistage antibiotic therapy [57, 58, 59].

Timely diagnosis and modern principles of treatment of CE with a personalized approach can increase the effectiveness of IVF programs and reduce the frequency of miscarriage.

Despite the high achievements in scientific and clinical practice, the search continues for various ways to increase the effectiveness of IVF programs.

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СОЗЫЛМАЛЫ ЭНДОМЕТРИТ ДИАГНОСТИКАСЫ МЕН ЕМІНІҢ ЗАМАНАУИ ӘДІСТЕРІ, ПАЦИЕНТТЕРДІ ҚОЛДАУ БАҒДАРЛАМАЛАРЫНА ДАЙЫНДАУДА ҚОЛДАНЫЛАТЫН РЕПРОДУКТИВТІ ТЕХНОЛОГИЯЛАР (ӘДЕБИЕТКЕ ШОЛУ)

Аннотация. Қазіргі уақытта созылмалы эндометрит проблемасының өзектілігі тек медициналық тұрғыдан ғана емес, сонымен қатар әлеуметтік тұрғыдан да маңызға ие болып отыр, Өйткені бұл ауру көбінесе репродуктивті функцияның бұзылуына, бедеулікке, ЭКҰ-ның сәтсіздігіне, жүктілікке және жүктілік пен босануға әкеледі. Жатырдың шырышты қабатында эмбрионды сәтті бекіту үшін эндометрияның қалыңдығы кем дегенде 7 см болуы керек. Эндометриялық гипоплазия кезінде имплантация жасалуы мүмкін, бірақ тіркеме нәзік болып, мұндай жүктілік оның дамуын одан ары тоқтатуы мүмкін. Соңғы уақытта, аллергиялық реакциялардың, дисбактериоздың даму жиілігінің жоғарылауына және антибиотикалық терапия кезінде микроорганизмдердің төзімді штамдарының пайда болуына байланысты осы асқынулардың алдын алу үшін емдеудің жаңа әдістерін іздеу жүргізіліп келеді. Бірқатар талаптарды қанағаттандыратын созылмалы эндометритті емдеудегі осындай әдістердің бірі (тиімділік, қолайлылық, қолжетімділік, қауіпсіздік) – жатыр қуысына ультрадыбыстық кавитация енгізу әдісі.

Түйін сөздер: ҚРТ, бедеулік, созылмалы эндометрит, эндометриялық гипоплазия, ЭКО сәтсіз әрекеттері, ультрадыбыстық кавитация.

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СОВРЕМЕННЫЕ МЕТОДЫ ДИАГНОСТИКИ И ЛЕЧЕНИЯ ХРОНИЧЕСКИХ ЭНДОМЕТРИТОВ В ПОДГОТОВКЕ ПАЦИЕНТОК К ПРОГРАММАМ ВСПОМОГАТЕЛЬНЫХ РЕПРОДУКТИВНЫХ ТЕХНОЛОГИЙ (ОБЗОР ЛИТЕРАТУРЫ)

Аннотация. В настоящее время актуальность проблемы хронического эндометрита приобретает не только медицинское, но и социальное значение, поскольку данное заболевание часто приводит к нарушению репродуктивной функции, являясь причиной бесплодия, неудачных попыток ЭКО, невынашивания беременности, осложненного течения беременности и родов. Для успешного закрепления эмбриона в слизистой оболочке матки, толщина эндометрия должна составлять не менее 7 см. При гипоплазии эндометрии есть вероятность того, что имплантация произойдет, но прикрепление может оказаться непрочным и такая беременность может в дальнейшем прекратить свое развитие. В последнее время в связи с ростом частоты развития аллергических реакций, дисбактериоза и возникновением резистентных штаммов микроорганизмов при антибактериальной терапии ведётся поиск новых методов лечения, позволяющих

избежать этих осложнений. Одним из таких методов в терапии хронического эндометрита, удовлетворяющих ряду требований (эффективность, комфортность, доступность, безопасность), является метод ультразвуковой кавитации полости матки.

Ключевые слова: ВРТ, бесплодие, хронический эндометрит, гипоплазия эндометрия, неудачные попытки ЭКО, ультразвуковая кавитация.

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PROSPECTS FOR THE USE OF SAFFLOWER (*CARTHAMUS TINCTORIUS L*) IN OPHTHALMOLOGY

Abstract. Plant materials and preparations based on it continue to play an important role in the pharmacotherapy of many chronic and sluggish human diseases. Over the past two decades, there has been a very high consumer demand for medicines and preventive products obtained from natural plant sources. This is due to the complex effect of biologically active substances, vitamins, antioxidants of plant origin on the human body and the practical absence of side effects. An analysis of the development of phytopharmacology shows that the most promising direction in the field of the development of phytopreparations is the scientifically based use of the experience of traditional and modern medicine.

One of the promising types of raw material - medicinal plant safflower (*Carthamus tinctorius L*). It contains vitamins A, E, unsaturated fatty acids and other biologically active substances in large quantities, that determine antimicrobial, antifungal, anti-inflammatory, antioxidant properties. Thanks to these pharmacological effects, the content of vitamins is promising for the development and introduction of a drug used in the field of ophthalmology.

To this end we have searched and analysed scientific publications about safflower – *Carthamus tinctorius*. All studies used in this review have been found using «Google Scholar» scientific search engine and were selected from publications indexed in Web of science, PubMed, Medline, E–library, and Cyberleninka databases.

Key words: safflower, eye diseases, ophthalmopharmacology, phytopreparation.

Currently, medicinal plants are becoming increasingly popular in the world, including in our country, used for the prevention and treatment of various diseases. In this regard, in the field of pharmacy and medicine, pharmaceutical development and production of domestic innovative herbal remedies. These initiative scientific directions include the collection and study of medicinal plant materials, pharmacognostic studies, pharmaceutical development of herbal remedies and other scientific studies, after which they can be recommended and used as medicines for the treatment of various diseases.

More than 7,000 different drugs are registered in the State Register of the Republic of Kazakhstan [19]. According to marketing analysis, the majority of these drugs come from abroad, and domestic drugs make up an insignificant amount.

In the structure of the general morbidity of the population of the Republic of Kazakhstan, ophthalmopathology takes fifth place after diseases of the respiratory, cardiovascular, digestive and genitourinary systems [1]. Around the world, about 285 million people suffer from visual impairment, of which 19 million are children and 39 million are blind [2]. In Kazakhstan, according to official figures, more than 1 million people turn to ophthalmologists every year. Among the main causes are injuries, inflammatory diseases, myopia, cataracts, glaucoma and age-related macular degeneration [1].

Anti-inflammatory and Analgesic Properties Although a number of steroidal or non-steroidal anti-inflammatory drugs have been developed, researchers are changing their focus to natural products to develop new anti-inflammatory agents due to the side-effects of chemical drugs As a result, the search for other alternatives seems necessary and beneficial. C. tinctorius are an open door for new and effective compounds [18, 20].

Carthamus tinctorius L. is commonly known as Safflower. *C. tinctorius* extracts and oil are important in drug development with numerous pharmacological activities in the world. This plant is cultivated mainly for its seed, which is used as edible oil [18].

Safflower (*Carthamus tinctorius L.*) ranks eighth among the major oilseeds crop grown worldwide. The leaves, flowers and seeds have medicinal and industrial significance. *Carthamus tinctorius L.* is commonly known as Safflower. *C. tinctorius* extracts and oil are important in drug development with numerous pharmacological activities in the world. This plant is cultivated mainly for its seeds, which are used as edible oil. Safflower (*Carthamus tinctorius L.*) belongs to the Compositae family. It is a herbaceous plant with pronounced external signs of the inhabitant of arid regions. Safflower has the following characteristic morphological indications: a solid, upright, bare and branchy stem depending on the variety and growing conditions over 100 cm. The leaves are leathery, oblong-lanceolate or elliptical, at the edges have teeth, usually end in thorns as a rule, but it should be noted that there are forms without thorns. The color of the safflower leaf is observed from light green to dark green. The flowers are small, tubular, yellow or orange. The corolla is five-partite, the stigma is rounded and the anthers firmly and tightly fit to the style. Safflower is characterized by an oval-shaped ovary and a long style. It is noted that the color of the corolla is in the range from white to red. The inflorescences of safflower are many-flowered, multi-seeded baskets in shape are conical, dome-shaped or flat. The flower basket is from 1.5 to 4 cm in diameter, and the number of baskets per individual varies and depends both on the variety and cultivation conditions (from 14 to 60, and an average of 18). The number of seeds in the basket is from 25 to 60. The basket wrap is double, the outer scales of the wrapper are of leaf-shaped. Depending on the variety, there are thorns on the edges, there are also forms without thorns. The nature of the covering films belongs to the inner scales of the wrapper, and with the help of a tight closure of the inner leaflets, no shedding of seeds occurs. The fruit of the safflower is the seed. Seeds are white, bare, obovoid, glossy, tetrahedral, elongated, with weakly protruding ribs. The seeds of safflower dye are all armored. It should be noted that the shell layer is very deep in the tissues of the shell. By mass, 1000 seeds correspond to 400 g. 50-60 % of the mass of the whole seed is the seed-coat. The root system of safflower is well developed and of taproot. According to P.I. Podgorny safflower roots structure is small-cell. The main root is located at a depth of 15-20 cm and is quite well branched, thinning far to 1.5-2 m deep in the soil. Lateral branches run horizontally from the main root, almost at an angle of 90º to the main taproot. They begin quite close to the soil surface (3-5 cm).

Safflower tinctorial is a cross-pollinated plant. Pollination occurs with the help of insects (bees). First of all, the central baskets of safflower bloom, then the lateral once, flowering of different types of baskets in one plant lasts about one month. The vegetation period (the number of days from full germination to full maturity) is divided into varieties and is in the following limits 93-152 days. According to authors such as N.V. Yakushkin and P.I. Podgorny, botanical characteristic is controversial. This is due to the difference in climatic zones and the dependence of the formation of different morphological characters on the variety of the plant. And this indicates that the study of safflower cultivated in the territory of the South Kazakhstan oblast is especially important and necessary.

Edge flowers of the flower basket and fatty oil from the seeds of safflower tinctorial are used for therapeutic purposes. Safflower flowers are used as components of flower teas. According to published data, it is known that substances containing in safflower play a large role in improving blood circulation, when blood stagnates, in improving the blood composition, in anemia, at high blood pressure, and in the consequences of brain hemorrhage.

According to observations at the Kazakh Research Institute of Plant Protection and Quarantine, it has been found that individuals after two weeks of taking safflower tea showed a decrease in blood viscosity to normal, hypertensive pressure reduced, and low pressure returned to normal, so we can say that safflower tea affects blood pressure. At the same time, it was noted that this drug dosn't have a negative effect for those who do not suffer from hypertension [18].

In Chinese traditional medicine, safflower tea is used by patients with heart failure, suffering from anemia, numbness of the upper and lower extremities.After taking tea for 4-6 months, full recovery occurs. Safflower tea is one of the flower teas produced by the Chinese. In Europe, safflower is known mainly because of the fact that vegetable oil, which has found its wide application in the food industry is made from safflower. Many people don't even suspect that this plant is able to cure numerous pathologies.This fact was the impetus for a close study of this tea. It made directly from the petals of this plant flowers.This tea is used, in most cases, as a

mean, which tends to facilitate the general well-being of patients in the presence of these or other diseases of the gastrointestinal tract [18].

There is evidence that safflower flowers help to improve blood circulation, reduce inflammation, and also can reduce brain damage in connection with impaired blood flow, as well as preventing the occurrence of stroke. In addition, safflower petals help to block cell proliferation. While influencing the human body, safflower tea helps to relieve inflammation, prevents cell proliferation, and also improves blood circulation. Very often it is prescribed as a means of preventing psoriasis and malignant tumors. The composition of safflower flowers contains a fairly large number of useful substances used in the fight against numerous pathologies. Very often safflower is used in the treatment of pneumonia, jaundice, and also gastritis. In the case of gynecological diseases such as metritis and amenorrhea, the use of this plant is also shown. Quite often, this plant is also used as a choleretic and laxative agent. Safflower has some other useful properties. So, for example, it also has diuretic, stimulating, emetic, antiseptic and astringent effects.

A decoction of the flowers of this plant treats peptic ulcer, gastritis, jaundice, and enterocolitis. The seeds of this plant provide with a blood-purifying and laxative effect. It is believed that the greatest benefits of this tea are cleansing the liver and kidneys, increasing sweating and healing of damage to the intestinal walls. Safflower tea is also an intestinal antiseptic. It should be taken for quite a long time, until the skin is completely cleansed, and then periodically carry out cycles of its reception, which helps the proper bowel movement. It should be taken for quite a long time, until the skin is completely cleansed, and then periodically carry out cycles of its reception, which helps the proper bowel movement [18].

Fatty oil from the seeds of safflower can be used in medicine as well as sunflower, its use is known externally for rheumatism. Use of safflower oil helps to low cholesterol. Safflower tincturial is actively used in cosmetics: safflower oil has a high moisture retention and moisture regulating ability and is well absorbed by any skin type as an emollient and moisturizing agent; it is used in shampoos and balms for dry hair, in night creams for dry skin, in sunscreens. As a result of scientific research, it was found that the chemical composition of safflower oil contains a record amount of gamma-tocotrienol compared to other types of vegetable oils, i.e. vitamin E. However, on the other hand, in the composition of safflower oil is completely absent no less important compound – squalene. In order to preserve all the benefits of safflower oil it is produced by cold pressing. However, in the food industry there is safflower oil, made by pressing or extraction. Safflower oil is actively used for medical as well as dietary purposes [18].

For example, with obesity or overweight, safflower oil helps to normalize the metabolic and digestive processes occurring in the human body. It reduces the amount of abdominal fat, while increasing muscle tissue. Linoleic acid contained in the safflower oil has a positive effect on the human body as a whole, and also contributes to the prevention and treatment of diseases of the cardiovascular system. Safflower oil is used not only as a food or medicine. This type of vegetable oil is actively used in the production of cosmetics for skin care and hair. It is not unreasonably believed that safflower oil can help in the treatment of some serious dermatological diseases. Safflower oil is able to penetrate into the deeper layers of the skin and saturate the cells with the necessary beneficial compounds of natural origin. For this reason, it is safflower oil that is the main component of expensive anti-aging cosmetics. The seed oil of safflower can be used to obtain provitamin A. According to the literature, the highest beta-carotene content in safflower oil is described, namely 12.68 mg / l [18].

The fatty oil obtained from seed kernels is close in taste to sunflower oil, and it is also used in the food industry. The oil extracted from whole seeds is bitter in taste, and therefore it is used for the production of varnish, white paint, enamel, soap, linoleum. Safflower seeds are good food for poultry. Oilcake in small quantities is fed to animals: in 100 kg it contains 55 feed units.

Data generalized indicate a significant variety of applications of plants of the *Carthamus* in popular and traditional medicine; screening experimental studies of scientific medicine have shown a wide range of biological activity of this species. Thus, *Carthamus tinctorius L*. is of great interest for the introduction into medical practice by the prevalence of the plant, the cultivation potential, the degree of knowledge of the chemical composition and pharmacological properties.

As of safflower production, Kazakhstan has been among the top five world leaders since 2000, and in 2010, with a harvest of 122.24 thousand tons, it became the second after India. In addition to these countries, safflower is actively grown in China, Uzbekistan, Ukraine, Australia, USA, Mexico, Argentina, Ethiopia, Tanzania.

There are several studies using of Safflower in ophthalmology practice.

The neuroprotective properties of Honghua was examined, an extract of safflower used as an herbal medicine in China, in several experimental models of retinal ischemia [4].

The possibility that previously demonstrated reductions in photoreceptor sensitivity to light in n-3 fatty-acid-deficient rats that can be explained by alterations in rhodopsin content, and/or function was investigated in rat retina [5].

The nature and reversibility of biochemical and functional changes in the retina encountered over a single generation of dietary n-3 polyunsaturated fatty acid deficiency in guinea pigs [6].

The molecular species composition of ethanolamine glycerophospholipids (EGP) in the primate retina and to examine the effects of different dietary fats, the authors fed rhesus monkeys diets containing widely ranging amounts of n-3 fatty acids was characterized.

Diets of differing n-3 fatty acid content had profound qualitative and quantitative effects on the molecular species of retinal phospholipids, and the replacement of 22:6(n-3) by 22:5(n-6) in the retinas of n-3 deficient monkeys was asymmetric and functionally incomplete [7].

A phytochemical study of the aerial organs of the safflower tinctorial was carried out. A technique has been developed for quantitative analysis of the amount of flavonoids in the safflower flowers. When using the results of phytochemical studies, it can be argued that safflower is not only a promising oilseed crop, but also a potential domestic medicinal raw material. Thus, the safflower tinctorial cultivated in the territory of the Samara region is promising for further justification of its use in medicine and pharmacy [8].

Recycling of docosahexaenoic acid in rat retinas during n-3 fatty acid deficiency was investigated. Analysis of plasma, liver, and the contralateral (non-injected) eye showed that the specific activity of 22:6 (n-3) was less than 1 % of the 22:6 (n-3) in the injected eye.These results suggest that, during n-3 deficiency, the retina conserves 22:6 (n-3) by recycling this fatty acid within the eyes [9].

Fat-*1* mice can convert n-6 to n-3 fatty acids endogenously, resulting in the accumulation of n-3 fatty acids in major tissues. Highly enriched DHA and n-3 VLCFA in the retina lead to supernormal scotopic and photopic ERGs and increases in Mu¨ller cell reactivity and oxidative stress in photoreceptors. The regulation of n-3 fatty acids levels and of the n-6/n-3 fatty acid ratio are essential in preserving retinal integrity [12].

Docosahexaenoic acid can protect against hereditary retinal degenerations in transgenic mice expressing the V20G, P23H, and P27L (VPP) rhodopsin mutations was determined [13].

Polyunsaturated fatty acids (PUFA), especially docosahexaenoic acid (DHA, 22:6n-3), are enriched in phospholipids of vertebrate rod outer segments (ROS). Retinal ROS can incorporate 22 carbon (C-22) PUFA from the plasma pool where C-20 PUFA are predominant. In this study, we analyzed the fatty acid composition of retinal pigment epithelium (RPE) and ROS from rats fed different fatty acid supplements to determine whether this enrichment is at the photoreceptor-RPE boundary or the RPE-choriocapillaris boundary [14].

The effects of n-3 and n-6 polyunsaturated fatty acids (n-3 and n-6 PUFAs) in a murine model of herpetic chorioretinitis was examined. Results showed that mice fed on Menhaden oil (n-3 PUFAs) presented an early development of contralateral chorioretinitis by day 6 post-AC HSV-1 inoculation and also a significant increase in RNA HSV-1 expression compared with animals fed on Safflower and Corn oils. This increase of HSV-1 could be associated with the higher development of chorioretinitis. [15].

For a long time *C. tinctorius* has been used in traditional medicines as a purgative, analgesic, antipyretic and an antidote to poisoning [18].

The objective of this review has been to show the recent advances in the exploration of *C. tinctorius* as phytotherapy and to illustrate its potential as a therapeutic agent. With the current information, it isevident that *C. tinctorius* has pharmacological functions including antioxidant, anti-inflammation, analgesic, antidiabetic, hepatoprotective and antihperlipidemicactivities, among others [17]. As the current information shows, it is also possible that furanocoumarins might be useful in the development of new drugs to treatvarious diseases.

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САФЛОРАНЫ (*CARTHAMUS TINCTORIUS L*) (МАҚСАРЫ) ОФТАЛЬМОЛОГИЯДА ҚОЛДАНУДЫҢ КЕЛЕШЕГІ

Аннотация. Дәрілік өсімдік шикізаты және оның негізінде жасалынған фитопрепараттар адамды емдеу фармакотерапиясында маңызды рөл атқарады. Соңғы жиырма жылда емдеу және профилактикалық дәрілік заттар ретінде өсімдік шикізаты негізінде жасалған дәрілерге сұраныс дүние жүзінде күн санап артып келеді. Бұл дәрілік өсімдіктегі биологиялық белсенді заттың, дәрумендердің, антиоксиданттардың, микроэле-менттердің және т.б. кешенді түрде адам ағзасына әсер етуі жоғары және жанама әсерінің төмен болуымен түсіндіріледі. Қазақстан Республикасында тіркелген дәрілік заттардың ішінде офтальмологияда қолданылатын дәрілер жалпы дәрілер санының 3 %-ын құрайды. Бұл дәрілік заттардың барлығы да – синтетикалық дәрілер. Фитофармакологияның дамуы фитопрепараттарды жасауда ерекше рөл атқарады, сонымен қатар халық және дәстүрлі медицинаның ғылыми негізде кеңінен қолдануға мүмкіндік береді.

Солардың бірі – мақсары (сафлора – *Carthamus tinctorius L)* өсімдігі. Мақсары (*Carthamus tinctorius* L.) күрделігүлділер тұқымдасына (*Compositae*) жатады. Құрамында А, Е дәрумендері, көп мөлшерде полиқанықпаған май қышқылдары, линол қышқылы (70 %) және аз мөлшерде стеарин қышқылы бар моноқанықпаған олеин қышқылы (10 %) бар. Медицина саласында микробқа, бактерияға, зеңге қарсы, қабынуға қарсы, антиоксидантты қасиетке ие. Құрамында дәрумендердің болуы, аталған фармакологиялық әсерлеріне байланысты, осы дәрілік өсімдіктен офтальмология саласында қолданатын препарат жасап, оны практикаға енгізудің болашағы зор. Сондықтан біз алғаш рет Қазақстанның оңтүстік аймағында өсірілетін мақсары дәнінің сығындысынан көзге арналған тамшының оптималды құрамын дайындадық.

Осы мақсатта мақсары (сафлора – *Carthamus tinctorius L)* өсімдігі бойынша ғылыми мақалаларға талдау жасадық. Әдебиеттік шолуға алынған мақалаларды «Google Scholar» ғылыми іздеу жүйелерімен және Web of science, PubMed, Medline, E-library и Cyberleninka индекстелетін деректер қорынан алдық.

Халық медицинасында мақсары шайын қан аздығымен ауыратын, аяқ-қолы ұйып қалатын ауруларда қолданады. *C. Tinctorius* су сығындысы халық медицинасында жүрек-тамыр ауруларын клиникалық емдеу үшін кеңінен қолданылатын көктамыр ішіне инъекция ретінде әзірленген. Қазақстандық өсімдіктер карантині және қорғауды бақылау ғылыми зерттеу институты мәліметтері бойынша, мақсары шайын екі апта бойы қабылдаған адамдардың қан тұтқырлығының нормаға түсетіні, гипертониктердің қысымы төмендегені, төмен қысым қалпына келетіні, сондықтан мақсары шайы артериялық қысымға әсер ететіні анықталған. C. Tinctorius – жүрек-тамыр, цереброваскулярлық және гинекологиялық ауруларда қолданылатын рецептілер үшін маңызды дәрілік зат. Мақсары гүлдері қан айналымын жақсартып, қабынуды азайтады және қан ағымының дұрыс болмауына байланысты миды зақымданудан сақтайды, сонымен қатар инсульттың пайда болуына жол бермейтіні туралы мәліметтер бар. Одан басқа, мақсары жапырақтары жасушаның бөлінуіне тосқауыл болуға көмектеседі. Мақсары шайы адамның ағзасына әсер ете отырып, қабыну процестерін тоқтатуға көмектеседі, жасушалардың бөлінуінің алдын алады, сонымен бірге қан айналымын жақсартады. Оны өте жиі қатерлі ісіктердің және псориаздың алдын алу үшін дәрі ретінде қолданады. Пневмонияны, сары ауруды, гастритті емдегенде өсімдікті өте жиі қолданады. Метрит және аменорея сияқты гинекологиялық ауруларда осы өсімдіктің қолданылуы көрсетілген. Сондай-ақ бұл өсімдікті өт айдайтын және іш жүргізетін дәрі ретінде өте жиі пайдаланады. Мақсарыға басқа да бірнеше пайдалы қасиеттер тән. Мысалы, ол несеп жүргізетін, ынталандыратын, құстыртатын, антисептикалық қасиеттерімен белгілі.

Жинақталған мәліметтер *Carthamus* тұқымды өсімдіктің алуан түрлілігін дәстүрлі медицинада көрсетеді; скринингтік эксперименталды ғылыми медицинаның зерттеулері бұл түрдің кең түрдегі биологиялық белсенді спектрін көрсетеді.

Біздің ғылыми жұмысымыз сафлора негізінде жасалған көз тамшысын фундаменталды және қолданбалы офтальмологияда зерттеумен байланысты.

Тірек сөздер: мақсары, көз аурулары, офтальмофармакология, фитопрепараттар

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ПЕРСПЕКТИВЫ ПРИМЕНЕНИЯ САФЛОРА (*CARTHAMUS TINCTORIUS L*) В ОФТАЛЬМОЛОГИИ

Аннотация. Лекарственное растительное сырье и препараты на его основе продолжают играть важную роль в фармакотерапии многих хронических и вялотекущих заболеваний человека. За два последних десятилетия во

всем мире возник очень высокий спрос потребителей на лекарственные и профилактические средства, полученные из природных растительных источников. Это объясняется комплексным воздействием биологически активных веществ, витаминов, антиоксидантов, микроэлементы и др. растительного происхождения на организм человека и практическое отсутствие у них побочных эффектов. Маркетинговый анализ зарегистрированных лекарственных средств, применяемые в офтальмологии в Республике Казахстан, составляет – 3 % от общего количество. Все лекарственные препараты синтетического происхождения часто вызывают побочные эффекты, такие как раздражение и различные аллергические реакции. Анализ развития фитофармакологии показывает, что наиболее перспективным направлением в области разработки фитопрепаратов является научно обоснованное использование опыта народной и традиционной медицины.

Один из перспективных видов сырья – лекарственное растение сафлор (*Carthamus tinctorius* L). Принадлежит к семейству сложноцветных (*Compositae*). Содержит витамины А, Е, большое количество полиненасыщенных жирных кислот, линолевой кислоты (70 %) и мононенасыщенной олеиновой кислоты (10 %) с небольшим количеством стеариновой кислоты и другие биологически активные вещества в значительных количествах, которые обуславливают противовоспалительные, антимикробные, антиоксидантные свойства. Благодаря этим фармакологическим эффектам и содержание витаминов является перспективным для разработки и внедрения лекарственного средства, используемого в области офтальмологии. Поэтому мы впервые сделали оптимальный состав глазных капель на основе экстракта семян сафлора, выращиваемых на огромной территории в южных регионах Казахстана.

С этой целью нами были проведен анализ научных публикаций по сафлору – *Carthamus tinctorius L*. Все принятые к формированию обзора статьи были найдены при помощи научной поисковой системы «Google Scholar» и были индексированы в базах данных Web of science, PubMed, Medline, E-library и Cyberleninka.

В народной медицине сафлорный чай применяют больные с сердечной недостаточностью, страдающие малокровием, онемением верхних и нижних конечностей. По наблюдениям в КазНИИ защиты и карантина растений выявлено, что у лиц после двухнедельного приема сафлорного чая наблюдалось снижение вязкости крови до нормы, у гипертоников снижается давление, а низкое давление нормализуется, поэтому можно сказать, что сафлорный чай оказывает влияние на артериальное давление. Есть данные о том, что цветки сафлора способствуют улучшению кровообращения, уменьшают воспаление, а также способны уменьшать повреждения мозга в связи с нарушением притока крови, а также предотвращая возникновение инсульта. Воздействуя на организм человека, чай из сафлора помогает снять воспалительные процессы, предупреждает пролиферацию клеток, а также улучшает циркуляцию крови. Очень часто его назначают в качестве средства профилактики псориаза и злокачественных новообразований. Сафлор используют в лечении пневмонии, желтухи, а также гастрита. В случае таких гинекологических заболеваний, как метрит и аменорея также показано применение этого растения. Данное растение используют также в качестве желчегонного и слабительного средства. Присущи сафлору и некоторые другие полезные свойства. Так, к примеру, он обладает еще мочегонным, стимулирующим, рвотным, антисептическим и вяжущим действиями.

Обобщенные данные указывают на значительное многообразие применения растений рода *Carthamus* в народной и традиционной медицине; скрининговые экспериментальные исследования научной медицины показали широкий спектр биологической активности данного вида.

Наша научная работа сосредоточена на исследовании глазных капель на основе сафлора в фундаментальной и прикладной офтальмологии.

Ключевые слова: сафлора, глазные болезни, офтальмофармакология, фитопрепараты.

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SCREENING OF *ASPERGILLUS FUNGI* FOR EXTRA CELLULAR PROTEASE AND COLLAGENASE PRODUCTION

Abstract. Protease and collagenase are the most important enzymes used for the processing of meat raw materials. In the meat industry, proteolytic enzymes are used to accelerate the maturation of meat and increase its yield. The use of enzyme preparations in meat processing makes it possible to rationally use meat raw materials, intensify technological processes, improve quality and expand the range of products. Collagenase, unlike protease, acts on those connective proteins of meat raw materials that determine its stiffness, breaking down hard-hydrolyzable and non-digestible collagen. The aim of this study was selection of strains of industrially valuable micromycetes from the collection of micromycetes that have the ability to synthesize extracellular protease and collagenase and create a fungal association. A comparative characterization of 7 strains of micromycetes of the genus *Aspergillus* and *Penicillium* - potential producers of protease and collagenase enzymes, was carried out. *A. awamori 16* and *A. awamori 22* showed the highest clearance zones and was used for further studies. The clearance zones of casein of *A. awamori 16* on day 5 were 22.8 mm, and collagen 20.8 mm, while the clearance zones of casein of A. awamori 22 were 20.1 mm, and collagen - 19.1 mm.

Keywords: *Aspergillus*, enzymes, protease, collagenase.

Introduction. Nowadays, the meat processing industry is developing new recipes and technologies using secondary meat and other food raw materials containing a sufficient amount of proteins, fats, vitamins and trace elements. In this regard, it is of great interest to use enzymes that allow the rational use of protein resources, increase the biological value of meat dishes by increasing the proportion of collagen proteolysis products – the fibrillar protein that forms the basis of connective tissue [1-3]. The use of enzyme preparations positively affects the tenderness, juiciness, nutritional value of meat raw materials, the formation of the required level of water-binding and adhesive ability, improves its organoleptic characteristics due to the targeted effect of enzymatic complexes on the components of muscle tissue [4-6].

The use of enzyme preparations in the production of meat products makes it possible to rationally use raw meat, to intensify technological processes, improve quality and expand the range of products. Of greatest interest for the processing of raw meat are the enzymes protease and collagenase. Recently, a search for microorganisms capable of intensive synthesis of these enzymes has been actively conducted. The producers of these enzymes were found among *Actinomycesrimosus, Streptomyces griseus, Actinomycesfradiae*, etc. [7-10]. The proteolytic enzymes of bacteria of the genus *Bacillus* were studied. [11, 12]. Despite the fact that among microorganisms producing protease and collagenase bacteria, fungi, yeast and actinomycetes are noted, micromycetes have recently become widespread due to the ease of their cultivation and high productivity. The preparations from micromycetes of the genus *Aspergillus, Penicillium*, and others are successfully used [13-15].

In this regard, the selection of active strains of micromycetes – producers of enzymes and the creation based on an associative culture that will have both protease and collagenase activity.

Materials and Methods. The objects of research were micromycetes of the genus *Aspergillus* and *Penicillium* from own collection of microorganisms. The research work was conducted using accepted microbiological and biochemical research methods. The initial cultures were grown on potato – dextrose

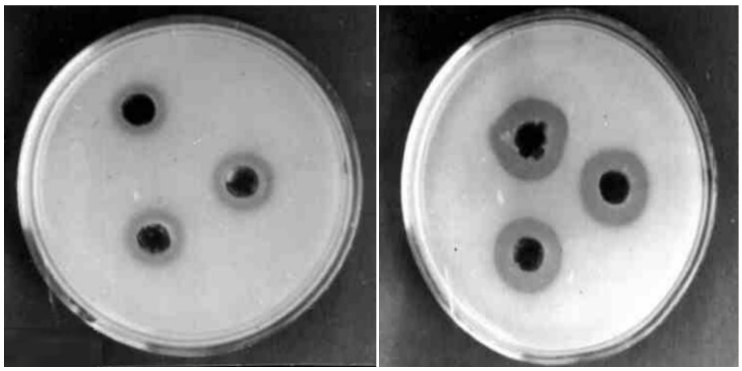
agar for 5 days at a temperature of 30 °C. The primary selection of the culture according to the level of protease formation was carried out by a qualitative method by measuring the diameter of the clarification (hydrolysis) zones of the substrate by the cultures under study for 3-5 days of incubation (in mm) at 30 °C. Skim milk with agar was used as a substrate [16].

The primary selection of producers of collagen-cleaving enzymes was carried out in Petri dishes on Chapek-Doks medium containing purified collagen as a substrate [17]. The ability of the culture to hydrolyze the substrate was evaluated by the size of the zones of substrate hydrolysis on the 5th day of growth.

Proteolytic activity (PA) was determined according to GOST 20264.2-88 [18]. The amount of enzyme that catalyzes the hydrolysis of 1 g of protein in 30 minutes under standard conditions to products not precipitated with trichloracetic acid was taken as a unit of proteolytic activity.

Collagenase activity was determined in the culture fluid filtrates using the method based on spectrophotometric determination of free amino acids formed during collagen hydrolysis using the ninhydrin reagent [19]. A collagen suspension was obtained by incubating the substrate in a buffer solution at 370 for 1 day. A buffer was prepared at pH 7.4, which contained Na_2HPO_4 (1.76 g/L), NaCl (8.8 g/L) in 1L of distilled water in the presence of 0.2 μM CaCl2. In order to determine collagenase activity, 1 ml of a collagen suspension was poured into a 1 ml experimental sample and the mixture was incubated at 370 for 18 h, after which 1 ml was taken from the incubation mixture and 2 ml of ninhydrin reagent (fresh prepared 2% ninhydrin in acetone) were added to it. It was held for 20 minutes at 1000, the volume of each sample was adjusted to 10 ml with distilled water, and the optical density was measured on a spectrophotometer at 600 nm.

Results and Discussion. A search for protease and collagenase producers was carried out among microscopic fungi of the genus *Aspergillus* and *Penicillium*, known as potential producers of the studied enzymes. For this purpose, a comparative characterization of 7 strains from our own collection of microorganisms was carried out – *Aspergillus awamori 16, Aspergillus awamori 22, Aspergillus awamori 21/96, Aspergillus oryzae 3-9-15, Aspergillus niger P, Aspergillus foetidus* and *Penicillium chrysogenum 241*. Tthe substrate was evaluated by the size of the zones of enlightenment on the 5th day of growth (picture).



Casein clearing zone assay

The clear zone formation concerns the ability of colonies with confirmed casein hydrolysis, i.e. with the ability to synthesize an enzyme. The larger the hydrolysis zone, the more actively the culture forms an enzyme. The data obtained are presented in table 1.

According to the Table 1, the strains *A. awamori 16* and *A. awamori 22* were the most active in the ability to split casein and collagen. The hydrolysis zones of casein *A. awamori 16* for 5 days were 22.8 mm, and collagen 20.8 mm, while the hydrolysis zones of casein *A. awamori 22* amounted to 20.1 mm, and collagen – 19.1 mm. The strains of *A. oryzae 3-9-15* and *A. niger* P, which did not produce substrate cleavage zones, had the least enzymatic activity. In order to determine the activity of protease and collagenase by selected cultures of *A. awamori 16* and *A. awamori 22*, they were cultured under submerged conditions on a liquid nutrient medium. After 3 days, the activity of extracellular protease and collagenase was determined (table 2).

Table 1 – Selection of the active variant – producer of protease and collagenase

Culture	Diameter of Casein cleavage zones (mm)	Diameter of Collagen cleavage zones (mm)
Aspergillus awamori 16	22,8±1,7	20,8±2,0
Aspergillus awamori 22	20,1±1,3	19,1±1,5
Aspergillus awamori 21/96	16,3±2,0	13,3±1,9
Aspergillus oryzae 3-9-15	0	16,9±1,9
Aspergillus nige rII	0	0
Aspergillus foetidus	11,5±1,4	11,3±1,2
Penicillium chrysogenum 241	11,2±1,7	12,8±1,8
Control	0	0

Table 2 – Enzymatic activity of monocultures and fungal association

Culture	Protease Activity, U/ml	Collagenase activity, U/ml
A. awamori 16	3,4±0,5	4,6±0,8
A. awamori 22	3,0±0,6	4,3±0,7
Association *A. awamori 16* and *A. awamori 22*	4,2±0,6	6,8±0,8

The next stage of the research was the creation of an association of selected strains of *A. awamori 16* and *A. awamori 22* – producers of proteolytic and collagen-cleaving enzymes. For this purpose, a joint cultivation of selected producers in a liquid nutrient medium was carried out in deep growth conditions. After 3 days, the activity of extracellular protease and collagenase associative culture was determined. The data obtained are presented in table 2.

According to the data presented in Table 2, the association of micromycetes, consisting of *A. awamori 16* and *A. awamori 22* forms proteolytic and collagen degrading enzymes more actively than their monocultures. Thus, the resulting associative culture is the starting point for its further study in order to obtain an active enzyme preparation for the meat processing industry.

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ПРОТЕАЗА ЖӘНЕ КОЛЛАГЕНАЗА ПРОДУЦЕНТІ *ASPERGILLUS*-ТЕКТІ МИКРОМИЦЕТТЕР СКРИНИНГІ

Аннотация. Ет өңдеу өнеркәсібінде қолданылатын ферменттік препараттардың ішінде протеаза мен коллагеназа ет және ет өнімдерінің консистенциясын жақсарту үшін пайдаланылатын негізгі ферттенттер тобына жатады. Ет өнеркәсібінде протеолитикалық ферменттер еттің пісіп жетілуін жеделдету және оның шығуын арттыру үшін қолданылады. Коллагеназаның протеазадан айырмашылығы – ыдырауы қиын және сіңірілмейтін коллагенді ыдырата отырып, оның қаттылығын анықтайтын ет шикізатының сол дәнекер ақуыздарына әсер етеді. Соңғы уақытта екі немесе одан да көп штамдардан тұратын препараттар жиі қолданылады. Өйткені бір микроорганизм табиғи шикізатты биодеструкциялау үшін қажетті ферментативтік белсенділіктің барлық спектріне ие бола алмайды. Пайдаланылатын субстраттар спектрі бойынша, ерекшеленетін екі штамды қолдану ет шикізатының, әсіресе, оның төменгі бөлігінің қаттылығын анықтайтын дәнекер тіннің толық бұзылуына әкелуі мүмкін. Консорциумда бірнеше штамдарды бірлесіп пайдалану кезінде, олардың әсері күшейеді. Осыған байланысты, бұл зерттеудің мақсаты – коллекциялық культуралардың ішінен жасушадан тыс протеаза мен коллагеназаны синтездеу қабілетіне ие өнеркәсіптік-құнды микромицет штамдарын іріктеу және олардың негізінде қауымдастырылған культураны құру. Протеаза және коллагеназа ферменттерінің продуценттері – *Aspergillus* және *Penicillium* тектес микромицеттердің 7 штамына салыстырмалы сипаттама жүргізілді. Культураның субстратты гидролиздеу қабілеті 5-тәулікте ағару аймағының көлемі бойынша бағаланды. Ағару аймағы көп болған сайын, культура соғұрлым ферментті белсенді түзеді. Культураны протеазаны түзу деңгейі бойынша бастапқы іріктеу

өсірудің 3-5 тәулігінде 30 °С жағдайында субстратты ағарту аймағының (гидролиз) диаметрін өлшеу арқылы сапалы әдіспен жүргізілді. Субстрат ретінде агаризацияланған майсыздандырылған сүт қолданылды. Коллагенді ыдырататын ферменттердің продуценттерін бастапқы іріктеу Петри табақшасында құрамында субстрат ретінде тазартылған коллагені бар Чапека-Докстың агаризацияланған ортасында жүзеге асырылды. *A.awamori 16* және *A. awamori 22* штамдары ең көп белсенділікке ие болды. *A. awamori 16*-да 5-тәулікте казеин гидролизінің аймақтары – 22,8 мм, ал коллагенде – 20,8 мм болса, ал A. awamori – 22-де казеин гидролизінің аймақтары – 20,1 мм, ал коллагенде 19,1 мм-ді құрады. Жүргізілген зерттеулердің келесі кезеңі пртеолитикалық және коллаген ыдыратушы ферменттердің продуценттерінің іріктелген *A.awamori 16* және *A. awamori 22* штамдарынан ассоциацияны құрумен байланысты. Осыған орай, іріктелген продуценттерді екеуін бірге тереңдетіп өсіру жағдайында сұйық қоректік ортада өсіру ісі жүргізілді. *A. awamori* 16 және *A. awamori 22*-ден тұратын микромицеттер қауымдастығы оның монокультурасының құрамдас бөлігіне қарағанда, протеолитикалық және коллагенді ыдырататын ферменттерді белсенді түрде түзетінгі белгілі болды. *A. awamori 22* штамында 3-тәулікте протеазаның белсенділігі – 3,0 б/мл, коллагеназа – 4,3 б/мл, ал *A. awamori* 16 штамында протеазаның белсенділігі – 3-тәулікте 3,4 б/мл, коллагеназа – 4,6 б/мл-ді құрады. *A. awamori 16* және *A. awamori 22* қауымдасқан культурада протеазаның белсенділігі 3-тәулікте – 6,8 б/мл, ал коллагеназа – 4,6 б/мл-ді құрады. Бастапқы культура мен алынған қауымдастықтың макро- және микроморфологиясы берілген. Культура өсірудің 3 тәулігінде ақ жиегі бар радиалды қатпарлы қоңыр түсті, ірі колонияларды құрайтыны анықталды. Конидиеносцалары түзу, қалың, тегіс. Конидиеносцалардың жоғарғы бөлігі көтеріңкі және бастарын құрайды. Стеригмалары қысқа цилиндрлік жасушалар тәрізді.

Кілттік сөздер: *Aspergillus,* ферменттер, протеаза, коллагеназа.

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СКРИНИНГ МИКРОМИЦЕТОВ РОДА *ASPERGILLUS* - ПРОДУЦЕНТОВ ПРОТЕАЗЫ И КОЛЛАГЕНАЗЫ

Аннотация. Из ферментных препаратов, используемых в мясоперерабатывающей промышленности, протеаза и коллагеназа являются основной группой, используемой для улучшения консистенции мяса и мясопродуктов. В мясной промышленности протеолитические ферменты применяют для ускорения созревания мяса и повышения его выхода. Коллагеназа в отличие от протеазы действует на те соединительные белки мясного сырья, которые определяют его жесткость, расщепляя трудногидролизуемый и неусвояемый коллаген. В последнее время все чаще используют препараты, состоящие из двух и более штаммов, поскольку один микроорганизм не способен обладать всем спектром ферментативной активности, необходимым для биодеструкции природного сырья. Использование двух штаммов, отличающихся по спектру потребляемых субстратов, может привести к полной деструкции соединительной ткани, определяющую жесткость мясного сырья, особенно ее низкосортной части. При совместном использовании нескольких штаммов в консорциуме их эффект усиливается. В связи с этим, целью настоящего исследования являлся отбор из коллекционных культур промышленно ценных микромицетов штаммов, обладающих способностью синтезировать внеклеточную протеазу и коллагеназуи, создание на их основе ассоциативной культуры. Проведена сравнительная характеристика 7 штаммов микромицетов рода *Aspergillus* и *Penicillium* – потенциальных продуцентов ферментов протеазы и коллагеназы. Способность культуры гидролизовать субстрат оценивали по размерам зон просветления на 5 сутки роста. Чем больше зоны гидролиза, тем активнее культура образует фермент. Первичный отбор культуры по уровню образования протеазы проводили качественным методом путем измерения диаметра зон просветления (гидролиза) субстрата исследуемыми культурами на 3-5 сутки инкубации (в мм) при 30°С. В качестве субстрата использовали агаризованное обезжиренное молоко. Первичный отбор продуцентов коллагенрасщепляющих ферментов осуществляли в чашках Петри на агаризованной среде Чапека-Докса, содержащей в качестве субстрата очищенный коллаген. Наибольшей активностью обладали штаммы *A. awamori 16* и *A. awamori 22.* Зоны гидролиза казеина *A. awamori 16* на 5 сутки составили 22,8 мм, а коллагена 20,8 мм, тогда как зоны гидролиза казеина *A. awamori 22* составили 20,1 мм, а коллагена - 19,1 мм. Следующим этапом проводимых исследований явилось создание ассоциации из отобранных штаммов *A. awamori 16* и *A. awamori 22* – продуцентов протеолитических и коллагенрасщепляющих ферментов. Для этой цели было проведено совместное культивирование отобранных продуцентов в жидкой питательной среде в глубинных условиях роста. Установлено, что ассоциация микромицетов, состоящая из *A. awamori 16* и *A. awamori 22,* активнее образует протеолитические и коллагенрасщепляющие ферменты, чем

составляющие ее монокультуры. Так, активность протеазы *A. awamori 16* на 3 сутки роста составила 3,4 ед/мл, а коллагеназы – 4,6 ед/мл, тогда как активность коллагеназы *A. awamori 22* на 3 сутки роста составила 3,0 ед/мл, а коллагеназы – 4,3 ед/мл. Активность протеазы ассоциативной культуры *A. awamori 16* и *A. awamori 22* на третьи сутки культивирования составила 4,2 ед/мл, а активность коллагеназы – 6,8 ед/мл. Дана макро- и микроморфология исходных культур и полученной ассоциации. Установлено, что на 3 сутки роста культура образует крупные колонии коричневого цвета, радиально складчатые с белым ободком. Конидиеносцы прямые, толстые, имеют гладкую поверхность. Верхняя часть конидиеносца вздутая и образует головки. Стеригмы представляют собой короткие цилиндрические клетки.

Ключевые слова: *Aspergillus*, ферменты, протеаза, коллагеназа.

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ГРНТИ 36.33.27

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ANALYSIS OF SOIL DEGRADATION AND DESERTIFICATION IN SOUTHERN BALKASH DESERT BASED ON GIS

Abstract. Desertification and degradation provide a clear picture of global environmental and socio-economic issues. Most of Kazakhstan is located in a desert region, including the suburbs of South Balkhash. The reason is that desertification of the region has a strong influence on natural and anthropogenic factors.

To consider the geomorphological state of the region and the problem of desertification of the territory, it is necessary to determine the importance of the process of relief of geological structure and relief of tectonics. In recent years, the environmental situation in Balkhash has deteriorated sharply not only as a result of river flow regulation, but also as a result of non-commercial economic activities. Therefore, it is very important to assess the situation of desertification and degradation in the Balkhash region. Desert vegetation has been identified, since information in the spectral range is often insufficient to describe the state of plants, plant indices often develop by combining two or more spectral bands. Land cover index is the percentage of vegetation over a given surface area. Remote sensing information was used to detect the entire land cover. Remote sensing with time and space limitations is widely used to classify vegetation cover. In this work, the proportion of vegetation was estimated by NDVI. The proportion of land cover is based on the relationship between NDVI (NDVIS) and NDVI (NDVIV) in the soil. Using the NDVI index, land cover zones were determined based on satellite images of 2006 and Landsat-5 from 2011. TCT (Tasseled Cap Transformation) coefficients are used in the widest range of problems solved using Earth remote sensing data: from recognition of the coastline of water bodies to determination of forest disturbances. Stressful vegetation may be an indirect sign of the presence of salt in soils. Saline soils are usually characterized by poorly planted areas. A normalized differential salinity index (NDSI) was also determined.

Key words: degradation, desertification, satellite images, Landsat-5, NDVI.

Introduction. Scientists have used various methods to study deserts. The methods used vary widely depending on the availability of information. The first researchers of the Balkhash region were such naturalists as: A.A. Babkov [1], I.V. Mushketov [2], V. Fisher [3], A.M. Nikolsky [4], G. Karelin, B.F. Meffert [5-6].

"Assessment of the geoecological state of Balkhash". T. Tilekova, M.T. Oshakbaev, A.P. Haustov, 2016. The current environmental problems of the Balkhash region are considered. An assessment is made of the ecological condition of the territory and water resources, among which Lake Balkhash, the Ili, Karatal, Lepsy rivers are identified as the most polluted. The necessity of geoecological monitoring, as well as comprehensive measures to maintain the stability of the Balkhash level, prevent water pollution, protect floodplains of lakes, preserve floodplain forests and saxaul plantations, control desertification processes, is justified. The main pollutants are mining, utilities, the impact of human settlements and agrocenoses, in particular, irrigated agriculture. As a result of the study, it was found that all landscapes in the region underwent changes caused by anthropogenic impact, and are anthropogenically modified natural landscapes [7].

"Formation of anthropic soils in agricultural areas of the south of Balkhash (south of Kazakhstan)" Tazabekova E.T., Usen Azina, 2015. The ecological assessment of the current state of breeding systems is given [6].

"Geographic Information System (GIS) with integrated models: a new approach to assessing the vulnerability and risk of desertification in Sardinia (Italy)" Paola Molinari. The DPSIR (Driving Forces-Pressure-State-Impact-Response) category is used to classify desertification indicators. The desertification index (IDI) was classified according to five risk levels, and the results of field studies were tested in areas selected as areas with high risk areas. "Desertification monitoring using satellite imagery LANDSAT TM" Methods of Wu-Kyun Lee, Du-An Kwak, Sungho Choi, JeonheolLiTwo were used to determine the desertification process. First, the extent and tendency of desertification was determined by classifying the soil cover into four different categories using the Plant Index (NDVI): water-logged desert zone, a partially recorded sand zone, a recorded sand zone and pastures. Secondly, the desertification classification was classified by the Plant Index (ICAID): state of nature, latent state, weak desertification, moderate desertification and high desertification level [8].

"Terrestrial and satellite studies of the productivity of pasture republics of Kalmykia with an affordable degree of degradation of plant communities" A.N. Zolotokrylin, T.B. Titkova, S.S. Ulanova, N.L. Fedorov, 2013.

Using satellite data from NDVI MODIS and NDVI ETM + Landsat-7, we studied the space variations in productivity, identified areas other than the degree of degradation, estimated the correlation between the values of NDVI and the productivity of desert phytocenoses, measured by the number of available methods [9].

"Regional manifestation of global desertification in the north-west of the Caspian Sea" K.M. Petrov, V.A. Bananova, V.G. Lazareva, A.S. Unagaev, 2016. Degradation of vegetation, condition of lands and irrigation systems, fluctuations in the level of the Caspian Sea, development of transport networks, cities and towns in the region are used as objects for monitoring levels of destruction of the natural environment. The concept of cartographic monitoring of degradation of arid ecosystems is discussed and a map of the modern desertification of the Northwest Para-Caspian is proposed. Thanks to GIS technologies, the map can be updated taking into account the dynamic processes of land degradation [10].

"Development of an algorithm for assessing the degree of soil degradation from a multispectral image" V.G. Bondur, A.B. Murynin, A.A. Richter, M.A. Shahramanyan. An algorithmic assessment of the degree of soil degradation using aerospace images is described. A block diagram of a software module that implements the proposed algorithm is presented. An example of the study of soil degradation during littering in areas of large urban landfills is given [11].

The reason of formation of the centers of the mobile sandy barkhans formed as a result of anthropogenic degradation of sandy soils of desert rangelands of SouthernLake Balkhash region is studied. The main soil-hydrological properties the 0-60cm a layer of a sandy barkhan of friable-sandy granulometric composition with absolute prevalence of fine sandy fraction (> 90 %), having very high speed of absorption (8.1 m/min), filtrations (2,1 mm/min), minimumwater capacity (MWC) – 7.3 % and wilting moisture (WM) 1.7 % are defined. Features of the seasonal regime of field moisture of a sandy barkhan, characterized maximum moisture (5,6 %) during the early-spring period, the beginning of deficiency of moisture (~ 2 %) in June and acute shortage of moisture in July, August and in September with moisture of all thickness of a root zone below WM are established [12].

The article provides the data of the seasonal hydrothermal regime of the centers of the mobile barchans formed from sandy soils as a result of anthropogenic degradation, which were widely spread in Southern Balkhash region [13].

Aim of the research. Balkash is a closed semi-freshwater lake in the Balkash-Alakol depression in southeastern Kazakhstan, the second largest non-drying salt and the 14th in the list of the largest lakes in the world (figure 1) [14].

Absolute elevations of the earth's surface vary from 340 m to 500-600 m. The northern and western border of the basin is Lake Balkhash. From the south and east it borders with the spurs of the Zhongar Alatau, and from the southwest it borders with the Shu-Ili mountains [15]. The Early Paleozoic

successions dated by the Cambrian are known in the northwest of the Balkhash lake. This vast area was named the Atasu-Zhamshi watershed [1], that is, thearea located between the rivers Atasu and Mointy. In geological literature, one can find also anothernaming of the Atasu-Mointi watershed[16].The southern Balkhash region is divided into western and eastern parts. On the left bank of the Ili river basin, the Taukum and Moiynkum deserts, and in the middle of the Ili and Karatal rivers – the Saryesik-Atyrau desert. In the east, between the Karatal and Aksu, Zhamanzhal and Lyukum sands and Aral rivers on the lower bank of Aksu and the Lepsy river. The arid climate of the region is characterized by desert landscapes [14]. Balkhash region is mining large-scale polymetallic ores, coal, building materials. Traditionally, large areas were used for pasture. In the region, 16 % of industrial production and 13 % of agricultural production in Kazakhstan, fishing accounts for more [17].

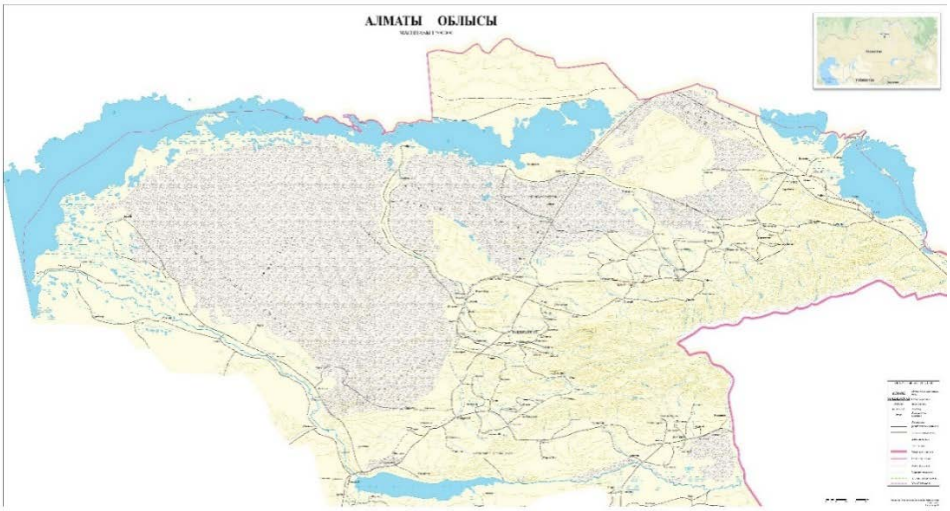

Figure1 – Study area- Southern Balkash Desert

The featureless relief. The climate is continental. Winter is cold, summers are hot, arid. The average temperatures in January are 13-15 °C, July 24 °C. The average annual rainfall is 100-150 mm [18]. The largest river is Ili with a length of 1001 km. On its right bank laid Akdalinsky irrigation system. Numerous bakanas are old dried river beds. On the territory of the district is the Karoy state reserve with an area of 509 thousand hectares. The main soil cover: takyr-like soils and sands on which saxaul, meadowsweet, jujube, wormwood, cheegrass, sedge and others grow. There are wolf, fox, badger, hare, roe deer, saiga, wild boar, muskrat are found in dense reeds. Pheasants, partridges are found in floodplains and river valleys; on ponds – cranes, pelicans, flamingos, etc.; in reservoirs: carp, crucian carp, perch, marinka.

Deposits of coal, manganese and uranium have been explored in the bowels of the Balkhash region. Marble and granite are mined at the Zhalpaktas deposit. In addition, there are deposits of salt, building sand and clay for the production of bricks. All settlements are located in the valley of the Ili River. The basis of the region's economy is agriculture. In crop production – irrigation and rainfed farming (wheat, rice, vegetables and potatoes). The main areas of livestock breeding are sheep breeding, cattle breeding, horse breeding. In the lower reaches of the Ili River, shipping is developed [19].

Materials and methods. The calculation of the normalized differential vegetation index (NDVI), which is available on the fly, comes first. In addition, NDVI is often used around the world to monitor drought, forecast agricultural production, assist in forecasting fire zones and desert attack maps. NDVI is preferred for global monitoring of vegetation, since it helps to compensate for changes in lighting conditions, surface slope, exposure, and other external factors (Figure2) [20].

NDVI is calculated by the formula:

$$Proportion\ of\ vegetation\ cover = \frac{(NIR-Red)}{(NIR+Red)} \quad (1)$$

NIR - reflection in the near infrared spectrum

RED - reflection in the red region of the spectrum

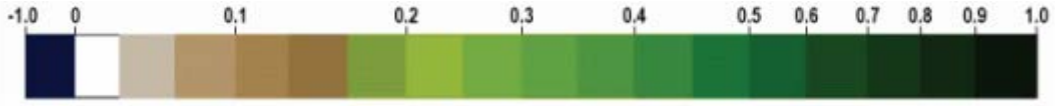

Figure 2 – Discrete NDVI Index Scale

The main research method was the analysis of the normalized relative vegetative index (NDVI – Normalized Difference Vegetation Index), which was first described by B. J. Rouse in 1973[21].

TCT (Tasseled Cap Transformation) coefficients are used in the widest range of problems solved using Earth remote sensing data: from recognition of the coastline of water bodies to determination of forest disturbances [22]. This technique uses the Brightness coefficient TCT.Tasseled Cap Transformation (TCT) is calculated by the formula (table 1).

Table 1 – The calculation formula Tasseled Cap Transformation (TCT) (Healey S.P., et al, 2005).

Tasseled Cap Transformation	Formula
Brightness	0.3037*(b1)+0.2793*(b2)+0.4743*(b3)+0.5585*(b4)+0.5082*(b5)+0.1863*(b7)
Green	0.2848*(b1)-0.2435*(b2)-0.5436*(b3)+0.7243*(b4)+0.0840*(b5)-0.1800*(b7)
Humidity	0.1509*(b1)+0.1973*(b2)+0.3279*(b3)+0.3406*(b4)-0.7112*(b5)-0.4572*(b7)

Salting of soil is the process of enriching the soil with soluble salts, which leads to obtaining information about the soil exposed to salt. Soil salinization in irrigated areas is becoming a serious problem for agriculture. Saline soil conditions have reduced the value and productivity of large areas of land around the world [23]. The main problems associated with arid and semi-arid areas are salinization and desertification. Irrigational evaporation of moisture from the surface or shallow depths within the profile and insufficient annual precipitation for leaching salts from the rooting zone of plants contribute to the excessive accumulation of soluble salts in soils of arid and semi-arid regions, which makes such lands with minimal success.Sixteen different spectral salinity indices developed in numerous studies related to salt detection and soil salinity mapping were studied for all Landsat images and seven salinity indices were most commonly used (NDSI, SI 1, SI 2, SI 4, SI 9, SI 10, SI 14) taken into account in this study are shown in table 2 [24]. The digital elevation model (DEM) can also be used to predict soil salinization taking into account the variographic morphology of the earth's surface in order to increase the accuracy of its prediction [25].

Table 2 – The most common salinity indicators [26]

Salinity indices	Equation	Reference
Normalized Differential Salinity Index	NDSI=$\frac{(R-NIR)}{(R+NIR)}$	(Khan, Rastoskuev et al. 2001)
Salinity Index 1	SI1=$\sqrt{B \times R}$	(Khan, Rastoskuev et al. 2001)
Salinity Index 2	SI2=$\sqrt{G \times R}$	(Douaoui, 2006)
Salinity Index 4	SI4=$\sqrt{G^2 + R^2}$	(Douaoui, 2006)
Salinity Index 9	SI9=$\frac{(B_5 \times B_6\ B_6 \times B_6}{B_5}$	(Bannari, Guedon et al. 2008)
Salinity Index 10	SI10=$\frac{B}{R}$	(Abbas, 2007)
Salinity Index 14	SI14=$\frac{R \times NIR}{G}$	(Abbas, 2007)

For the tasks of determining the degree of salinization of the soil cover of the project territories, as one of the factors of desertification, it is recommended to use this index during monitoring [23].

Results and discussion. Landsat TM data for 2006 and 2011 were taken for this research (table 4, figure 3). The image has seven bands with a resolution of 30 m pixels. Image analysis was performed using ArcGIS 10.3.

Table 4 – Data used

Image	Image data
Landsat TM5	09.09.2006; 02.09.2006; 11.09.2006; 19.09.2006
Landsat TM5	07.09.2011; 15.09.2011; 08.09.2011; 18.09.2011

The stage of Earth remote sensing data analysis, the main task of which is the recognition and identification of objects detected in the image, is called image decryption.

For Landsat-5 images, in accordance with the process of soil degradation, salinization, and desertification, the interpretation of these channel combinations was chosen, i.e., the color combination 7.5.3. This combination gives an image close to natural colors, but at the same time allows you to analyze the state of the atmosphere and smoke. Healthy vegetation looks bright green, grassy communities look green, bright pink areas detect open soil, brown and orange tones are typical for sparse vegetation. Dry vegetation looks orange, water – blue. Sand, soil and minerals can be represented by a very large number of colors and shades. This combination gives an excellent result in the analysis of deserts and desertified territories [27].

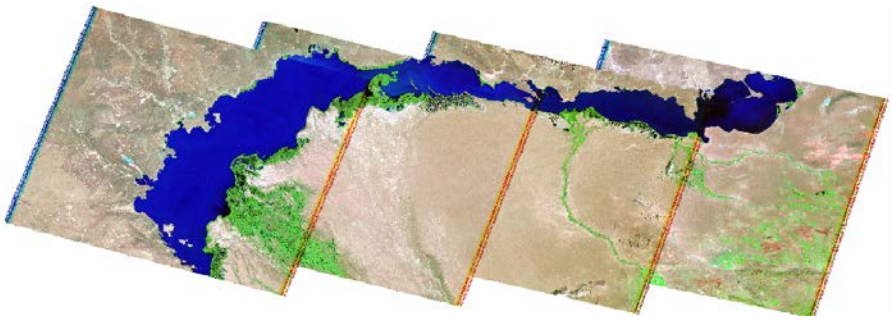

Figure 3 – Satellite image of the Southern Balkash Desert (Landsat TM5)

The formula used to calculate the NDVI of the study area:

$$\mathrm{NDVI} = \frac{(\mathrm{BAND4}-\mathrm{BAND3})}{(\mathrm{BAND4}+\mathrm{BAND3})} \quad (2)$$

The formula used to calculate the SI2 of the study area:

$$\mathrm{SI2} = \sqrt{\mathrm{band2} \times \mathrm{band3}} \quad (3)$$

The formula used to calculate the TCT (Tasseled Cap Transformation) of the study area:

$$TCT = 0.304 * \mathrm{b1} + 0.279 * \mathrm{b2} + 0.474 * \mathrm{b3} + 0.559 * \mathrm{b4} + 0.508 * \mathrm{b5} + 0.186 * \mathrm{b7} \quad (4)$$

As a result, the map “Degradation map of desert soils of the South Balkash region, 2006” and the Degradation map of desert soils of the South Balkash region, 2011” was compiled on a scale of 1: 2 500 000 (figures 4, 5).

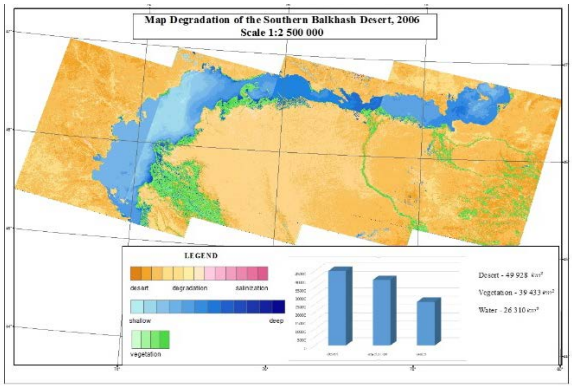

Figure 4 – Soildegradation map of the Southern Balkash deserts based on GIS, 2006

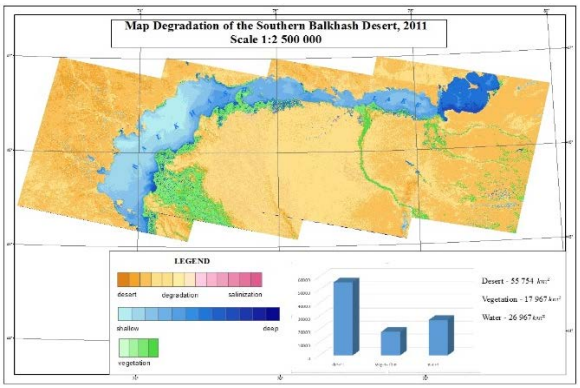

Figure 6 – Soil degradation map of the Southern Balkash deserts based on GIS, 2011

The obtained values of NDVI, SI, TCT are varied (table 5). We showed this difference in the form of diagrams (figures 7, 8). For example, if in 2006 the total area of SI was 49928 km^2, and in 2011, the total area was 55754 km^2. NDVI in 2006 was 39433 km^2, and in 2011, the area was reduced to 17967 km^2.

Table 5 – The obtained values of NDVI, SI, TCT

Index	2006	2011
SI	49928 км^2	55754 км^2
NDVI	39433 км^2	17967 км^2
TCT	26310 км^2	26975 км^2

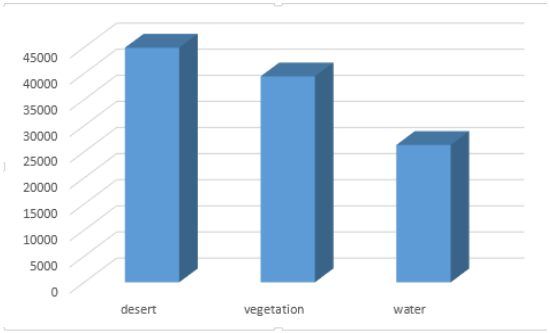

Figure 7 – The calculatedindixes, 2006

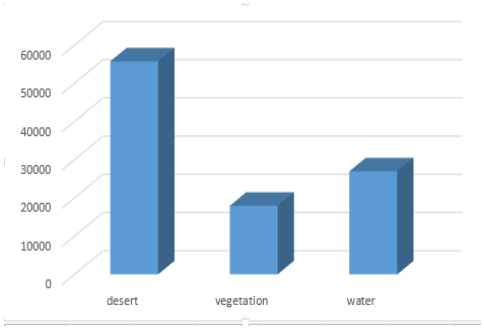

Figure 8– The calculatedindixes, 2011

Conclusions. Most part of the study area has been changed to a high level of desertification and an average level of degradation. You can use images taken at different times, which leads to some seasonal differences in the vegetation cover. Such differences could affect the comparison of desertification rates from 2006 to 2011.

This study performed several tasks related to degradation and desertification. The main tasks are to identify plant indices and vulnerability to soil erosion, and the degree of salinity. In the Southern Balkhash desert, we can observe a relative decrease in the distribution of vegetation based on biennial satellite imagery through NDVI, which has a different standardized vegetation index. In addition, the main problems associated with arid and semi-arid areas are salinity (NDSI) and desertification. The obtained values of NDVI, NDSI are varied. We showed this difference in the form of diagrams. For example, if in 2006 the total area of NDSI was 49,928 km^2, and in 2011, the total area was 55,754 km^2.

This index classification is a natural histogram breakdown algorithm (which determines gaps between classes, which divide the same values into groups and maximize differences between classes). The prevalence of vegetation cover, the risk of soil erosion and the results have been summarized.

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ОҢТҮСТІК БАЛҚАШ ШӨЛІНІҢ ТОПЫРАҚ ДЕГРАДАЦИЯСЫН ЖӘНЕ ШӨЛДЕНУІН ГАЖ АРҚЫЛЫ ТАЛДАУ

Аннотация. Шөлдену және топырақ деградациясы жаһандық экологиялық және әлеуметтік-экономикалық мәселелердің айқын көрінісін білдіреді. Шөл аймақтарының пайда болуына климаттың аридтілігі, топырақтың және өсімдіктің дефляциялық және эрозиялық әректтері нәтижесінде беткі бедердің бұзылуы, эолдық үдерістердің қарқындылығы және тағы басқа табиғи факторлар ғана әсер етіп қоймай, антропогендік іс-әрекеттердің, яғни егістік және жайылым жерлерді тиімсіз пайдалану, су ресурстарын ысырапсыз пайдалану сияқты жағдайлар да табиғатқа кері ықпалын тигізіп жатыр.

Шөлейттену – табиғат пен табиғаттың қолайсыз құбылыстары, бір-бірін нығайтатын табиғат ортасы сипаттамаларының өзгеруіне әкелетін ұзақ тарихи үдерістің нәтижесі. Қазақстанның көп бөлігі шөл

аймағында жатыр, соның ішінде Оңтүстік Балқаш маңы аумағын ерекше атап айтуға болады. Себебі бұл өңірдің шөлденуіне табиғи және антророгендік факторлар қатты әсер етіп отыр. Бұл зерттеу жұмысында шөлдің өсімдік жамылғысын талдау нәтижелері қарастырылды. Өсімдіктердің жай-күйін сипаттау үшін бір спектральды диапазондағы ақпарат әдетте жеткіліксіз болғандықтан, өсімдік индекстерінің көбінесе екі немесе одан да көп спектральды жолақтарды біріктіру арқылы дамиды. Өсімдік жамылғысы индексі – белгілі бір беткей аумағындағы өсімдіктер аймағының үлес мөлшері. Сонымен қатар зерттеу аймағының өсімдік жамылғысын анықтап, талдау үшін арақашықтықтан зерделеу (зондтау) туралы ақпараттар қолданылды. Уақыт пен кеңістік шектеулерімен арақашықтықтан зерделеу өсімдік жамылғысын жіктеуде кеңінен қолданылады.

Бұл жұмыста өсімдік жамылғысының үлесі NDVI бойынша бағаланған, ал өсімдік жамылғысының үлесі топырақта NDVI (NDVIS) және өсімдіктегі NDVI (NDVIV) арасындағы қатынастарды ескере отырып, өсімдік жамылғысының үлес салмағына байланысты бес класқа бөлінді. NDVI индексі арқылы өсімдік жамылғысының таралу аймақтары 2000 жылға дейін және 2000 жылдан кейінгі Landsat-5 ғарыштық сурет негізінде салыстырмалы түрде анықталды. ТСТ коэффициенттері арақашықтықтан зерделеу мәліметтерін қолдану арқылы шешілетін мәселелердің кең спектрінде қолданылады: су объектілерінің жағалау сызығын танудан бастап, орманның бұзылуын анықтауға дейін. Стрессті өсімдіктер топырақта тұздың болуының жанама белгісі болуы мүмкін. Тұзды топырақ әдетте нашар отырғызылған жерлермен сипатталады. Қалыпты дифференциалданған тұздылық индексі (NDSI) анықталды.

Түйін сөздер: деградация, шөлдену, ғарыштық суреттер, Landsat-5, NDVI.

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АНАЛИЗ ДЕГРАДАЦИИ И ОПУСТЫНИВАНИЯ ПОЧВ ПУСТЫНЬ ЮЖНОГО ПРИБАЛХАШЬЯ С ПРИМЕНЕНИЕМ ГИС

Аннотация. Опустынивание и деградация почв представляют четкую картину глобальных экологических и социально-экономических проблем. На опустынивание влияют не только климатические факторы, нарушение рельефа поверхности вследствие дефляции и эрозии почвы и растительности, интенсивность ветровых процессов и другие природные факторы, но также антропогенные действия, такие как неэффективное использование пахотных и пастбищных земель и расточительное использование водных ресурсов. также оказывают негативное влияние на природу.

Опустынивание является результатом длительного исторического процесса, который приводит к неблагоприятным воздействиям природы и природы, которые изменяют характеристики усиливающей среды. Большая часть Казахстана находится в пустынном регионе, включая пустыни Южного Прибалхашья. Опустынивание территории обусловлено влиянием природных и антропогенных факторов на экосистему пустыни.

В последние годы экологическая ситуация в пустыне Южного Прибалхашья резко ухудшилась не только в результате регулирования речного стока, но и в результате антропогенного воздействия. В данной работе исследования рассмотрены результаты анализов пустынной растительности. Информация в спектральном диапазоне недостаточно для описания состояния растений, поэтому индексы растений часто развиваются путем объединения двух или более спектральных полос. Индекс растительного – это доля растительности на определенной площади поверхности. Кроме того, использовались материалы дистанционного зондирования для выявления и анализа растительного покрова исследуемой территории. Так как дистанционное зондирование с ограничениями по времени и пространству широко используется для классификации растительного покрова. В этой работе доля растительности была оценена с помощью индекса NDVI. Доля растительного покрова основана на взаимосвязи между NDVI (NDVIS) и NDVI (NDVIV) в почве. С помощью индекса NDVI зоны растительного покрова были определены на основе спутниковых снимков Landsat-5 (2006 г и 2011 г). Коэффициенты ТСТ применяются в самом широком спектре задач, решаемых с помощью данных ДЗЗ: от распознавания береговой линии водоемов до определения нарушений лесов. Стрессовая растительность может быть косвенным признаком наличия соли в почвах. Засоленные почвы характеризуются плохо выраженным растительным покровам. Также был определен нормализованный разностный индекс засоленности (NDSI).

Ключевые слова: деградация, опустынивание, космические снимки, Landsat-5, NDVI.

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STUDY AND MAPPING OF DEGRADATION OF THE ARALKUM DESERT

Abstract. Desertification is a land degradation in arid, semi-arid and dry sub-humid areas as a result of various factors, including climate change and human activities. The Aral Sea is called the once large, and now almost dry, salt lake, which today looks like a large salt desert. Its drying is considered one of the greatest environmental disasters of our time, because only 50 years ago it was one of the four largest lakes on our planet. In the 1990s, the western world learned about the environmental disaster of what used to be the fourth largest lake in the world - The Aral Sea. The abrupt drying of the Aral Sea led to the intensive development of desertification processes in the region and the formation of the new man-made Aralkum desert.

The main method for determining the soil degradation of the Aralkum desert is the calculation of indices. The selected methods are widely known and repeatedly applied in world practice methods for processing satellite images. So, all of the listed spectral indices are universal. The uniqueness of this technique lies in the determination of the exact ranges of values for each of the spectral indices in the identification of various indicators of desertification.

Key words: degradation, desertification, satellite images, Landsat-5, NDVI, SI, TCT.

Introduction. In the 1990s, the western world learned about the environmental disaster that occurred at the fourth largest lake in the world – the Aral Sea. The decline of the Aral Sea was called one of the worst environmental disasters of the 20th century and called “quiet Chernobyl [1]. The sharp drying of the Aral Sea led to the intensification of desertification processes in the region and the development of the new Aralkum desert on the dried up seabed. Over the past few decades, the open bottom has become a new “hot spot” of dust and salt storms in the region. The arid lands of South Kazakhstan, Uzbekistan and Turkmenistan have always been exposed to dangerous dust storms. However, in the last thirty years of the 20th century, dust storms have shown a significant downward trend throughout the region [2].

In the arid regions of Central Asia, dust storms are observed with frequencies that are among the highest in the world [3]. The emergence of an additional vast territory subject to wind erosion, namely the anthropogenic created Aralkum desert, inevitably led to the activation of dust emission processes [4].

The water level in the Aral Sea started drastically decreasing from the 1960s onward. The reduction in the volume and area of the sea has led to significant changes in the hydrological, chemical and natural biological structure of the water [5]. The Aral sedimentary basin with an area of 70 thousand km^2 occupies the north-western outskirts of the TuranPlate [6]. The Aral sedimentary basin extends from the Mugodzhar mountains in the north to Sultanuizdag in the south for more than 440 km. Its width from the Aral-Kyzylkum shaft in the west to the Akkyrsko-Kumkalinsky shaft in the east is about 210 km [7]. The engineering and geological conditions of logistic center territories of Aralsk and Turkistan citie’s determined by the development of loose rocks. They related with the manifistations of numerous hazardous geological processes like salinization, swamping, deflation, linear erosion, slope wash, the phenomenon of subsidence, etc. Their development conditions significantly depend on anthropogenic factor.Sand massifs are affected by active deflation processes and with the development of the territory can cover large areas [8].

Purpose of the research. The Aral Sea is a terminal salt lake in Central Asia, on the border of Kazakhstan and Uzbekistan. Since the 1960s of XX century, sea level has been rapidly dropping due to

water abstraction from the main supply rivers: Amudarya and Syrdarya. Before the shallowing, the Aral Sea was the fourth largest lake in the world. Over-abstraction of water for irrigation of agricultural land has turned the fourth largest lake-sea in the world, formerly rich in life, into a barren desert [9]. Water is a tremendous value, a national treasure. The decision of all the most actual ecological and hydrogeoecological problems depends on the state of water resources [10].

Drying of the Aral Sea led to two different types of desertification. Recently dried seabed and artificial cutting of irrigated lands. As a result, a new Aralkum desert appeared in the center of the great deserts. The sandy-salt waste lies on the territory of Uzbekistan and Kazakhstan, on the northwestern extremity of the Karakum and Kyzylkum deserts. Aralkum covers an area of more than 38 thousand km² and is a powerful source of wind loss (figure 1) [11].

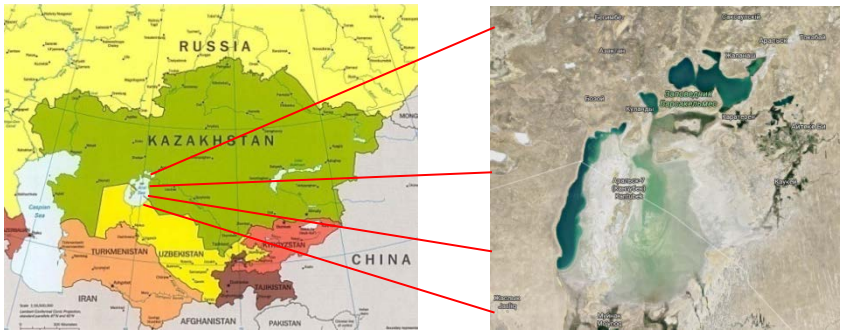

Figure 1 – Studyarea- Aralkum desert

The Aral Sea and the Aralkum are located within the Asiatic desert belt [12]. The climate of the surroundings of Aralkumis characterized by very cold winters and very hot summers. It is assumed that the effects of the drying of the Aral Sea were associated with climatic conditions. Current climate data show only a slight shift towards a more emphasized continentality [13]. Meteorological data show that in the Middle East region, annual rainfall has increased over the past 50 years [14]. This is due to all parts of the Turan Plain, as well as to high mountains on the outskirts [15]. Directly at the remnants of the Aral Sea, and at the Aralkum, at the stations on the former islands (Barsa-Kelmes, Lazarev, Vozrozhdeniya, Tigrovni) this trend cannot be traced significantly. However, those stations mostly have been closed since the middle or the end of the 1980s.Thus, only the last 15 or 20 years of observations would have been especially worthwhile. Only the Aral station clearly indicates an increase in precipitation within the 1950s, but within the last 40 years the mean precipitation seems to be stable [16].

Materials and methods. Currently, the quantitative characteristics of models of temporary and spatial plants with remote sensing data are of great interest for the study of Earth sciences and global changes. Spectral models and indicators are being developed to increase sensitivity to plants, taking into account the effects of the atmosphere and soil.

In the table below (table 1), a list of desertification indicators is given and the possibility of determining these indicators using remote sensing data is noted.

Table 1 – Spectral Indices

№	Desertification Indicators	Spectral Indices
1	Vegetation cover	NDVI
2	Soilsalinization	SI
3	Water	TCT

The Normalized Difference Vegetation Index (NDVI) is one of the most widely used plant indexes, and its usefulness for satellite-based assessment and monitoring of global vegetation has been well demonstrated over the past two decades [17].

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Normalized Vegetation Index NDVI is a standardized index showing the presence and condition of vegetation (relative biomass). This index uses the contrast of the characteristics of two channels from a set of multispectral raster data – the absorption of chlorophyll by the pigment in the red channel and the high reflectivity of plant materials in the infrared channel (NIR).

NDVI isoften used around the world to monitor drought, monitor and forecast agricultural production, assist in forecasting fire hazard zones, and desert attack maps. NDVI is preferred for global monitoring of vegetation, as it helps to compensate for changes in lighting conditions, surface slope, exposure and other external factors. NDVI indices range from -1.0 to 1.0, where higher values relate to green vegetation and tiny ones relate to other widespread surface resources. Naked soil is indicated by NDVI values that are in contact with 0, and water bodies are characterized by negative NDVI values [18].

Different reflection in the red and infrared (IR) channels allows you to control the density and growth rate of green vegetation using the spectral reflection of solar radiation. Green leaves usually show better reflection in the near infrared wavelength range than in visible wavelength ranges. If the leaves are suppressed by water, fading or dead, they become more yellow and reflect much less in the near infrared range. Clouds, water and snow give a better reflection in the visible range than in the near infrared range, while the difference is almost zero for rocks and bare soil. NDVI processing creates a single-channel dataset that basically represents greenery. Negative values represent clouds, water and snow, and values close to zero represent rocks and bare soil.

The default documented NDVI equation:

$$\mathrm{NDVI} = \frac{(\mathrm{NIR}-\mathrm{Red})}{(\mathrm{NIR}+\mathrm{Red})} \quad (1),$$

where, NIR is reflection in the near infrared region of the spectrum, RED is reflection in the red region of the spectrum. The main research method was the analysis of the normalized relative vegetation index (NDVI – Normalized Difference Vegetation Index), which was first described by B.J. Rouse in 1973 [19].

NDVI provides accessible constructive information for distinguishing and interpreting vegetation cover that is widely used in remote sensing studies [20].

Salinization of the soil is the process of enriching the soil with soluble salts, which leads to obtaining information about the soil exposed to salt. Soil salinization in irrigated areas is becoming a serious problem for agriculture. Saline soil conditions have reduced the value and productivity of large areas of land around the world [21].Salinity usually occurs in irrigated soils due to the accumulation of soluble salts as a result of continuous use of irrigation water containing large or medium amounts of dissolved salts [22]. The main problems associated with arid and semi-arid areas are salinization and desertification. Soil salinization is the main form of land degradation in agricultural areas where information is needed on the degree and magnitude of soil salinity for better planning and implementation of effective soil reclamation programs.Irrigational evaporation of moisture from the surface or shallow depths within the profile and insufficient annual precipitation to leach salts from the rooting zone of plants contribute to the excessive accumulation of soluble salts in soils of arid and semi-arid regions, which makes such lands with minimal success [23].

Estimation of soil salinity can be applied using digital indices extracted from satellite images with different spectral bands [24]. The digital elevation model (DEM) can also be used to predict soil salinization based on the variographic morphology of the earth’s surface in order to increase the accuracy of its prediction [25]. The rapid spread of salinization of the soil mainly depends on altitude, because the terrain controls the rate of salt transfer through different layers of soil [26].

It has been proven that remote sensing has advantages in predicting soil salinity. Meanwhile, the spatial distribution of soil salinity is apparently associated with one or more variables at the same time, depending on the characteristics of the study area [27]. Researchers have developed many approaches to studying and predicting soil salinity with multiple variables using statistical analysis [28].

Sixteen different spectral salinity indices developed in numerous studies related to salt detection and soil salinity mapping were studied for all Landsat images and seven salinity indices were most commonly used (NDSI, SI 1, SI 2, SI 4, SI 9, SI 10 , SI 14) taken into account in this study are given in table 2 [29].

Table 2 – The most common salinity indicators (A. Azabdaftari a, F. Sunarb, 2016)

Salinity indices	Equation	Reference
Normalized Differential Salinity Index	NDSI=$\frac{(R-NIR)}{(R+NIR)}$	(Khan, Rastoskuev et al. 2001)
Salinity Index 1	SI1=$\sqrt{B \times R}$	(Khan, Rastoskuev et al. 2001)
Salinity Index 2	SI2=$\sqrt{G \times R}$	(Douaoui, 2006)
Salinity Index 4	SI4=$\sqrt{G^2 + R^2}$	(Douaoui, 2006)
Salinity Index 9	SI9=$\frac{(B_5 \times B_6\, B_6 \times B_6}{B_5}$	(Bannari, Guedon et al. 2008)
Salinity Index 10	SI10=$\frac{B}{R}$	(Abbas, 2007)
Salinity Index 14	SI14=$\frac{R \times NIR}{G}$	(Abbas, 2007)

We have used the formula from the indices that determine the salinization of the soil, as follows:

$$SI2 = \sqrt{Green \times Red} \quad (2)$$

Various analyzes, including remote sensing and spatial modeling using GIS, a regression model, and method validation, were used to determine the feasibility of remote sensing and a geographic information system for mapping salinity of the soil directly from the soil and indirectly from the vegetation.

Tasseled Cap Transformation (TCT) is calculated using the formula (table 3).

Table 3 – Tasseled Cap Transformation (TCT) calculation formula (Healey S.P., et al, 2005)

Tasseled CapTransformation	Formula
Brightness	0.3037 × (b1) + 0.2793 × (b2) + 0.4743 × (b3) + 0.5585 × (b4) + 0.5082 × (b5) + 0.1863 × (b7)
Green	0.2848 × (b1) – 0.2435× (b2) – 0.5436 × (b3) + 0.7243 × (b4) + 0.0840 × (b5) – 0.1800 × (b7)
Humidity	0.1509 × (b1) + 0.1973 × (b2) + 0.3279 × (b3) + 0.3406 × (b4) – 0.7112 × (b5) – 0.4572 × (b7)

TCT coefficients are used in the widest range of problems solved using Earth remote sensing data: from recognition of the coastline of water bodies to determination of forest disturbances [30]. This technique uses the Brightness coefficient TCT.

Results and Discussion. The selected methods are widely known and repeatedly applied in world practice methods for processing satellite images. So, all the listed spectral indices are universal, however, they are relative. The uniqueness of this technique lies in the determination of the exact ranges of values for each of the spectral indices in the identification of various indicators of desertification. This refinement was made possible thanks to field survey data. However, ground-based data were taken for one field season, therefore, the inclusion of more scientists in the calculation of ground-based survey data will allow us to more accurately determine the ranges of index values for each of the desertification indicators.

Landsat TM data for 2000 and 2008 years were taken for this work (table 4). The image has seven bands with a resolution of 30 m pixels. Image analysis was performed using ArcGIS 10.3.

Table 4 – Space imagery selection

Image type	Shooting date
Landsdat TM5	09.16.2000; 09.16.2000; 09.07.2000; 09.07.2000
Landsdat TM5	07.11.2008; 07.11.2008; 07.27.2008; 07.27.2008

Since all the data received from the satellite is nothing more than multispectral images, to obtain the information contained in them, it is necessary to interpret the data obtained and reveal their physical meaning.

The stage of Earth remote sensing data analysis, the main task of which is the recognition and identification of objects detected in the image, is called image decryption.

For Landsat-5 images, in accordance with the process of soil degradation, salinization, and desertification, the interpretation of these channel combinations was chosen, i.e., the color combination

7.5.3. This combination gives an image close to natural colors, but at the same time allows you to analyze the state of the atmosphere and smoke. Healthy vegetation looks bright green, grassy communities look green, bright pink areas detect open soil, brown and orange tones are typical for sparse vegetation. Dead standing vegetation looks orange, water - blue. Sand, soil and minerals can be represented by a very large number of colors and shades. This combination gives an excellent result in the analysis of deserts and desertified territories (figures 2, 3) [31].

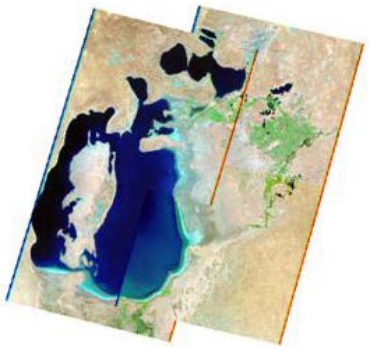

Figure 2 – Satellite image based on a combination of 7.5.3 colors in the Study area, 2000

Figure 3 – Satellite image based on a combination of 7.5.3 colors in the Study area, 2008

For Landsat-5 images, the normalized differential vegetation index (NDVI) was calculated as follows:

$$\text{NDVI} = \frac{(\text{band4}-\text{band3})}{(\text{band4}+\text{band3})}. \quad (3)$$

Also, the SI formula (salinity index) for Landsat-5 images:

$$\text{SI2} = \sqrt{\text{band2} \times \text{band3}} \quad (4)$$

The change in sea water was calculated by the formula TCT (Tasseled Cap Transformation):

$$\text{TCT} = 0{,}304 \times (\text{b1}) + 0{,}279 \times (\text{b2}) + 0{,}474 \times (\text{b3}) + 0{,}559 \times (\text{b4}) + 0{,}508 \times (\text{b5}) + 0{,}186 \times (\text{b7}), \quad (5)$$

where, b1, b2, b3, b4, b5, b7 are the corresponding Landsat channels.

As a result, the Soil Degradation maps for 2000 and 2008were compiled (1:2500 000) (figures 4, 5).

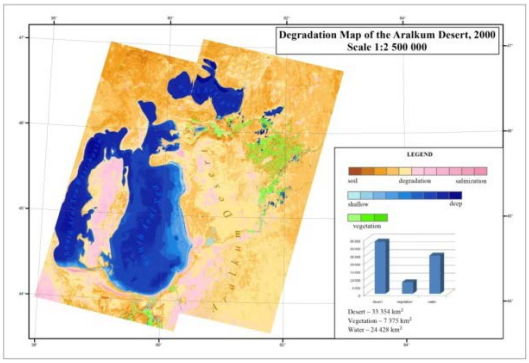

Figure 4 – Soil Degradation Map of the Aralkum Desert, 2000

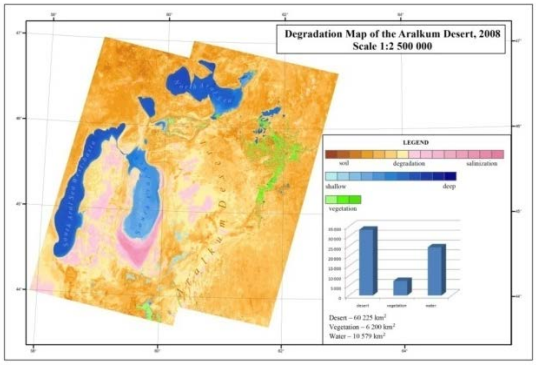

Figure 5 – Soil Degradation Map of the Aralkum Desert, 2008

The results of the calculation of the two-year index are presented in the following table. As a result, the desertification process in 2008 increased by 26,871km^{2}desert area compared to 2000, the bottom area was 13 849km^2, and the vegetation cover was reduced to 1175 km^2. As a result, the drying of the Aral Sea, the Aralkum desert increased, and the soil degraded significantly (table 5). The quantitative indicator for 2000 and 2008 obtained from the results of calculating the index is shown in diagram (figures 6, 7).

Table 5 – Dynamics of changes in objects of the Aral Sea and its region in 2000 and 2008

Calculated objects	Area	
	2000 year	2008 year
Desert	33 354km^2	60 225km^2
Vegetation	7 375km^2	6 200km^2
Water	24 428km^2	10 579 km^2

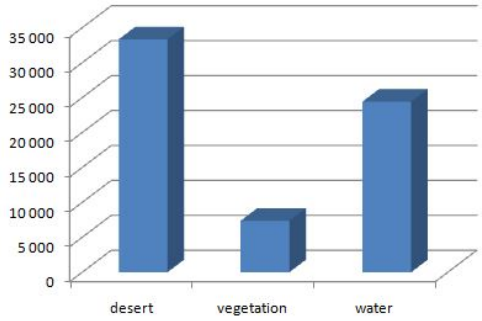

Figure 6 – Calculatedindexes, 2000.

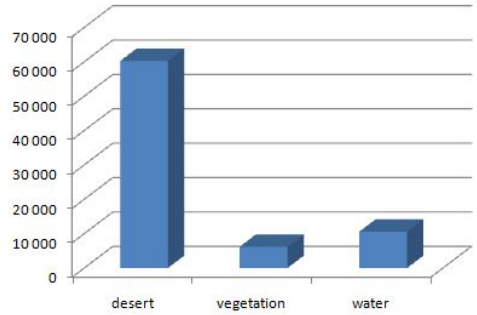

Figure 7 – Calculated indexes, 2008.

Conclusion. Desertification, a phenomenon related to land degradation in arid, semi-arid and arid sub-humid regions as a result of climate change and human activities, is considered one of the most serious environmental and socio-economic problems of our time. The study of its dynamics should be accompanied by a full-scale comprehensive study and ground-based route observation data. However, the observation of the underlying surface, that is, vegetation and open soil cover, as one of the main components of this complex process, is to some extent possible when using Earth remote sensing data.

This study performed several tasks related to desertification degradation. The main objectives are to increase the area of the Aralkum desert due to changes in the volume of the Aral Sea from year to year and determine the reduction of vegetation cover. Based on two-year satellite images, it is clear that the distribution of vegetation in the Aralkum desert is relatively small.For example, in 2008, the area of vegetation was reduced to 1175 км^2 compared with estimates of 2000. The area of sea water decreased by 13 849 км^2 compared with 2000. The current state of the youngest desert in the world of Aralkum is in the worst condition. Due to quantitative indicators of the process, salinization of the Aralkum desert makes it clear that the area of deserts is increasing. This is due to the fact that in 2000 the desert area was 33 354 км^2, and in 2008 60 225 км^2, that is, it increased to 26871 км^2. Due to the drying of sea water, some areas have degraded, and the risk of salinization is increasing. As a result of the research, the distribution of vegetation cover, the risk of degradation and the dynamics of the development of sea water were determined. And also the dynamics of changes in the objects of research is shown in the diagram and compiled, and maps of the degradation of desertification of the Aralkum in 2000 and 2008, at a scale of 1:2 500 000.

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АРАЛҚҰМ ШӨЛІНІҢ ДЕГРАДАЦИЯСЫН ЗЕРТТЕУ ЖӘНЕ КАРТОГРАФИЯЛАУ

Аннотация. Шөлейттену – әртүрлі факторлардың, соның ішінде климаттың өзгеруі мен адамның іс-әрекеті нәтижесінде құрғақ, шөлейт және құрғақ субгумидті жерлердегі алқаптардың деградациясы. Бұл жағдайда «жер» термині топырақтан, судан, өсімдіктерден, басқа да биомассадан тұратын биопродуктивті жүйені, сондай-ақ жүйенің ішіндегі экологиялық және гидрологиялық процестерді білдіреді. Жердің

деградациясы – жерді пайдалану нәтижесінде егістік жерлердің немесе жайылымдардың биологиялық және экономикалық өнімділігінің төмендеуі немесе жоғалуы. Ол аз мөлшерде жермен, өсімдіктердің батпақтануымен, топырақ біртектілігінің төмендеуімен сипатталады, нәтижесінде жылдам жел эрозиясы болуы мүмкін.

Арал теңізі – бір кездері ең ірі көл деп аталса, қазір тартылған, тұзды көл, ол бүгінде үлкен тұзды шөлге ұқсайды. Оның тартылуы біздің заманымыздағы орасан күрделі экологиялық апаттардың бірі болып саналады, өйткені осыдан 50 жыл бұрын ол біздің планетамыздағы ең ірі төрт көлдің бірі болған. 1990 жылдары батыс әлемі экологиялық апат туралы әлемдегі төртінші ірі көл – Арал теңізі туралы білді. Арал теңізінің күрт тартылуы аймақта шөлейттену процестерінің қарқынды дамуына және жаңа антропогендік Аралқұм шөлінің пайда болуына әкелді.

Шөлейттену процестерін және жердің деградация процестерін анықтау мониторингінің нағыз тәсіліне мыналар жатады: қашықтықтан зондтау деректеріне негізделген бақылау байқауының орындылығын айқындайтын табиғи объектілердің, шөлейттену процестерінің немесе құбылыстарының (индикаторларының) тізбесі; осы ескертулерді жүргізу кезеңдері мен мерзімдері; жүйелі түрде және көпжылдық негізде еркін таратылатын ғарыштық көріністердің түрлері, оларға бақылау жүргізу ұсынылады; бақылаудың негізгі кезеңдері, әрбір байқалған индикатор бойынша шығыс нәтижелерінің геоақпараттық нысаны және өзгерістер динамикасын бағалау.

Аралқұм шөлінің деградациясын анықтайтын негізгі әдіс – индекстерді есептеу. Таңдалған әдістер кең түрде танымал және әлемдік тәжірибеде бірнеше рет спутниктік суреттерді өңдеуде қолданылады. Сонымен, аталған барлық спектрлік көрсеткіштер әмбебап болып келеді. Бұл әдістің бірегейлігі шөлейттенудің әртүрлі көрсеткіштерін анықтауда спектрлік көрсеткіштердің әрқайсысы үшін нақты мәндер ауқымын анықтауда жатыр. Аралқұм шөлінің шөлейттенуі мен деградациялануының ғарыштық мониторинг әдістемесіндегі орындалған шешуші қадамдар: спутниктік суретке тапсырыс беру, оларды алдын ала өңдеу; спектрлік көрсеткіштерді есептеу; визуалды бажайлау; индекс мәндерінің қажетті диапазонын бөлу; шөлдену процесінің индекстік мәндері негізінде карта құрастыру; жердегі мәліметтерді пайдаланып, карталарды тексеру; алынған нәтижелерді талдау.

Түйін сөздер: деградация, шөлдену, ғарыштық суреттер, Landsat-5, NDVI,SI, TCT.

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КАРТОГРАФИРОВАНИЕ И ИССЛЕДОВАНИЕ ДЕГРАДАЦИИ ПУСТЫНИ АРАЛКУМ

Аннотация. Опустынивание – деградация земель в засушливых, полузасушливых и сухих субгумидных районах в результате действия различных факторов, включая изменение климата и деятельность человека. Понятие «земля» в данном случае означает биопродуктивную систему, состоящую из почвы, воды, растительности, прочей биомассы, а также экологические и гидрологические процессы внутри системы. Деградация земель – снижение или потеря биологической и экономической продуктивности пахотных земель или пастбищ в результате землепользования. Характеризуется маленьким количеством земли, увяданием растительности, снижением связанности почвы, в результате чего становится возможной быстрая ветровая эрозия.

Аральским морем называют некогда большое, а сейчас практически высохшее, соленое озеро, которое сегодня выглядит как большая соляная пустыня. Его пересыхание считается одной из самых катастрофических экологических проблем современности, хотя 50 лет назад оно входило в четверку самых больших озер нашей планеты. В 1990-х годах западный мир узнал об экологической катастрофе того, что когда-то было четвертым по величине озером в мире - Аральским морем. Резкое высыхание Аральского моря привело к интенсивному развитию процессов опустынивания в регионе и формированию новой антропогенной пустыни Аралкум.

Реальным способом мониторинга процессов опустынивания и процессов деградации земель является перечень природных объектов, процессов или явлений опустынивания (индикаторов), которые определяют осуществимость контрольных наблюдений на основе данных дистанционного зондирования; сроки и сроки этих замечаний; типы космических снимков, которые распространяются свободно на регулярной и долгосрочной основе, рекомендуется их мониторинг; основные этапы контроля, геоинформационная форма результатов расходов по каждому наблюдаемому показателю и динамика изменений.

Основным методом определения деградации пустыни Аралкум является расчет индексов. Выбранные методы являются широко известными и неоднократно примененными в мировой практике обработки космических снимков. Так, все перечисленные спектральные индексы являются универсальными. Уникальность же данной методики состоит в определении точных диапазонов значений по каждому из спектральных индексов при идентификации различных индикаторов опустынивания. Выполнены ключевые этапы методики космического мониторинга процессов опустынивания и деградации пустыни Аралкума: заказ космических снимков, их предварительная обработка; расчет спектральных индексов; визуальное дешифрирование; выделение необходимых диапазонов значений индексов; 1составление на основе значений индексов карт процессов опустынивания; верификация карт по наземным данным; анализ полученных результатов.

Ключевые слова: деградация, опустынивание, космические снимки, Landsat-5, NDVI,SI, TCT.

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EFFICIENCY OF PRODUCTION OF HORSE MEAT AND KOUMISS FROM THE KAZAKH HORSES OF THE ADAI OFFSPRING

Abstract. Kazakh horses of the Adai offspring are the standard of herd horses in the desert zone of the Mangyshlak Peninsula. They perfectly adapt to the area of their reproduction, hardy to long-distance driving to various pastures. With an insignificant expenditure of labor and money, young Adai horses reach 340-350 kg of live weight by the age of 2.5 years. When slaughtering stallions, the carcass weight reaches 185-195 kg. High-milk mares for 105 days of lactation produce from 590 liters to 675 liters of marketable milk. The rates of slaughter yield in Adai young stock were also comparatively lower than that of stallions of the Mangystau population and averaged to 53.9 %, while the rate of slaughter yield in horses of the Mangistau population was 55.1 %.

When studying the dairy productivity of both groups of mares, it was found that mares of the Adai offspring have higher dairy productivity than the Mangistau population under pasture conditions. Over 105 days of lactation, the milking capacity of the mares of the Adai offspring was 1617.0 liters, in the Mangistau population it was 1413.3 liters, and commercial milk yield was 674.1 and 590.1 liters, respectively. Thus, the yield of the Adai mares exceeds by 14.2 % or 84.0 liters in comparison with the Mangistau population.

Profitability in the horse meat production reaches from 70 % to 74 % and in koumiss production – 13.9-16.9 %.

Keywords: live weight, carcass, pulp, bones, lactation, prime cost, profitability.

Introduction. In the Republic of Kazakhstan, horse breeding has always occupied a special position among other branches of productive livestock. For the countries of the Eurasian Economic Union, productive horse breeding has a special value at there cost of the local breeding [1].

Of great importance for horse breeding of the Mangyshlak Peninsula is the Kazakh horse of the Adai offspring, created by native selection [2].

Adai horses are bred in different soil and climatic zones of the Caspian Depression of the Republic of Kazakhstan. They can be kept on pasture throughout the winter, extracting food from under the snow. Therefore, in the conditions of the Mangyshlak peninsula, the development of horse breeding is of considerable importance, as well as the use of mares for dairy products – mare's milk and koumiss production.

The object of the research. Mangistau population and Adai offspring of the Kazakh horses in the farm Taushyk LLP of the Mangystau region.

The aim of the research. To determine the economic efficiency of horse meat and koumiss production in the desert zone of the Mangistau region.

Methods of the research. The study of the meat productivity of the Mangistau population and the Adai offspring of the Kazakh horses was carried out by slaughtering 2.5-year-old stallions after autumn feeding at the Taushyk LLP slaughterhouse according to the methodology of the All-Russian Research Institute of Horse Breeding [3].

Carcass qualities were evaluated according to the development of muscle tissue, the presence of fatty deposits on the surface (watering) and the thickness of fat on the abdominal wall – kazy [4].

Commodity milking capacity of mares was determined monthly during lactation using the control milk yield method, twice a month on two adjacent days. Dairy productivity was calculated taking into account milk sucked at night by a colt, according to the formula of professor I.A. Saigin [5].

The economic efficiency was calculated according to the accounting data of Taushyk LLP. All experimental data were biometrically processed according to the common methods [6].

Research results. To establish the dairy productivity of the Mangistau population and the Adai offspring of the Kazakh horses at the slaughterhouse of Taushyk LLP, 2.5-year-old colts were slaughtered after the autumn feeding. For control slaughter, horses were selected that are characteristic for each population and offspring with close indicators of live weight to the average data. The results of the control slaughter of the colts are presented in table 1.

It was found that the stallions of the Adai offspring were inferior to the analogs of the Mangistau population by 8.6 kg in carcass weight. The rates of slaughter yield in Adai young stock were also comparatively lower than that of stallions of the Mangystau population and averaged to 53.9 %, while the rate of slaughter yield in horses of the Mangistau population was 55.1 %.

Table 1 – Results of the control slaughter of colts (n- 4 heads of each)

indicators	Mangistau population	Adai offspring
Pre-slaughter live weight, kg	359.5 ± 3.2	351.7 ± 3.5
Carcass weight	198.1 ± 2.9	189.5 ± 1.6
Slaughter yield, %	55.1 ± 0.1	53.9 ± 0.2

When studying the morphological composition in each type and on the whole carcass, the ratio of pulp and bone was determined (table 2).

Table 2 – the ratio of pulp and bone according to types

Carcass joint by types	Unit of measure	Mangistau population		Adai offspring	
		pulp	bone	pulp	bone
Out of type (Kazy + zhal)	kg	27.4	1.2	21.8	1.4
	%	16.2	4.1	13.7	4.5
I type (back, loin and hinder part of the carcass)	kg	81.3	10.2	77.3	11.4
	%	48.2	34.8	48.9	36.4
II type (neck, humeroscapular parts, flat bone)	kg	56.0	13.6	55.3	14.0
	%	33.2	46.4	35.0	44.7
III type (sticking piece, shank, hock)	kg	4.1	4.3	3.8	4.5
	%	2.4	14.7	2.4	14.4
Total in carcass	kg	168.8	29.3	158.2	31.1
	%	100	1000	100	100

From the data of table 2, it can be seen that the morphological composition of the carcass of both groups was not identical. The yield of pulp in the carcasses of the Mangystau population was 5.6 kg higher (25.7 %) compared with the Adai offspring. The highest yield of pulp in both groups is observed in type I – 48.2-48.9 %, then in type II – 33.2-35.0 % and out of type – 16.2-13.7 %. The smallest volume of pulp was in type III – 2.4 %. The largest number of bones in both groups is contained in type II – 46.4-44.7 %, then in type I – 34.8-36.4 %, in type III – 14.7-14.4 % and the lowest bone content is contained in the cut out of type – 4.1-4.5 %.

Thus, more pulp was obtained from the colts of the Mangistau population, and therefore more valuable in typical proportion from the point of view of the consumer.

When studying the dairy productivity of both groups of mares, it was found that mares of the Adai offspring have higher dairy productivity than the Mangistau population under pasture conditions. Over 105 days of lactation, the milking capacity of the mares of the Adai offspring was 1617.0 liters, in the Mangistau population it was 1413.3 liters, and commercial milk yield was 674.1 and 590.1 liters, respectively. Thus, the yield of the Adai mares exceeds by 14.2 % or 84.0 liters in comparison with the Mangistau population.

The milking capacity of the mares of both groups during the 105 days of lactation was far from equal (table 3).

The mares showed higher productivity in the 2-3 months of lactation, then the milk yield gradually decreased, and more sharply towards the end of lactation. So, for example, in the 2nd month of lactation,

the milk yield of both groups of mares was 427.18 and 485.10 L, in the 3rd month 432.50 - 518.95 L, in the fourth month – 421.53-476.16 L, and the fifth month – 132.12-136.79 liters

These scientific results are consistent with previous studies of horse breeders [7; 8; 9; 10, 11, 12], who believe that a maximum of mare's milk is secreted in the 2-3 months of lactation. With the onset of pregnancy, milk yield decreases, especially with its second half.

The indicator of the uniformity of milk secretion in mares of both groups is the average daily milk yield. Thus, the highest average daily milk yields were in the 2nd month of lactation – 13.78-15.65 L, the 3rd month – 14.42-17.30 L, and the last 5 month of lactation – 10.16-10.52 L. These data indicate that the yield curve in mares of both groups is uniform, a tendency to its decline is observed gradually.

Table 3 – Change in dairy productivity of mares by months of lactation, liters

Milk indicators	Month of lactation			
	May II	June III	July IV	August V
	Mangistau population (n = 15)			
Per day	13.78 ± 0.26	14.42 ± 0.28	13.60 ± 0.31	10.16 ± 0.28
Per month	427.18 ± 5.74	432.50 ± 4.39	421.53 ± 5.01	132.12 ± 3.39
	Adai offspring (n = 15)			
Per day	15.65 ± 0.29	17.30 ± 0.25	15.36 ± 0.27	10.52 ± 0.23
Per month	485.10 ± 4.08	518.95 ± 3.96	476.16 ± 4.86	136.79 ± 3.12

Thus, during seasonal milking of mares at Taushyk LLP, through the selection of mares from the Adai offspring of meat and milk production direction, the dairy productivity of milking mares can be significantly increased rather than the Mangistau population of the meat production direction.

The economic efficiency of growing foals of the Mangistau population and the Adai offspring of the Kazakh horses under 30 months of age was determined by the difference in all costs and revenue of the products (table 4).

Table 4 – The effectiveness of the realization of young horses of the Mangistau population and the Adai offspring

Indicators	Unit of measures	Groups	
		Mangistau population	Adai offspring
The prime cost of a newborn foal	tenge	26962	26962
Costs for foal growing up to 2.5 years	tenge	45062	45062
Live weight of 1 2.5-year-old foal	kg	359	350
Price per 1 kg of live weight	tenge	350	350
Revenues from sales	tenge	125650	122500
Profit	tenge	53625	50476
Profitability	%	74.4	70.1

In Taushyk LLP, the cost of a newborn foal was the sum of the expenditures gone to the maintenance of the main herd (stallions – producers, mares). In 2018, a total of 1,127,000 tenge was incurred. Of these, the wages of 2 herdsmen - 7200000 KZT, the cost of insurance of forage reserves – 3870000 KZT and the cost of fuel – 200000 KZT. Based on this, 11.27 million KZT divided by 418 foals received this year equals 26,962 KZT. This is the prime cost of one newborn foal. 45062 tenge were spent on growing it up to 2.5 years of age. Thus, the cost of one foal at the age of 2.5 years was 72024 tenge. The wholesale purchase price of 1 kg of live weight in the Mangistau region was 350 tenge. When selling stallions for meat, the following results were obtained. Under the same conditions and costs of growing, the revenue for the Mangistau population was 125,650 tenge, and for the Adai offspring – 125,200 tenge. Profit amounted to 53625 and 50476 KZT, respectively, and profitability amounted to 74.4 and 70.1 %.

The main economic indicators of koumiss production from mares of the Mangystau population and the Adai offspring of the Kazakh horses are shown in table 5.

The prime cost of 1 liter of koumiss was calculated by dividing the sum of all expenditures by the gross koumiss production. So, the prime cost of 1 liter of koumiss obtained from the mares of the Mangistau population was 395 tenge, and the Adai horses – 385 tenge. Net income amounted to 55 and 65 tenge, respectively. The profitability level was 13.9 and 16.9 %.

Table 5 – Economic indicators of koumiss production in Taushyk LLP

No	Indicators	Mangistau population	Adai offspring
1	The number of milking mares, animals	15	15
2	The duration of the koumiss season, days	105	105
3	Total costs, tenge of them:	3 500 000	3 500 000
А)	Wages, tenge	3 385 825	3 782 990
Б)	Fuel and lubricants expenses, tenge	100 000	100 000
В)	Concentrated feed, tenge	14 175	17 010
4	Milk yield per one animal, liters	590	674
5	Gross koumiss production, liters	8 850	10 110
6	The prime cost of 1 liter of koumiss, tenge	395	385
7	Revenue from the sale of 1 liter of koumiss, tenge	450	450
8	Profit, tenge	55	65
9	Profitability, %	13.9	16.9

Thus, raising horses of the Mangistau population and the Adai offspring in the Taushyk farm for meat and koumiss production is highly profitable and has a significant effect on increasing the production of horse meat and koumiss.

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ҚАЗАҚ ЖЫЛҚЫСЫНЫҢ АДАЙ ТАРМАҒЫНАН ЖЫЛҚЫ ЕТІ ЖӘНЕ ҚЫМЫЗ ӨНДІРУДІҢ ҰТЫМДЫЛЫҒЫ

Аннотация. Адай жылқысы Қазақстан Республикасының Каспий маңы ойпатының түрлі топырақтық-климаттық зоналарында өсіріледі. Өздеріне қар астынан азық тауып жей алады, жыл бойы жайылымда жүруге бейімделген. Сондықтан Маңғышлақ түбегі жағдайында етті жылқы шаруашылығы, сонымен қатар биелерді сүт өнімдерін – бие сүті және қымыз өндіруде қолдану үлкен мәнге ие.

Зерттеу нысаны. Маңғыстау облысындағы ЖШС «Таушық» шаруашылығындағы маңғыстау популяциясы және қазақ жылқысының адай тармағы.

Жұмыстың тармағы. Маңғыстау облысының шөл аймағының жағдайында жылқы етін және қымызын өндірудің экономикалық ұтымдылығын анықтау.

Маңғыстау популяциясы және қазақ жылқысының адай тармағының ет өнімділігін анықтау үшін ЖШС «Таушық» шаруашылығындағы ет сою пунктінде күзгі жайылымнан кейін 2,5 жастағы айғырларды сойды. Бақылауға сою үшін орташа салмағы көрсеткіштері жақын жануарлар алынды.

Анықталғандай, адай тармағының айғырлары ұша массасы бойынша маңғыстау популяциясынан 8,6 кг төмен болды. Адай айғырларының сойыс шығымы маңғыстау популяциясынан салыстырмалы түрде төмен болды және оның орташа көрсеткіші 53,9 %-ды құрады, ал маңғыстау популяциясында сойыс шығымы 55,1 %.

Морфологиялық құрамын зерттегенде, әрбір сортта және жалпы ұша бойынша бұлшықет және сүйектер қатынасы анықталды. Маңғыстау популяциясындағы ұшасының таза ет шығымы адай тармағымен салыстырғанда 5,6 кг (25,7 %) жоғары болды. Қос топ жылқыларында да таза еттің көп шығымы I сортта 48,2-48,9 %, кейін II сортта 33,2-35,0 % байқалды және сортқа енбейтіні 16,2 – 13,7 % болды. Бұлшық еттің ең аз мөлшері III сортта – 2,4 %. Екі топтада сүйектердің ең көп мөлшері II сортта – 46,4-44,7 %, одан кейін I сортта – 34,8-36,4 %, ал III сортта – 14,7-14,4 % және сүйектердің ең аз мөлшері сортқа кірмейтіндерде – 4,1-4,5 %.

Осылайша, Маңғыстау популяциясының айғырларынан бұлшықет көп шыққан, тұтынушы тарапынан сорттық қатынаста осы жақсы.

Қос топтың да сүт өнімділігін зерттегенде, жайылым жағдайында адай тармағының биелерінің өнімділігі Маңғыстаумен салыстырғанда молырақ. Лактацияның 105 күнінде адай тармағының биелерінің сүттілігі – 1617,0 л, Маңғыстау популяциясында – 1413,3 л, сәйкесінше, тауарлы сауу – 674,1 және 590,1 л. Осылайша, Маңғыстау популяциясымен салыстырғанда, адай тармағы биелерінің сүттілігі – 14,2 % немесе 84,0 л басым.

Биелер жоғары өнімділікті лактацияның 2-3 айында көрсетті, кейін көрсеткіш біртіндеп төмендеді, ал лактация соңында бірден төмендеді. Мысалы, лактацияның екінші айында қос топта да сүттілік – 427,18 және 485,10 л, ал 3 айда – 432, 50-518, 95 л, төртіншіде – 421,53-476,16 л және бесіншіде – 132,12-136,79 л-ді құрады.

Қос топтағы биелердегі сүттің бөліну көрсетіштері – орташа тәуліктік сауу мәлметтері. Мөлшері көп орташа тәуліктік сауу лактацияның екінші айына келді – 13,78-15,65 л, 3 айда – 14,42-17,30 л, ал лактацияның соңғы 5 айында – 10,16-10,52 л. Алынған мәлметтер қос топтағы сауым қиғашы бір қалыпты, азаю біртіндеп іске асады.

Осылайша, ЖШС «Таушық» шаруашылығында бие сауым мерзімінде етті-сүтті бағыттағы адай тармағының биелерін сұрыптау есебінен, етті бағыттағы Маңғыстау популяциясына қарағанда, биелердің сүттілігін айтарлықтай ұлғайтуға болады.

Жылқы етін өндіруде рентабельдік 70-74 %-ды және қымыз 13,9-16,9 %-ды құрады.

ЖШС «Таушық» шаруашылығында Маңғыстау популяциясы және қазақ жылқысының адай тармағын етке және қымыз өндіруге өсіру жоғары рентабельді болып саналады және ет пен қымыз өндіруге айтарлықтай әсер етеді.

Түйін сөздер: тірі салмақ, ұша ет, таза ет, сүйектер, өзіндік құны, рентабельділік.

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ЭФФЕКТИВНОСТЬ ПРОИЗВОДСТВА КОНИНЫ И КУМЫСА ОТ КАЗАХСКИХ ЛОШАДЕЙ АДАЙСКОГО ОТРОДЬЯ

Аннотация. Адайских лошадей разводят в разных почвенно-климатических зонах Прикаспийской низменности Республики Казахстан. Они способны в течение всей зимы содержаться на пастбище, добывая корм из-под снега. Поэтому в условиях полуострова Мангышлак большое значение имеет развитие мясного коневодства, а также использование кобыл для получения молочной продукции – кобыльего молока и производства кумыса.

Объект исследования. Мангистауская популяция и адайское отродье казахских лошадей хозяйства ТОО «Таушык» Мангистауской области.

Цель работы: определить экономическую эффективность производства конского мяса и кумыса в условиях пустынной зоны Мангистауской области.

Для установления мясной продуктивности мангистауской популяции и адайского отродья казахских лошадей на убойном пункте ТОО «Таушык» был проведен убой 2,5 летных жеребчиков после осеннего нагула. Для контрольных убоев отбирались лошади, характерные для каждой популяции и отродья с близким показателям живой массы к средним данным.

Установлено, что по массе туши жеребчики адайского отродья уступали аналогам мангистауской популяции на 8,6 кг. Показатель убойного выхода у адайского молодняка был также сравнительно ниже, чем у жеребчиков мангистауской популяции и в среднем составил 53,9 %, тогда как у лошадей мангистауской популяции убойный выход равнялся 55,1%.

При изучении морфологического состава в каждом сорте и в целом по туше определялось соотношение мякоти и костей. Установлено, что выход мякоти в тушах мангистауской популяции был выше на 5,6 кг (25,7 %) в сравнении с адайским отродьем. Наибольший выход мякоти в обеих группах лошадей наблюдается I сорте 48,2 – 48,9 %, затем во II сорте 33,2 – 35,0 % и вне сорта 16,2 – 13,7 %. Наименьшее количество мякоти было в III сорте 2,4 %. Наибольшее количество костей в обеих группах содержится во II сорте 46,4 – 44,7%, затем в I сорте 34,8 – 36,4%, в III сорте 14,7 – 14,4% и наименьшее содержание костей содержатся в отрубе вне сорте 4,1 – 4,5 %.

Таким образом, от жеребчиков мангистауской популяции получено мякоти больше, а, следовательно, и более ценное в сортовом соотношении с точки зрения потребителя.

При изучении молочной продуктивности обеих групп кобыл установлено, что более высокой молочной продуктивностью при пастбищных условиях содержания обладают кобылы адайского отродья, нежели мангистауской популяции. За 105 дней лактации молочность кобыл адайского отродья составила 1617,0 л, мангистауской популяции – 1413,3 л, а товарный удой составил соответственно 674,1 и 590,1 л. Таким образом, удой кобыл адайского отродья превышает на 14,2% или 84,0 л в сравнении с мангистауской популяцией.

Более высокую продуктивность кобылы показали на 2 – 3 месяце лактации, затем удой постепенно снижался, причем более резко к концу лактации. Так, например, на 2-ом месяце лактации молочность обеих групп кобыл составила 427,18 и 485,10 л, на 3 месяце 432, 50 – 518, 95 л, четвертом – 421,53 – 476,16 л и на пятом 132,12 – 136,79 л.

Показателем равномерности выделения молока у кобыл обеих групп являются данные среднесуточных удоев. Так, наибольшие среднесуточные удои были во 2 месяце лактации 13,78 – 15,65 л, 3 месяце – 14,42 –

17,30 л, а на последнем 5 месяце лактации – 10,16 – 10,52 л. Эти данные свидетельствуют о том, что кривая удоев у кобыл обеих групп равномерна, тенденция к ее спаду наблюдается постепенно.

Таким образом, при сезонным доении кобыл в ТОО «Таушык» за счет отбора кобыл адайского отродья мясо-молочного направления продуктивности нежели мангистауской популяции мясного направления продуктивности можно значительно повысить молочную продуктивность дойных кобыл.

Рентабельность при производстве конины достигает от 70% до 74 % и кумыса 13,9 – 16,9 %.

Таким образом, выращивание лошадей мангистауской популяции и адайского отродья в хозяйстве «Таушык» на мясо и производства кумыса является высокорентабельным и оказывает существенное влияние на повышение производства конины и кумыса.

Ключевые слова: живая масса, туша, мякоть, кости, лактация, себестоимость, рентабельность.

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PROBLEMS AND IMPROVEMENT OF STATE REGULATION IN AGRICULTURE OF THE REPUBLIC OF KAZAKHSTAN

Abstract. The article deals with modern problems of state regulation and development of agriculture in Kazakhstan, provides analytical information on the condition of state regulation, proposes measures to improve the state of agricultural production

Keywords: state regulation, state program, agriculture, crop production, animal husbandry, export, internal, external market, mechanisms, tools, cattle breeding, meat, meat products, grains, crop rotations, mineral fertilizers, agricultural formations, production costs, rural residents, rural areas, agroleasing, agricultural policy.

Introduction

Globalization of the world economy and the development of integration processes and cooperation in the domestic economy, the strengthening of international integration processes have led to macroeconomic changes in Kazakhstan, which is manifested especially in post-economic conditions. Therefore, the development of a strategy for sustainable development of the agricultural economy in accordance with the latest Message of the President of the Republic of Kazakhstan, where priority is given to the development of the agro-industrial complex, in particular agriculture, is put forward to the fore.

Agriculture due to its specific organization and functioning, low investment attractiveness and limited financial opportunities, high exposure to unstable climatic and other conditions, the great risk of doing business most of all requests state regulation and state support. All this causes the request for a comprehensive study of the system of agricultural production as a system-forming factor of the agro-industrial complex of the national economy.

Currently, the relevant directions in the field of agriculture of the republic are to increase the efficiency of the agricultural production system and state regulation, optimization of the use of land, material, labor, water and other natural resources, improving the quality of agricultural products and increasing the profitability of agricultural formations of the country.

All this determines the need for theoretical and methodological developments and practical understanding of the ongoing processes, assessing the effectiveness of the implementation of the state agrarian policy on the basis of various state programs and innovative projects, analyzing the development of the agricultural sector, identifying key problems and developing proposals and recommendations to improve the organization and efficiency of management in general in agriculture in order to increase the competitiveness of agricultural products and sustainable growth of agricultural formations.

Favorable and successful geopolitical location of Kazakhstan and great opportunities in the field of agricultural production, today allow to increase the production of various types of crop and livestock products, increase the export opportunities of the country, expand production capacity and ensure diversification of agricultural production, apply new modern resource-saving technologies, to cultivate high-yielding varieties of plants and highly productive cattle of different directions to increase the supply of various products to the domestic and foreign markets. However, the country's agriculture today does not fully meet the requests of the domestic market for some types of agricultural products, which is covered mainly by imports of these products. Therefore, state regulation and state support of rural producers should have a clearly oriented systematic and integrated approach with the application of the strategy of agricultural development in the near and long term, which will increase the effectiveness of state regulation and state support.

In the process of research, the dialectical method, statistical and economic methods, comparative, problem-oriented, computational-constructive, abstract-logical, monographic and other methods of economic research were used.

The main part of the study:

During the years of independence, Kazakhstan has created the necessary conditions for the development of agriculture, adopted the relevant legal acts and documents, which were the fundamental basis for ensuring the state agrarian policy in the field of agriculture of the country. In the republic, the most developed food subcomplexes are grain, meat and dairy subcomplexes. The most successfully developed is the grain subcomplex, which from the agricultural sector provides grain production. At the same time, the agro-industrial complex of the country is represented by a variety of processing enterprises in the milling, cereal, food and fodder industries, as well as subjects of elevator-warehouse, container economy and a network of trade and sales companies bringing the products of this subcomplex to the final consumer.

The second most important food subcomplex of the agro-industrial complex of the country is meat products, the basis of which is animal husbandry, in particular cattle, sheep, horse, pig and poultry. Moreover, meat production has been developed in all regions of the Republic. However, the conditions for the development of this sphere are not always the same and require consideration of zonal features of cattle breeding.

The third subcomplex of the agro-industrial complex is dairy, which includes dairy cattle breeding, fodder production, primary milk processing, processing, transportation and sale of dairy products. Unfortunately, this sphere of activity in various regions of the Republic does not receive proper development, as livestock is privately owned by the local population. Moreover, in some regions there are even no areas of industrial processing of milk, which leads to the dependence of these regions on other regions of the Republic [1].

At the present stage of development of the agrarian sector of economy state regulation and state support in this sphere takes place on the basis of the State program of development of the agro-industrial complex of Kazakhstan for the 2017-2021, developed in accordance with the instructions of the Leader of the nation, given at the enlarged session of the Government dated September 9, 2016, in accordance with the strategic goals of development outlined in the Plan of the nation “100 steps” and the Strategy “Kazakhstan – 2050”.

The form of managing and creation of the effective economic mechanism of managing according to features of this or that organizational and legal form should provide concentration of agricultural production, optimality of the sizes of farms and their efficiency on the basis of the intensive approach to conducting agricultural production. Many domestic and foreign economists paid due attention to this problem. Moreover, according to many of them, small forms and sizes of farms do not allow to control and monitor by the state due to the lack of elements of the economic mechanism of management in these forms of farms [2, 3, 4].

Based on this, it is necessary to take into account the characteristics of individual branches of crop production, such as rice farming and some others, where engineering-prepared planned land, drainage systems, specific crop rotations and large volumes of irrigation water should be used. Moreover, the concentration of resource potential in large farms allows the most effective implementation of scientific achievements and best practices of the best farms, introduce new varieties of crops, timely use of mineral fertilizers and plant protection products, expand their capabilities through the development of additional branches of animal husbandry, reduce production costs and timely remove grown products in adverse weather conditions.

To date, the state executive authorities, unfortunately, do not take into account these features, which leads to a lack of efficiency of all state support and does not provide a forecast of sowing of certain types of crops. Given that many regions of Kazakhstan are located in arid areas, where the summer is very hot and there is an acute shortage of irrigation water and moisture in the soil, state regulation should predict the annual area of crops under irrigated and rain-fed agriculture on the basis of strict criteria of financial support for the forms and sizes of farms, which will ensure the concentration of land, material, labor, water, financial and other resources, and also to ensure timely and lossless harvesting of the grown crop in adverse weather conditions of individual years.

The world experience of management in the field of agriculture shows, that the consolidation of small and medium-sized farms is an inevitable process. Thus, the USA experience shows that in the period from 2010 to 2015 the number of farms decreased from 2201 to 2067, in Canada in 2001 there were 247 farms, and in 2012 it decreased to 229 farms. The result is an average farm size, estimated area of land used has grown over these time periods from 418 to 441 acres in the USA and from 676 to 728 acres in Canada [5].

At the same time, the increase in the area of land used does not always indicate the effectiveness of management, because the development of civilization leads to a large outflow of rural population to the urban area. As a result, a large part of the rural population moves to the urban area. In the structure of rural and urban population of Kazakhstan over the past decades, there have been no sharp changes in urbanization. Therefore, this problem of efficiency of agricultural production concentration requests to be considered from a position of return of the enclosed financial and other material means on monetary unit. The analysis of the problem of agricultural production concentration for greater objectivity should reflect the assessment not only of yield, but also of the total net profit received on the farm, and in the context of divisions and crop rotations, because the essence of the state support is covering part of production costs. In this aspect, large rice farms of Kyzylorda region have great opportunities to obtain gross agricultural output, total net profit, as well as profit in the context of structural units of the main production. Thus, in 2019, the area of rice in large rice farms such as LLP “Shagan”, “Tan”, “Akzharma” and some others amounted to 3000-3500 hectares of rice, which allowed timely and lossless harvest. At the same time, in farms where the area of rice ranged from 400 to 1050 hectares, there was an acute shortage of harvesting agricultural machinery. And in some farms until the end of September the rice did not ripen, despite the very hot summer, only good weather conditions allowed them to remove the grown crop. A positive example of the concentration of agricultural production can be called the rice company “Abzal and K”, which in 2019 planted rice on an area of 5500 hectares, and all field agrotechnical activities of this company were carried out in a timely and qualitative manner, which had an impact on the yield of unpolished rice. It should be noted that this company has a very good material and technical base with modern agricultural machinery, as a result, in the Central estate of the aul district named after Naga Ilyasov, the entire infrastructure is created, which is not inferior to urban areas. A similar situation is observed in LLP “Magzhan and K” Syrdarya district, which this year sowed 5000 hectares of rice, which is a partner of the rice company “Abzal and K”. Direct links between the two rice companies allow direct supply to the rice processing plant of the General partnership “Abzal and K”. As a result of this, LLP “Magzhan and K” today employs 415 workers in the economy, has 1 rice-growing teams, the economy from year to year develops new lands for rice culture. The farm is sowing seeds of rice varieties “Liman” and “Yantar”, which are in high demand among customers. At the same time, in many small farms, seed production is not at the proper level, which affects the rice yield. In this regard, requires financial support of the state, derived Kazakh Research Institute of Rice new varieties of rice.

The division of the former large rice farms into peasant and farm in many aul districts of the Kazakhstan Aral Sea region has worsened the opportunities of these rural areas, in which the budget of the aul districts cannot solve many pressing social problems, not to mention the low level of equipment of these small farms. Mechanisms of cooperation in essence do not stimulate rural producers to consolidation in view of the lack of motivation to shareholders. Today, the population of aul districts, where there are small forms of farms, largely do not receive dividends on their land shares, which cannot be said about large rice farms, where the net profit is distributed to encourage advanced workers, strengthen the material base of farms. In order to obtain financial support, farmers and rice farmers are forced to increase the acreage for rice, which does not comply with the structure of scientifically based rice-alfalfa crop rotations, in poor condition is the planning of rice checks, which leads to inefficient use of land and water resources. Therefore, the agrarian policy of the state should create an effective mechanism of cooperation and integration, in which large farms will be able to realize their resource potential and solve the social problems of rural areas, unfortunately, which is not fulfilled in many regions of the country.

State regulation by means of institutional tools characterizes methods of impact using organizational institutional forms. Unfortunately today the role of institutional tools in implementation of the state agrarian policy of the agricultural manufacturers has not been considered yet at the national and regional levels causing reduction of efficiency of the state regulation and support of rural manufactures in regions. This is reasoned by absence of complexity and consistency in implementation of the agrarian policy which does not fully cover occurring changes in the market of the county. At the same time there is low return of

the human resources capacity in the agrarian sphere of economy which causes incomplete usage of the existing possibilities in regions and in country in whole.

One of the considerable functions of the state regulation and supporting rural manufacturers is control over efficiency of the state support in the rice planting. There is no doubt that the state spends a lot of funds to support various organizational legal forms of business, but at the same time the level of return of invested funds is low. Secondly, it is impossible to reach rationality of previous functions without proper control of financial support, otherwise as the practice shows, billions of the budget funds have been used improperly [6].

Speaking about state regulation and state support, it is necessary to note certain state programs, which sometimes do not have a relationship between budgets. Improving the budget process involves integrating the strategic and medium-term socio-economic development of the country with the annual budget. The policy of relations between the Republican and local budgets is one of the important strategic issues facing the Republic of Kazakhstan. The changes that have occurred in the technology of budget relations have been most reflected in the recent years of reforming the budget relations of the center and regions, improving the financial technology of the organization of inter-budget flows [7].

Therefore, in order to strengthen the role of state regulation and state support, all state programs and subprograms should be defined in the strategic plan for the development of agriculture, in which there should be no duplication in the implementation of financial support for certain crops, livestock breeds or agricultural products. In this aspect, a conceptual approach is required to solve the urgent problems of the development of certain branches of agricultural production, animal breeds and livestock products. Unfortunately, the issues of zonal specialization of regions are still not resolved, there is no system of agricultural production, so the adopted state programs do not give an economic effect. Today, the agricultural policy of Kazakhstan should provide priority directions for the development of the single agricultural market of agricultural products and food in the Eurasian space on the basis of taking into account the capabilities of the regions and the implementation of the cluster approach in agriculture.

The main problems of the agricultural mechanism of Kazakhstan are: the low role of the state in the management of production processes (the share of the state in the volume of gross production is 24 %, Belarus – 74 %, in the Russian Federation – 48 %). Along with this, the high debt burden of rural producers, the lack of competitiveness of agricultural products in terms of price characteristics, the low volume of export-oriented products, except for grain and low quality [8].

The reason for all this is the lack of compliance with the necessary technological techniques, weak material and technical base of agricultural formations, lack of financial resources, the use of extensive approaches and the lack of modern highly productive technologies, the lack of rotation of crop rotations and turnover of breeding cattle in various farms. Along with this, the disparity in prices for agricultural and industrial products, the lack of use of agricultural land for its intended purpose, the lack of certification of products, public-private partnerships and others are of great importance.

Financial support of agriculture today is carried out by the state body of JSC “National Holding KazAgro”, financing of its activities is carried out at the expense of the Republican budget, bond loans, credit resources of second-tier banks and other financial institutions. This holding mediates the development of financial resources allocated by the state budget for the development of agriculture. Part of the allocated budget funds is directed to increase the authorized capital of the holding. The main directions of financing budget funds through this holding are: the program “Sybaga”, the program “Altyn asyk”, financing of small and medium-sized agricultural producers through credit partnerships, the development of non-commodity exports through JSC “Agrarian Credit Corporation”, ensuring effective employment of the rural population and the use of the potential of private farms through JSC “Fund for support of agriculture” and others. Since 2017, JSC “KazAgro” revised interest rates, and financing is carried out in three directions through the Agricultural Credit Corporation. The first – funding of second-tier banks at 1 % per annum, with the final annual rate for agricultural producers not exceeding 5 % per annum. The second – direct financing of Agricultural Credit Corporation at 2 % per annum with the provision of guarantees to banks. The third – financing through credit partnerships and microfinance organizations at 2 % per annum, with the final rate for rural producers not exceeding 6 % per annum. At the same time, the main borrowers of this Corporation are mainly large agricultural formations, the share

of small farms in the Republic accounts for only a small part of the allocated funds. Financing of agriculture through JSC "KazAgro" is visible from table 1.

Table 1 – Financing of agriculture through JSC "KazAgro", billion tenge

Type of financing	2012	2013	2014	2015	2016	2017
On carrying out spring and field works	80	60	40	60	60	60
On carrying out cleaning works	8	14	20	-	77	15
Information: data of JSC "KazAgro".						

As can be seen from the table for spring field work over the past three years, the state consistently provides financial support in the amount of 60 billion tenge, which are returned by rural producers at the end of the year. However, in 2015 the state did not allocate funds for harvesting, and in 2016 it allocated 77 billion tenge and in 2017 15 billion tenge. These funds were allocated for oilseed crops of sunflower, rapeseed, soybean, flax, sugar beet, rice, cotton, oats, potatoes.

One of the elements of state support of rural producers for modernization and technical re-equipment of existing and creation of new productions is agroleasing. The use of leasing by agricultural formations today allowed to purchase various modern agricultural machines and combines. However, the possibility of leasing varies in farms. Physically and morally obsolete agricultural machinery and equipment and high costs for their maintenance do not allow small and medium-sized forms of agricultural formations to fully solve technological operations, not to mention the use of agroleasing. Therefore, the priorities of industrial and innovative development of the sphere of agriculture should be state assistance in the modernization of the material and technical base of export-oriented agricultural formations by concentrating production capital on the basis of integration of the sphere of processing of agricultural products with the producers themselves. In this regard, the positive experience in the field of rice farming of large rice-sowing agricultural formations, where the management pays great attention to the modernization of production and the renewal of the machine and tractor fleet of farms on the basis of the application of agroleasing, deserves attention.

Important for state regulation and financial support for agriculture is the creation of an effective mechanism of regional innovative policy in which the system of complex support of innovative activity of agricultural enterprises for agricultural production development should occur in complex part not only of public authorities but also private businesses, financial institutions, public organizations and associations. On the other hand, the state should increase funding for scientific institutions on the basis of prioritization of crops and a systematic approach to agriculture in the regional aspect. In Kazakhstan, despite the presence of a certain network of scientific and technical institutions dealing with agricultural production, their number is very small, in addition, there is no integrated and systematic approach to the disclosure of the structure of scientific institutions, the state does not determine the strategy of development of the industry and does not form a system of territorial management of agricultural production [9, 10].

Kazakhstan as an agricultural and industrial country has huge possibilities for integration into the world market, however this requires to conduct a task-oriented and efficient agricultural policy aimed at development of regions by means of applying the system of management of agricultural industry. In this aspect it is required to attract new German projects oriented on intensification of agricultural industry. Through a broader lens to use a positive experience of Israel, EU counties as Holland, Sweden and others. The positive thing is the development of big production in Sweden which allows to use large crop areas of the north regions of Kazakhstan more efficiently on the basis of cooperation of the agricultural formations. As well it is required to fulfill diversification of agricultural industry taking into account requirements of the world market. Today, notwithstanding the high financial support from the government, Kazakhstan is dependant in sugar needs from the world market, covering own needs only by 11 %. The same situation is observed in relation to milk and dairy products. That is why it is required to develop a cattle breeding taking into account pedigree peculiarities by means of attracting investments and projects from Holland, Germany, Russia and other countries. Positive examples of the agricultural development, in particular in rural areas, include the experience of rural development in Germany and other countries of the European Union. In order to develop the agricultural machine building sector it is required to integrate this sector with the German agricultural machine building experience in some regions of our country. For instance,

the Kazakhstani professionals speak positively about the German harvester “Case”, which is successfully used in some rice-sowing farms of Kyzylorda oblast. The establishment of subsidiaries in this region will enable expanding the sale market of German companies in the Central Asia that accommodates vast agricultural areas [11].

Proceeding from these positions, the relationship between science and production should be ensured, the concept of rural development and rural areas should be developed, the mechanism of relations between rural producers and various scientific institutions and groups of scientists conducting research in this area should be formed.

Subsidies are the main form of covering part of the produced material costs in agriculture. However, in this regard, rural cotton producers last year did not receive the allocated amounts of subsidies due to the lack of elaboration of the mechanism of relations between them and the state authorities. The transition to the digitalization of relations between government agencies and representatives of agrobusiness, the use of electronic invoices in essence does not allow to prove to the state authorities the delivery of agricultural products. Therefore, only 10-15 % of the cotton crop goes to direct processing. It requires determining the real value of the purchase price for cotton grown by farmers, as the price at the level of 110 tenge per kilogram does not allow small farms to make a profit. The transfer of cotton plants to the status of warehouses sharply reduced the infusion into the sphere of cotton production. At the same time, the lack of direct links between cotton mills and farmers, a lot of intermediaries purchased by foreign traders does not allow cotton mills to buy cotton themselves, but only to process products as raw materials. At the same time, the Ministry of Agriculture cannot directly subsidize farms.

Therefore, today in the field of cotton production, there may be a reduction in this sphere, as production costs increase sharply from year to year. So, if in 2009 the cost per hectare was 65 thousand tenge, in 2019, they amounted to 129 thousand tenge. This situation leads to the transition of some farms to the sowing of rice culture. All this points to the lack of a targeted agricultural policy and strategy for the development of relevant sectors of agriculture on a regional scale. At the same time, the state through financial support mechanisms can successfully regulate the development of a particular sphere of agriculture.

Long-term practice of management shows that in the grain complex of the Republic there are also shortcomings of economic relations between processing and storage enterprises and various farms. At the same time, the state bodies represented by JSC “Gosprodkorporatsiya” do not control the process of storing grain in elevators, and grain that is in safe storage with the owners of elevators is subject to sale, although they are state stock. The situation with the use of agricultural land is no better. In this regard, the state has in recent years seized unused land and sold it in the future through auctions. At the same time, it is necessary to ensure annual monitoring and control over the rational and targeted use of agricultural land, to strengthen the responsibility of regional governors for this work. Along with this, there is a need on the part of state agricultural authorities and specialized land organizations to exercise annual control over the preservation of soil condition and fertility, because excessive and harmful use of arable land without taking into account the characteristics of the soil and introduced fertilizers leads to soil structure disturbance.

Given the state support for agriculture, agricultural yield and its structure are important, as can be seen from table 2.

Table 2 – Composition and structure of agricultural products of the Republic of Kazakhstan

Indicators	Years				
	2013	2014	2015	2016	2017
Gross domestic product, million tenge	35 999025,1	39 675832,9	40 884133,6	46 971150,0	51566764,1
including					
Agricultural product	2 940 723,1	3 133 198,4	3 295 159,7	3 669 122,2	4 085 483,4
Share of agricultural production to GDP, %	8,2 %	7,9 %	8,1 %	7,9 %	8 %
Crop production	1 683 851,4	1 739 436,4	1 825 236,7	2 047 580,8	2 278 340,9
Livestock product	1 256 871,7	1 393 762	1 469 923	1 621 541,4	1 807 142,5
Note: compiled on the basis of information of the Committee on statistics of the Republic of Kazakhstan.					

As can be seen from the table, the gross domestic product is growing from year to year, which in 2017 is 51566764,1 million tenge, including agricultural products amounted to 4085483,4 million tenge, which is 8 % of the total gross domestic product. The share of crop production in 2017 is 55,8 %, and livestock products – 44,2 %. At the same time, Kazakhstan has great opportunities to increase the share of livestock products, which requires solving problems in this industry in accordance with the Message of the President of the Republic of Kazakhstan to the people of Kazakhstan, which defines priorities for the development of AIC.

In the context of the current year, in the second quarter of 2019, the consumption of meat and meat products decreased against the first quarter by 1,8 %, with an average of 19,1 kg per inhabitant of the country, which increases by 2,5 % against the same period of 2018, a sharp reduction in meat consumption is observed in rural areas, which is an average of 17,7 kg per rural resident. At the same time, many villagers do not have personal livestock in their farmsteads, which is due to the lack of pastures and hay around the centers of the aul districts, as well as fodder for livestock. Therefore, local executive bodies should take measures to create places around the centers of aul districts for grazing cattle and harvesting hay for rural residents. The increase in demand for meat and meat products and the shortage of these products cause an increase in prices on the consumer market for all types of meat products and poultry, which requires strengthening of state regulation in terms of breeding cattle.

Despite the existence of an appropriate legislative and regulatory framework for the development of agriculture, state regulation requires the grouping of problems in the organizational, institutional, legal, economic, scientific and technological aspects with the definition of appropriate tools and mechanisms for the implementation of these pressing problems in this area. Along with this, there is a need to protect state programs and projects from corrupt actions of representatives of state structures, because the allocated budget funds often do not reach the agricultural producer, and social programs of rural areas are not implemented. All this reduces the role of state regulation and state support, increases the costs of this sphere of the national economy.

Today, many countries of the Middle East and South-East Asia, in particular China and Iran, have a great interest in agricultural products. During the visit of the President of Kazakhstan K. Tokayev to China, contracts for the supply of livestock dairy products and woolen raw materials were signed. In this regard, the establishment of enterprises for the primary processing of wool, the definition of zones for the placement of certain breeds and directions of cattle, which increase the export opportunities of the country, requires a solution.

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ҚАЗАҚСТАН РЕСПУБЛИКАСЫНДА АУЫЛ ШАРУАШЫЛЫҒЫН МЕМЛЕКЕТТІК РЕТТЕУДІҢ МӘСЕЛЕЛЕРІ МЕН ЖЕТІЛДІРІЛУІ

Аннотация. Мақалада автор әлемдік экономиканың жаһандану жағдайындағы ауыл шаруашылығын мемлекеттік реттеудің маңызды рөліне назар аударады, Қазақстандағы агроөнеркәсіптік кешенді мемлекеттік реттеу мен дамытудың қазіргі проблемаларын қарастырады. Мемлекеттік реттеу туралы аналитикалық ақпарат береді. Аймақтардағы ауылшаруашылық өндірісінің жағдайын жақсарту шараларын ұсынады. Республиканың ауыл шаруашылығы саласындағы тиісті бағыттары мемлекеттік реттеудің барлық факторлары мен құралдарының өзара байланысына қатысты деп есептейді автор. Сонымен қатар ауылшаруашылық өндіріс жүйесі мен мемлекеттік реттеудің тиімділігін арттыру, жер, материалдық, еңбек, су және басқа да табиғи ресурстарды пайдалануды оңтайландыру, ауылшаруашылық өнімінің сапасын жақсартумен байланысты деп санайды. Еліміздің ауылшаруашылығы саласындағы мемлекеттік аграрлық саясатты қамтамасыз етудің іргелі негізін анықтай отырып, мақалада астық, ет және сүт қосалқы кешендері сияқты ең дамыған азық-түлік қосалқы кешендері анықталған. Сонымен қатар агроөнеркәсіптік кешеннен астық өндіруді қамтамасыз ететін астық өнімдерінің субкомплексі өте сәтті дамыған деп саналады. Сонымен қатар мақалада ет-сүт кешенінің маңыздылығы айтылған. Халықаралық тәжірибеге сәйкес, мал шаруашылығындағы ұсақ шаруашылық түрлерін нығайтудың маңыздылығына назар аудара отырып, бұл

нақты мал шаруашылығы салалары мен аймақтарының ерекшеліктерін ескеру қажеттігін көрсетеді. Автор күріш өсіру аймағында дақылдардың ауыспалы егістігімен сәйкестікті жақсарту қажеттілігін қарастырады, бұл қажетті технологиялық әдістерге, ауылшаруашылық кәсіпорындарының материалдық-техникалық базасының әлсіздігіне, қаржылық ресурстардың жетіспеушілігіне, кең тәсілдердің болуына және қазіргі заманғы жоғары өнімді технологиялардың болмауына, шағын және орта фермаларда ауыспалы егіске сәйкес келмеуіне байланысты, осы ерекшеліктер мемлекеттік қолдауды қажет етеді, сондай-ақ жүйелі, жан-жақты, ұтымды және тиімді қағидатты қамтамасыз етуі керек. Автордың пікірінше, мемлекеттік реттеу ұйымдастырушылық, институционалдық, құқықтық, экономикалық, ғылыми және технологиялық аспектілерде ауылшаруашылық өндірісі саласындағы осы өзекті проблемаларды іске асырудың тиісті құралдары мен тетіктерін анықтай отырып, біріктіруді қамтамасыз етуі керек.

Түйін сөздер: Мемлекеттік реттеу, мемлекеттік бағдарлама, ауыл шаруашылығы, өсімдік және мал шаруашылығы, экспорт, ішкі, сыртқы нарық, тетіктер, құралдар, ет және ет өнімдері, дәнді дақылдар, ауыспалы егіс, минералды тыңайтқыш, ауыл шаруашылығын қалыптастыру, өндірістік шығын, ауыл тұрғындары, елдімекендер, агролизинг, аграрлық саясат.

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ПРОБЛЕМЫ И СОВЕРШЕНСТВОВАНИЕ ГОСУДАРСТВЕННОГО РЕГУЛИРОВАНИЯ В СЕЛЬСКОМ ХОЗЯЙСТВЕ РЕСПУБЛИКИ КАЗАХСТАН

Аннотация. В статье автор выделяет важную роль государственного регулирования в сельском хозяйстве в условиях глобализации мировой экономики, рассматривает современные проблемы государственного регулирования и развития сферы сельского хозяйства Казахстана, приводит аналитическую информацию по состоянию государственного регулирования, предлагается меры для улучшения состояния сельскохозяйственного производства в регионах с учетом зонального размещения системы ведения сельскохозяйственного производства. Автор считает, что актуальными направлениями в области сельского хозяйства республики являются взаимосвязь всех факторов и инструментов государственного регулирования, а также повышение эффективности ведения системы сельскохозяйственного производства и государственного регулирования, оптимизация использования земельных, материальных, трудовых, водных и других природных ресурсов, повышение качества производимой сельскохозяйственной продукции и увеличение рентабельности сельскохозяйственных формирований страны. Определяя фундаментальной основой обеспечения государственной аграрной политики в сфере сельского хозяйства страны, в статье выделяются наиболее развитые продуктовые подкомплексы, как зернопродуктовый, мясной и молочный подкомплексы. При этом считается, что наиболее успешно развитым является зернопродуктовый подкомплекс, который со стороны сферы сельского хозяйства обеспечивает производство зерна. Наряду с этим в статье выделяется важность мясопродуктового и молочного комплекса. Выделяя согласно международного опыта важность укрепления малых форм хозяйствования в животноводстве, в то же время указывается на необходимость учета специфических особенностей тех или иных отраслей животноводства и регионов. В регионе рисоводства автор считает необходимым улучшение соблюдения севооборотов, показывает о несоблюдении необходимых технологических приемов, слабой материально-технической базе сельхозформирований, нехватки финансовых ресурсов, о наличии экстенсивных подходов и отсутствие современных высокопродуктивных технологий, несоблюдении ротации севооборотов в малых и средних хозяйствах, при котором государственная поддержка должна учитывать эти особенности и обеспечивать принцип системности, комплексности, рациональности и эффективности поддержки с экономической отдачей вкладываемых государственных средств. По мнению автора, государственное регулирование должно обеспечить группировку проблем в организационном, институциональном, правовом, экономическом, научном и технологическом аспекте с определением соответствующих инструментов и механизмов реализации этих насущных проблем в сфере аграрного производства.

Ключевые слова: государственное регулирование, государственная программа, сельское хозяйство, растениеводство, животноводство, экспорт, внутренний, внешний рынок, механизмы, инструменты, скотоводство, мясо, мясные продукты, зерновые, севообороты, минудобрения, сельхозформирования, производственные затраты, сельские жители, сельские территории, агролизинг, аграрная политика.

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FEATURES OF DETERMINING THE COST OF TRANSPORT SERVICES

Abstract. The strong competition in the logistics market enforces the service provider companies to enhance the capabilities of their management accounting systems. It is of high importance to know the real costs of transport services as well as the cost efficiency of activities contributing to the production of services. This information is needed for assessing the profitability and operation efficiency and for determining the price of services. Traditional costing methods, however, are not always able to provide the information necessary for decision support in the required quality. They may even distort service cost calculations as detailed cost driver analyses are not applied within conventional costing regimes. Thus it is worth introducing alternative cost calculation methods which improve the accuracy and reliability of service cost data [1].

To properly manage costs in transport logistics, it is necessary to optimize all stages of the transport and logistics process-from choosing the type of transport and building the supply chain to planning routes and monitoring the execution of tasks.

The article deals with determining the optimal cost of auto cargo transportation, taking into account internal and external factors of influence. The results of the research in the article show that a transport company should have different payment options for paying for a completed flight with specific brands of cars, i.e. the cost of one m^3, t, km, depending on the type of orders and the distance of transportation.

The materials consider the methodology of determining the contractual price of transport services in the Republic of Kazakhstan. In the market conditions, the main objective is the correctness and accuracy of the assessment of the actual costs of the implementation of the transport service and, as a result, the correct pricing of this service.

Keywords: motor transport, factors, analysis, trucking companies, cost, efficiency, service.

Introduction. On the importance of transportation much has been written, and little need be said to stress further the significance of the vital service rendered by transport in the intricate and interdependent economic organization of modern times. It must not be forgotten that road transport has had a long history and that it has done its full share to help on the progress of civilization [2].

Market transformations in our country are forcing regional trucking companies to increase the efficiency of using material resources and personnel [3-6]. Only the trucking company that will meet the requirements of market economy to the fullest extent will be able to operate successfully tomorrow. Therefore, their primary objective is the accuracy of the the actual cost of transport services and, as a result, the accurate assignment of rates for this service [7].

Main part: The previously used indicators - ton, t.km, toll mileage km in the new conditions do not reflect the real costs of the carrier for the implementation of transport service and the actually necessary

payment of the client for the service rendered [8]. Therefore, the “reference” of all standards (maintenance and repair, fuel consumption, calculation of carrier cost) to the mileage does not reflect the actual energy costs of the vehicle to perform the transport service and its subsequent technical condition. In view of this, it is necessary to use another indicator of the vehicle operation process, namely the mechanical work of the vehicle engine in the process of movement (and not the mileage) [9-11].

In addition, the efficiency of road transport is mainly evaluated by the value of carrier cost, which largely depends on the level of technical operation of vehicles. Maintenance of a vehicle accounts for up to 25 % of the cost [12]. Therefore, increasing the efficiency and quality of the road transport means, first of all, reduction of the carrier cost by improving the quality of vehicles released, rational organization of transportation, improving the technical operation of vehicles.

There is one more problem. If we don’t set the necessary time for intermediate technological processes in the reduction of trucking, it is impossible to determine the scope of transportation of vehicles, as well as the implementation of the route plan [13]. At the same time, the quality and expedience of the intermediate technological processes depend on the level of mechanization and qualification of specialists involved in the supply chain.

The above economic indicators of trucking companies directly depend on capital compensation. Awareness of the need for efficient use of time is associated with marketing research of the road transportation market [14].

Reduction and efficiency of the road transport supply chain depend on the time spent on periodic technological trends. This dependence is expressed by the following equation:

$$K = T_{аж} / T_{ат} . \quad (1)$$

where: *Таж* – time spent on transportation in order execution, hours; *Тат* – time spent on the acceptance, cargo loading/unloading, hours.

In many cases, especially in the provision of cargo for production, movement of private apartment owners, transportation of goods to retail facilities, the likelihood of increase in the time of intermediate technological processes (*Тат*) is higher than the movement time of the main vehicles (*Таж*) [15]. Therefore, depending on the contract features, before cargo transportation, the driver must receive from the dispatching staff full information about his physical, transportation characteristics and transport characteristics, he must know the transportation route and the road condition, have a waybill.

Loading and unloading of goods is carried out by consignor or consignee, thus the costs of intermediate technological processes, wages are determined beforehand by bilateral agreement of the parties. However, the reduction and efficiency of the road transport chain includes not only the movement of vehicles of intermediate technological processes, but also the documentation of the movement of goods: the goods to be transported must be labeled; placed so that the labeling of the goods is visible; loading-unloading points and the volume of goods must be indicated. This will improve the acceptance of containers and goods, accelerate the verification of its quality, determine the accuracy of the price [15-17].

The reduction of the transportation chain is measured by the time spent on the execution of orders, for this reason, it is necessary to rationally place the goods: in the event of simultaneous transportation of heavy and light cargo, the heavy load must be placed below, on the top – light load. In the warehouses there should be places for the selection, grouping and packing of goods, as well as production facilities intended for storage in containers, repair of containers, places for loading-unloading mechanisms, functional, domestic and consulting areas. Therefore, taking into account the solvency of consumers, various methods are recommended to determine the cost of the transport services rendered, depending on the form and types of orders [18].

However, when determining the contractual price of transport services, the following components must be taken into account: expenses for operation and restoration of vehicles; driver’s salary; overhead costs of transport companies.

The first group of observations was carried out for low-capacity Gazelle trucks, i.e. with a loading capacity up to 2.0 tons for transportation of goods around the city. In addition, loading and unloading are performed by the customer.

Results of the study are presented in diagrams. After order acceptance, the first vehicle drives to the place of loading, and loading is arranged in two places and unloaded in one place, i.e. in the store warehouse. The time taken to complete the first order is 3 hours 45 minutes and the total mileage is 60 km. The second vehicle is loaded in two places and unloaded in one place, the time for order execution is 3 hours 36 minutes, mileage – 70 km. It took 5 hours 45 minutes to complete the fifth order, the total mileage – 100 km (table 1).

Table 1 – Calculation of the time spent on transportation of goods by a vehicle with a capacity of up to 2.0 tons.

Vehicle ordinal number	Arrival time, min.	Cargo acceptance and loading time, min.	Duration of the trip to the place of unloading, hour	Unloading time, min.	Driving time to trucking company, hour
1	15,0	35,0	1,50	25,0	1,0
2	17,0	40,0	1,20	27,0	1,0
3	14,0	36,0	2,00	20,0	1,2
4	16,0	50,0	1,20	30,0	1,0
5	13,0	45,0	2,50	35,0	1,7
Average value	15,0	41,5	1,68(100,8)	27,4	1,18 (70,8)

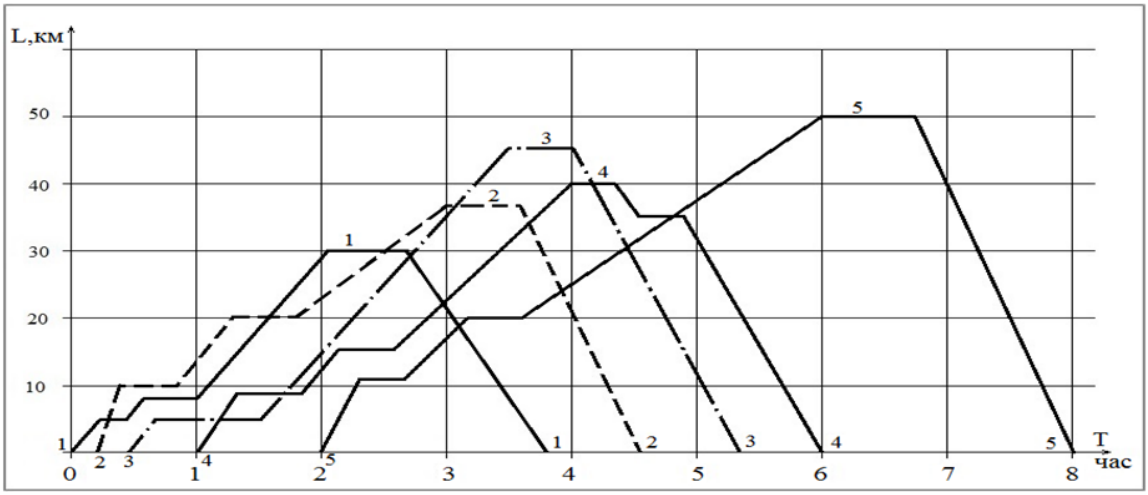

Figure 1 - Movement table of vehicles with a capacity of no more than 2 tons, depending on the type of orders

The average execution of one conditional order is 4.26 hours, of which 3.11 hours are on the road or in transit. The travel factor is 0.73. If the execution of these types of orders will be paid according to distance traveled or the mileage, the trucking company receives less for the transport services rendered. Therefore, in this case, the contractual price or the cost of transport services should be determined by time.

If the order will be fulfilled within the settlements, the conditional vehicle speed is 40 km/h, the consumer orders a vehicle for 5 hours. Then the cost of transport services is recommended to be determined by the following method. In five hours a vehicle will travel 200 km, the vehicle consumption rate is 17 liters/100 km or the estimated fuel consumption is 34 liters at the price of 110 tenge, the total cost is 3740 tenge. For accounting of other operating costs of the vehicle, this price is increased by 30 %, and then the operational cost of the vehicle for five hours will be 4862 tenge. The driver's salary is determined at the rate of 500 tenge/hour, for 5 hours – 2500 tenge.

For accounting of overhead costs of trucking companies, taking into account the estimated profit, the total amount is increased by another 30 %, thus (4862 + 2500) x1.3 = 9570.6 tenge, or 1914.12 tenge per hour of operation of this type of vehicle.

The second group of observations was carried out for trucks with a capacity of 3.5-5.0 tons. The results obtained are presented in diagrams, and the average costs of intermediate technological processes in the supply chain are presented in table 2.

Table 2 – Calculation of the time spent on cargo transportation with a capacity of 3.5-5.0 tons

Vehicle ordinal number	Arrival time, min.	Cargo acceptance and loading time, min.	Duration of the trip to the place of unloading, hour	Unloading time, min.	Driving time to trucking company, hour
1	25,0	85,0	2,0	45,0	1,3
2	33,0	105,0	3,20	67,0	2,5
3	34,0	90,0	3,50	60,0	3,2
4	15,0	85,0	3,20	35,0	2,6
5	18,0	80,0	4,00	40,0	2,7
Average value	25,0	89,0	3,18 (190,8)	49,4	2,46 (147,6)

As you can see in the diagram, the average execution of specific orders is 8 hours 21 minutes, while the total mileage of vehicles does not exceed 100 km.

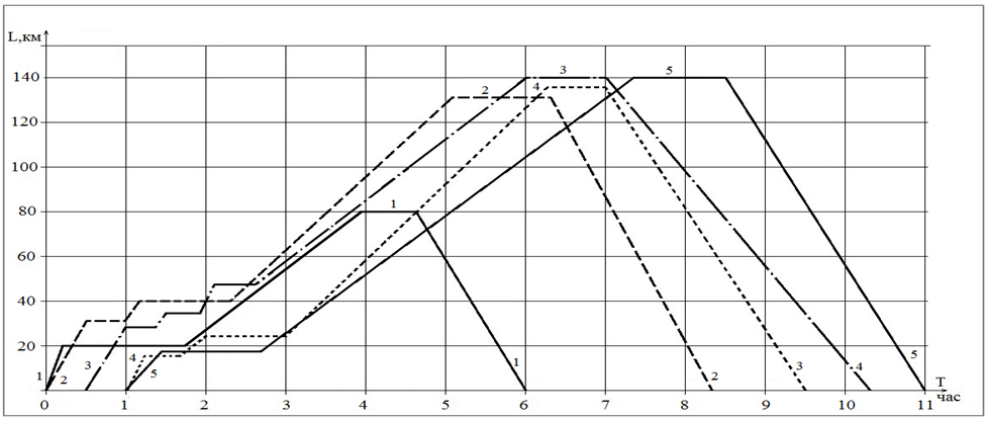

Figure 2 - Movement table of vehicles with a capacity of no more than 5 tons, depending on the type of orders

The total execution of orders was 8.21 hours, of which 6.0 hours on the road, i.e. the travel factor of a vehicle is 0.72. In this case, it is recommended to determine the cost or contractual price of the transport services rendered by time, according to the above method. We take the average fuel consumption as equal to 25 liters per 100 km, the cost is 110 tenge/L. We accept all the parameters as in the previous one. (50 L x 110) x 1.3 = 7150 tenge. The driver's salary is 2500 tenge. For accounting of overhead costs of trucking companies, taking into account the estimated profit, the total amount is increased by another 30 %, thus (7150 + 2500) x1.3 = 12 545.0 tenge, or 2509 tenge per hour of operation of this type of vehicle.

For the third option, transportation of goods by a vehicle with a capacity of more than 10 tons is considered. The results obtained are presented in diagrams and table 3.

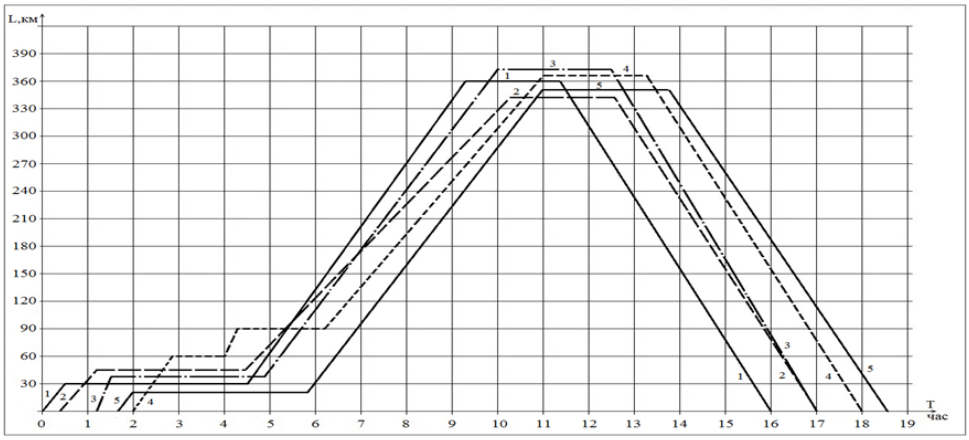

Figure 3 - Movement table of trucks depending on the type of orders

The figure shows that loading is possible in different places, and as practice shows, unloading of goods is mainly centralized, i.e. in one place. This is a key question, since heavy trucks with other numbers and series are highly questionable and cause strong interest on the part of regulatory authorities of other regions, therefore unloading in one place is desirable for both parties.

Table 3 – Calculation of the time for cargo transportation with a capacity of more than 10 tons

Vehicle ordinal number	Arrival time, min.	Cargo acceptance and loading time, min.	Duration of the trip to the place of unloading, hour	Unloading time, min.	Driving time to trucking company, hour
1	45,0	260,0	5,0	120,0	4,3
2	50,0	180,0	5,20	150,0	4,5
3	30,0	180,0	5,50	140,0	4,2
4	55,0	220,0	5,20	130,0	4,6
5	60,0	240,0	5,00	140,0	4,7
Average value	48,0	216,0	5,18 (310,8)	136,0	4,46 (267,6)

The total time for order execution is 16.31 hours, of which 10.44 hours are on the road, and the travel factor is 0.64. Now let's determine the cost of transport services acceptable for both parties. According to the above methodology, the cost of one hour for this type of vehicle will be: fuel consumption 40 liters/100 km, fuel price 102 tenge, driver's salary – 700 tenge/hour. The order is executed outside settlements, the average speed is 70 km/h. The calculation is based on 5 hours. (350 km x 0.4 x 102) = = 14280 tenge fuel cost, operating cost – 18564 tenge, driver's salary – 5x700 = 3500 tenge, the total cost of work will be (18564 +3500) x 1.3 = 28 683.20 tenge or 5 736.64 tenge/hour. Then the consumer must pay 93 564.60 tenge to trucking company for 16.31 hours.

The increase in the value of goods depending on the volume and weight of goods should also be considered. If this customer used the full volume of the body without trailer, which is usually 26-50 m^3 (KamAZ, MAZ), then the transportion cost of 1 m3 is 3568.64 or 1871.30 tenge. For transportation of goods over a distance of no more than 500 km, this price is considered lower than the market price and very acceptable. The use of heavy trucks may depend on the volume and weight of the goods, as well as on the delivery time. In any case, the consumer compares his ability and counts the amount of expected profit from the sale of particular goods, taking into account the cost of transportation. If the contractual product sales price depends on the delivery time, the customer obviously chooses the increase of future profit from the product sale and uses an incomplete body or carrying capacity of a particular vehicle, pays by time or for a full body. Therefore, the trucking company must have different options for calculation of the payment for the route with specific brands of vehicles, i.e. the cost of one m3, ton, km, depending on the type of orders and the transportation distance [19-20].

Table 3 – Calculation of the cost of works of Tulpar LLP

Vehicle class by carrying capacity, ton	Quantity, units	Technical availability	Annual scope of work in service, hour	Annual amount of performance, thousand tenge
Before 2,0	12	0,7	(2400x12) 28 800	55 126,656
Before 5,0	7	0,7	(2400x5) 12 000	30 108,00
Above 10	15	0,7	(2400x15) 36 000	206 519,04
TOTAL	34	0,7	64 800	291 753,69

Thus, the total expenses will be:

- overhead costs – 87 526,107 thousand tenge, including estimated profit – 26 257,832;
- salary of drivers – 20 400,00 thousand tenge;
- operating costs of vehicles – 227,59 thousand tenge (291 753,69-20 400,00-87 526,107);
- estimated cost of consumed fuel – 159,313 thousand tenge (227,59 x 0,7);
- repair pool – 68,277 thousand tenge (227,59 – 159,313).

In view of the foregoing, for small and medium-sized trucking companies as well as private entrepreneurs, we can recommend the following methodology to determine the cost of transport services rendered.

$$С_{тр} = (g_{л/час} \text{ x } С \text{ гсм x } К_{экс} + З_{вод}) \text{ x } К_{атп} \quad (2)$$

where: $С_{тр}$ – the cost of transport service for one hour of operation of a particular vehicle, tenge; $g_{л/час}$ – fuel consumption for one hour of vehicle operation, L/hour; С гсм - cost of one liter of fuel, tenge; $К_{экс}$ – coefficient taking into account all the operating costs for one hour of vehicle operation, usually equal to 1.3; $З_{вод}$ –driver's salary for one hour of work depending on the order complexity and the vehicle brand, tenge/hour; $К_{атп}$ – overhead costs of trucking company or private entrepreneur, usually equal to 1.3.

Conclusion. Market transformations in our country are forcing regional trucking companies to increase the efficiency of using material resources and personnel. Only the trucking company that will meet the requirements of market economy to the fullest extent will be able to operate successfully tomorrow. Therefore, their primary objective is the accuracy of the the actual cost of transport services and, as a result, the accurate assignment of rates for this service.

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КӨЛІК ҚЫЗМЕТТЕРІНІҢ ҚҰНЫН АЙҚЫНДАУ ЕРЕКШЕЛІКТЕРІ

Аннотация. Қазақстан Республикасында көлік саласы көліктің алты негізгі түрімен ұсынылған: автомобиль, темір жол, ішкі су жолы, теңіз, әуе және құбыр желісі. Алайда Қазақстанда көлік жүйесінің негізі автомобиль көлігі болып табылады. Ол 70%-дан астам жүк тасымалын қамтамасыз етеді, елдегі халық шаруашылығының барлық салаларында көлік міндеттерін шешуге қатысады.

Автомобиль көлігі – байланыстырушы тізбек, басқа көлік түрлерімен өзара тығыз әрекеттеседі, қысқа қашықтықтарда жүк тасымалдары бойынша монополиялық құқыққа ие деуге болады. Нарықтық экономиканың заманауи жағдайында автомобиль көлігінің оңтайлы қызмет етуінің маңызды факторларының бірі – қаржы-экономикалық басқарудың тиімділігін қамтамасыз ету. Ол үшін автокөлік саласы қызметінің экономикалық негіздерін білу, қаржы-экономикалық көрсеткіштерді пайдалана білу және талдай білу, автокөліктің қаржы-экономикалық қызметін талдау нәтижелерін тәжірибеде қолдана білу қажет.

Қазіргі күні нарықтық қатынастардың қалыптасу, экономикадағы түрлену процестері, өткір бәсекелестік көлік кәсіпорындарының іс жүргізуде, соның ішінде баға қалыптастыру және баға белгілеу процесінде жаңа тәсілдерді іздеуді талап етеді. Көлік кәсіпорындары басшылығы күн сайын қандай тариф түрлерін қолдану керек, қандай жағдайда баға белгілеудің қан әдістерін қолданған дұрыс және т.б. сияқты мәселелерді шешуіне тура келеді. Бұл мән-жайлар ҚР-да көлік қызметтеріне баға белгіленуін зерттеудің мәнін арттырады.

Тасымалдаулардың өзіндік құны көрсеткіш ретінде автокөлік қызметін бағалауда үлкен мәнге ие, себебі тасымалдаушының қаржылық жай-күйіне шешуші әсерін тигізеді: өзіндік құн қаншалықты төмен болса, жүк тасымалдауды жүзеге асыратын кәсіпорынның немесе жеке кәсіпкердің қаржылық ахуалы соншалықты жақсы. Тасымалдаулардың өзіндік құнын дұрыс айқындау өнімнің өзіндік құны көлік қызметтері өндірісіне жанды және қоғамдық еңбектің шығынын көрсететін қорытынды көрсеткіш болып табылатыны себебінен ғана емес, оның деңгейінің көлік қызметтері тиімділігінің басты көрсеткіштерінің бірі болуы себепті маңызды.

Елімізде жүріп жатқан нарықтық өзгерістер өңірлік автокөлік компанияларын материалдық ресурстар мен қызметкерлерді пайдаланудың тиімділігін көтеріп отыруға мәжбүрлейді. Ертеңгі күні нарықтық экономиканың талаптарына барынша жоғары дәрежеде сәйкес келетін атокөлік компаниясы ғана табыспен жұмыс істей алады. Сондықтан да көлік қызметін орындауға нақты шығындарды бағалаудың дұрыстығы мен дәлдігі және осының салдары ретінде осы қызмет үшін баға тағайындаудың дұрыстығы негізгі міндеттердің бірі болады.

Қазақстандық автокөлік кәсіпорындары көрсетілетін көлік қызметтерінің өзіндік құнын есептеудің әртүрлі нұсқаларына ие болуы тиіс. Бүгінгі таңда автокөлік қызметтеріне шығындарды оңтайландыру мәселесі әлі де өзекті. Көлік логистикасында шығындарды сауатты басқару үшін көлік түрін таңдау және

жеткізулер тізбегін құрудан бастап, бағыттарды жоспарлау және тапсырмалар орындалуын бақылауға дейінгі көлік-логистикалық процестің барлық кезеңдерін оңтайландыру қажет.

Мақалада әсер етудің ішкі және сыртқы факторларын ескеру мен жүкті авто тасымалдаудың оңтайлы құнын айқындау қаралады. Мақаладағы зерттеу нәтижелері автокөлік кәсіпорнының нақты автомобиль маркалары орындаған сапар үшін төлем ретінде есептесудің әртүрлі нұсқаларына ие болуы тиіс, яғни тапсырыс түрі мен тасымал қашықтығына қарай бір м3, т., км құны.

Түйін сөздер: автомобиль көлігі, факторлар, талдау, автокөлік компаниялары, құн, тиімділік, сервис.

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ОСОБЕННОСТИ ОПРЕДЕЛЕНИЯ СТОИМОСТИ ТРАНСПОРТНЫХ УСЛУГ

Аннотация. Транспортная отрасль в Республике Казахстан представлена шестью основными видами транспорта: автомобильным, железнодорожным, внутренним водным, морским, воздушным и трубопроводным. Однако основой транспортной системы в РК является автомобильный транспорт. Он обеспечивает перевозку более 70% грузов, участвует в решении транспортных задач во всех отраслях народного хозяйства страны.

Автомобильный транспорт является связующим звеном и тесно взаимодействует с другими видами транспорта, а на коротких расстояниях фактически обладает монопольным правом по перевозкам грузов. В современных условиях рыночной экономики одним из важнейших факторов оптимального функционирования автомобильного транспорта является обеспечение эффективности финансово-экономического управления. Для этого необходимо знать экономические основы деятельности автотранспортной отрасли, уметь использовать и анализировать финансово-экономические показатели, результаты анализа финансово-хозяйственной деятельности автотранспорта применять на практике.

В настоящее время процесс формирования рыночных отношений, преобразования в экономике, острая конкуренция требуют от транспортных предприятий поиска новых подходов к ведению дел, в том числе к процессу формирования цен и ценообразованию. Каждый день руководству транспортных предприятий приходится решать: какие виды тарифов применять, какие методы ценообразования более предпочтительны в тех или иных условиях и т.д. Эти обстоятельства повышают значимость изучения ценообразования на транспортные услуги в РК.

Себестоимость перевозок как показатель имеет большое значение при оценке автотранспортной деятельности, поскольку оказывает решающее влияние на финансовое состояние перевозчика: чем ниже себестоимость, тем лучше финансовое состояние предприятия или индивидуального предпринимателя, осуществляющих перевозки грузов. Правильное определение себестоимости перевозок важно не только потому, что себестоимость продукции является итоговым показателем, отражающим затраты живого и общественного труда на производство транспортных услуг, но и потому, что её уровень является одним из главных показателей эффективности транспортных услуг.

Рыночные преобразования, идущие в нашей стране, заставляют региональные автотранспортные компании повышать эффективность использования материальных ресурсов и персонала. Успешно работать завтра сможет только та автотранспортная компания, которая будет в наибольшей степени соответствовать требованиям рыночной экономики. Поэтому основной из задач является правильность и точность оценки фактических затрат на выполнение транспортной услуги и, как следствие, правильность назначения цены за эту услугу.

Казахстанские автотранспортные предприятия должны иметь разные варианты расчета себестоимости оказываемых транспортных услуг. Актуальным на сегодняшний день остается вопрос оптимизации затрат на автотранспортные услуги. Для грамотного управления затратами в транспортной логистике необходимо оптимизировать все этапы транспортно-логистического процесса – от выбора вида транспорта и построения цепи поставок до планирования маршрутов и контроля выполнения заданий.

В статье рассматривается определение оптимальной стоимости автоперевозки грузов с учетом внутренних и внешних факторов влияния. Результаты исследования в статье показывают, что автотранспортное предприятие должно иметь разные варианты расчеты для оплаты за выполненный рейс с конкретными марками автомобили, т.е. стоимость одного м3, т, км в зависимости от вида заказов и расстояния перевозки.

Ключевые слова: автомобильный транспорт, факторы, анализ, автотранспортные компании, стоимость, эффективность, сервис.

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KAZAKHSTAN LEGISLATION IN THE RELIGIOUS SPHERE: HISTORY AND PROSPECTS FOR DEVELOPMENT

Abstract. Objective: to study Kazakhstani legislation in the religious sphere in the historical aspect of development, as well as to identify and justify ways of further improvement, including through a comparative analysis with foreign legislation.

Method or methodology of work: When writing a scientific article, general scientific (logical, structural and system analysis, synthesis, comparison, abstraction, induction and deduction, modeling), special techniques, methods of researching phenomena and processes (specifically historical, dialectical, formal logical, structural-functional, comparative law method) were used. The analysis of regulatory legal acts was done.

Results of work: Analysis of previous regulatory legal acts, as well as the current Kazakhstan legislation in the religious sphere, the study of international experience, justification for the adoption of the draft Law of the Republic of Kazakhstan "On Amendments and Additions to Some Legislative Acts of the Republic of Kazakhstan on Religious Activities and Religious Associations".

Scope of application: legislation and law enforcement.

Conclusions: The result of the research work is an attempt to justify the need for adoption at this stage of development of relevant amendments aimed at improving legislation on religious activities and religious associations.

Key words: legislation in the religious sphere, religion, religious associations, foreign legislation in the religious sphere, secular state, draft law.

Introduction. Religion at all stages of the development of human civilization has been and remains one of the most important factors affecting the worldview and way of life of every believer, as well as relations in society as a whole. Each religion is based on belief in supernatural powers, organized with the worship of God or gods, and on the need to observe a certain set of norms and rules prescribed by believers. Religion in the modern world plays almost the same important role as it did thousands of years ago, since according to surveys conducted by the American Gallup Institute, at the beginning of the 21st century, more than 90 % of people believed in the existence of God or higher powers, and the number of believers is approximately the same in highly developed states, and in the countries of the "third world" [1].

As you know, religion is a spiritual state of each person within himself. If a person is a true believer, then no one forbids him to follow certain rules and laws of his religion. But also, the believer should not forget that, first of all, he is a citizen of a secular state and therefore must respect and observe the rights and freedoms of those around him. Thus, the Republic of Kazakhstan, in accordance with the Constitution, affirms itself as a secular state in which no religion can be established as state or mandatory, and religious associations are separated from the state and are equal before the law [2]. The aforesaid means that the state ensures freedom of lawful activity of religious associations, but does not interfere in the determination by citizens of their attitude to religion and religious affiliation, in the activities of religious associations, does not entrust the latter with the performance of the functions of state bodies and local self-government bodies. In turn, religious associations do not interfere in the activities of the state.

Religion has the different spiritual and moral ideals and cultural traditions in the Republic of Kazakhstan. The power of religious ethics is actively used to form the moral and spiritual world of the young generation [3].

Today, Kazakhstan has developed its own model of relations between the state and religion. As the leader of the nation N.A. Nazarbayev in his speech at the XVII session of the Assembly of the People of Kazakhstan: "Kazakhstan is the only place in the world where Muslims, Orthodox, Catholics, Protestants, Buddhists, Jews live in harmony" [4]. And, undoubtedly, one of the components of the peaceful coexistence of various nations and ethnic groups is a faithful and balanced state policy.

The constituent elements of state policy in the religious sphere is the existence of a solid legislative base, forms and methods of regulating certain relations in society, as well as special state bodies that implement this policy. Currently, in Kazakhstan all this is taken place.

The Kazakhstani experience of religious consent, of course, can be called unique. Confirmation of this is that in the republic at the present stage of development a wide range of religious associations is represented: from traditional dogmas that have an important historical role in the development of culture and spiritual life of the people of Kazakhstan (Islam of the Hanafi trend and Orthodox Christianity) to new, non-traditional, not previously presented in the country of religions. Today in the republic there are 18 denominations and 3754 officially registered religious associations [5].

This study has not only cognitive and scientific value, but, from the point of view of jurisprudence, a certain demand and practical value at the present stage of social development.

Methods. In the research process, both foreign and domestic sources were used, a list of which is indicated in the list of references. In the course of the work, such scientific research methods as scientific research, comparative analysis, and generalization were used.

Results. Religion in modern Kazakhstan is undergoing a stage of rapid development, since in a post-communist society the demand for spiritual and mystical teachings is quite high. In 2017, the Minister of Religious Affairs and Civil Society of the Republic of Kazakhstan N. Yermekbayev stated that "Kazakhstan needs to develop its own model of the relationship between the state and religion, its own school of understanding of Islam, without looking back and without fear of foreign criticism ...". Also in his speech N. Ermekbaev noted that in Kazakhstan about 90 % of believers and only 10% of atheists and agnostics" [6].

A prerequisite for the effective operation of the model of inter-religious harmony is the willingness of representatives of various faiths to dialogue on the basis of mutual understanding and tolerance. But the recognized model is not static and stable, its strengthening is a difficult task. So, according to the First President of the Republic of Kazakhstan N.A. Nazarbayev, to maintain interfaith harmony in the country, it is necessary to form a system of dialogue between various faiths ... [7, p. 163]. In addition, religion "should not become the object of a local or global political game" [7, p. 215].

Before considering the main changes in the legal regulation of relations in the religious sphere, we believe that it is appropriate to discuss some features of the interaction of the state and religion in the historical aspect in order to understand their evolution, as well as the development of Kazakhstani legislation in the religious sphere.

According to G. Berman, being two dimensions of life, religion and law cannot exist without each other, the law gives religion its social dimension, and religion to the law – its spirit. A person will always need law as a support for social conflicts and religion as a support for the unknown [8].

Speaking generally about the history of the interaction of the state and religion, it can be noted that the state since its inception regulated the religious activity of various groups to one degree or another. World history knows many examples of religious reforms carried out by the state. The institutions of legalization, registration and licensing familiar to modern legal systems, granting special statuses to specific associations and prohibitions of others, restrictions on various types of religious or related activities, criminal prosecutions have also been known since ancient times. As rightly noted by R.A. Podoprigora: "It is difficult to find states in which such a regulatory function would not be detected. Laws, edicts, decrees and other acts provided its regulatory justification, although often government influence was exercised at the discretion of not bound by any laws or other acts" [9].

E.K. Kubeev, considering the current stage of development of Kazakhstan in the context of this problem, noted that it is accompanied by complex processes in the spiritual life of society, the growth of

religious associations of both traditionally practiced religions and non-traditional as well. In this regard, the state should, first of all, ensure the implementation of religious legislation. At the same time, a study of the development trend of religious trends and comprehensive work to neutralize negative manifestations in the religious environment are required [10].

Conclusion and discussion. State-legal regulation of relations in the religious sphere of modern Kazakhstan has its own developmental features, which can conditionally be divided into several stages.

So, the first stage is characterized by the adoption of a law regulating relations in the religious sphere, which became the Law of the Republic of Kazakhstan "On Freedom of Religion and Religious Associations" dated January 15, 1992 [11]. The main provisions of this Law were the policy of religious tolerance and respect for the religious beliefs of citizens by the state.

The 1992 law enshrined the principles of relations between the state and religious associations, established a new position for religious associations and believers in society, and promoted the realization of the right to freedom of religion.

The foundations of a multiconfessional state were laid down by law from the first years of the existence of an independent republic.

In the early years of independence, state policy, legislation focused on the development of national culture, the spirituality of the people, the preservation of social stability and interfaith harmony gave a new impetus to the development of religion and the religious sphere. So, in the Law of the Republic of Kazakhstan "On Freedom of Religion and Religious Associations" and in the Law of the Republic of Kazakhstan "On Public Associations" dated May 31, 1996, it was written about the inadmissibility of the formation and activities of the party on a religious basis, the principles of the activities of religious organizations and the right of each were determined on freedom of religion [12].

In general, the political guidelines and legislation of this period, estimated by many experts as the most liberal in the post-Soviet space, contributed to the further growth of the process of religious revival.

However, by the mid-90s of the last century, the political situation in the post-Soviet space was becoming more complicated. In the conditions of liberal state control over religious organizations, the activities of destructive religious movements intensified, which sought to establish their influence in Kazakhstan, where many religious movements appeared, which due to their "novelty", as well as spiritual crisis, and lack of population experience in religion and social guarantees from the state, were interesting and attractive for a certain part of the population. These facts testified to the need to review state policy and tighten control over the activities of religious organizations.

All of the above testified to the need to improve the legislation of the Republic of Kazakhstan in the sphere of relations between the state and religious associations. So, in the Law of 1992 there was no clear regulation of the activities of religious associations; unambiguous criteria were not spelled out for legal entities entitled to engage in religious practice. Also, the imperfection of the legislation was manifested in relation to organizations engaged in missionary activity, which allowed local executive bodies, through their own interpretation of what they mean by missionary activity, to work with them at their own discretion.

A drawback of the Law of 1992 was the lack of a regulation on the control of the import and distribution of religious literature (often imported religious literature has no output – author's approx.).

The legal science of the beginning of the 90s has not studied the legal status of religious associations. In particular, according to R.A. Podoprigora, this was due to the fact that social sciences, until that time, religious associations were considered as temporary entities that would cease to exist due to the disappearance of religion. Therefore, there was practically no analysis of their various positions in society [13].

Despite the fact that the state is taking measures to resolve problem areas, for example, it has intensified educational activities, attracting scholars, religious scholars, representatives of the clergy, practicing field work in the regions of working groups, etc., nevertheless, the need to adopt a new law in the realm of religion is becoming apparent.

The Law of the Republic of Kazakhstan "On Freedom of Religion and Religious Associations" has been in effect for almost twenty years. During this period, great changes have taken place in the religious sphere of Kazakhstan. The religious situation throughout the world has undergone a serious transformation.

Thus, in connection with a change in the religious situation in the country, there was a need to rethink Kazakhstan's achievements in creating a state of interfaith harmony and miscalculations made when underestimating problems in a religious situation [14].

In the history of independent Kazakhstan, the current Law of the Republic of Kazakhstan “On Religious Activities and Religious Associations” dated October 11, 2011 [15] is the second and currently existing normative legal act on issues of religion and religious associations at the level of the law.

In the short historical period, Russia also experienced a series of religious reforms, during which a revision of the model of state-church relations was carried out. According to the current legislation, the Russian Federation is a secular state, ensuring the implementation of freedom of conscience. The new principles of church-state relations were enshrined in the Constitution of the Russian Federation of 1993, as well as in two federal laws - “On Freedom of Religion” in 1990 and “On Freedom of Conscience and Religious Associations” in 1997 [16].

If we compare the development of the laws of the Republic of Kazakhstan and the Russian Federation regulating issues of state-religious relations, then in general they were largely identical. But after the adoption of a new law in Kazakhstan in 2011, the system of relations between the state and religious associations in the Republic of Kazakhstan was reformed and began to significantly differ from the relations established in Russia, as this law became in some of its provisions significantly different from the previous one. So, the new law was designed to provide an appropriate legal framework for the fight against religious extremism, as well as to prevent the penetration of religious organizations in state institutions of Kazakhstan [17].

A feature of our law was also the exclusion of the concept of “freedom of religion” from the name of a regulatory legal act. Given the content of the law, the existing name seems justified, since it practically does not speak about freedom of religion. The law is devoted to consolidating the principles of the relationship between the state and religious associations, a new typology of religious associations, and fixing various administrative measures to influence religious institutions. In this regard, the name as a whole corresponds to its content, although in particular the law regulates not only issues of religious activity, but also other types of activities (charitable, educational) [18].

Basic principles, such as the equality of all religions before the law, the right of every citizen to freedom of religion, are fully preserved in the current law.

The Law of the Republic of Kazakhstan “On Religious Activities and Religious Associations” is an improved legal document designed to ensure stability in the religious sphere, preservation of inter-confessional consent and the right of everyone to freedom of conscience.

The key provisions of the Law are based on the experience of European countries, in particular, on the following Council of Europe Recommendations: “Excess of powers by sects and violation of human rights” of January 27, 2012, “On the illegal activities of sects” (No. 1412 of 1999) and “About sects and new religious movements” (No. 1178 of 1992). Moreover, the Recommendations are aimed at "protecting against attacks by sects and non-traditional religious groups on the fundamental freedoms of citizens, especially in the areas of healthcare, education, as well as respect for personal and family life" [19].

Today in Kazakhstan, as in other post-Soviet states, there are problems in the religious sphere, such as the spread of pseudo-religious ideologies and movements; radicalization of a part of the believing population, mainly adherents of the non-traditional religious movement “pseudo-Salafism”; Attempts to leave and participate supporters of destructive religious movements in armed conflicts abroad; strengthening the religiosity of a certain part of citizens, expressed in the manifestation of a refusal to comply with secular norms and rules, etc.

So, for modern Kazakhstan, the issues of combating religious extremism aimed at inciting religious enmity or hatred, including those related to violence or calls for violence, as well as the use of any religious practice that poses a threat to security, life, health, morality, or rights and the freedoms of citizens [20].

In March 2017, the President of the Republic of Kazakhstan N.A. Nazarbayev, during a meeting in Akorda with the Minister for Religious Affairs and Civil Society N. Yermekbaev (N. Yermekbaev at that time was the head of the now abolished Ministry for Religious and Civil Society of the Republic of Kazakhstan - author's note), instructed to review the legislation in the field of religion. “In our country, all conditions have been created for the work of all religious associations, and freedom of religion is

guaranteed. We need to remain calm in this area. At the same time, the issue of religious extremism should be dealt with, and legislation should be reviewed. The Ministry has a lot of work to do." then noted N.A. Nazarbayev [21].

Harmonization of relations in society is achieved not so much with a specific form of the model as with the ability of the authorities to find political strategies that neutralize the threat of conflict, potentially generated by models or traditions. Considering that one of the main objective risk factors in the modern world is ubiquitous multiconfessionalism, the tools of interfaith dialogue, tolerance, the rule of law, mutual respect and upholding of universal human rights and freedoms come to the forefront of religious policy. In this sense, the tasks of building state-confessional relations go far beyond the formal institutional interaction of authorities and faiths, including the need to flexibly use advanced managerial practices and strategies [22].

Thus, today in Kazakhstan, the third stage of the development of legislation in the religious sphere has begun - the modernization of state policy in the religious sphere in order to form a Kazakhstani model of interaction between the state and religion, based on the priorities of secular values and zero tolerance for destructive religious manifestations. So, by the Decree of the President of the Republic of Kazakhstan dated June 20, 2017 No. 500, the Concept of state policy in the religious sphere for 2017-2020 was approved, one of the priorities of which is to improve domestic legislation in the religious sphere [23].

In turn, the Ministry of Religious Affairs and Civil Society of the Republic of Kazakhstan in the framework of the implementation of this Concept, as well as the instructions of N.A. Nazarbayev, a draft law of the Republic of Kazakhstan "On Amendments and Additions to Some Legislative Acts of the Republic of Kazakhstan on Religious Activities and Religious Associations" was developed (hereinafter - the draft law).

The purpose of the draft law was to improve measures to ensure state-confessional relations, to specify the rights and obligations of subjects of religious activity, and to regulate the religious sphere.

The draft law approved by the Majilis of the Parliament of the Republic of Kazakhstan on May 23, 2018 and submitted to the Senate of the Parliament of the Republic of Kazakhstan (the draft law was withdrawn by the Government of the Republic of Kazakhstan on January 29, 2019 – author's note) proposed the following main changes and additions, namely, a legislative ban on the use, wearing and distribution in public places of external attributes, articles of clothing, demonstrating belonging to destructive religious movements; legislative prohibition of wearing in public places articles of clothing that interfere with face recognition; regulation of the procedure for obtaining spiritual (religious) education abroad; the establishment of restrictions on public servants associated with their stay in public service; legislative prohibition for minors under the age of sixteen to participate in divine services, religious rites, ceremonies and (or) meetings of a religious association with the objection of one of the minor's parents or other legal representatives thereof; empowering internal affairs bodies to issue official warnings to adherents of destructive religious movements; ensuring financial transparency of religious associations; bringing legislation in line with international legal obligations regarding observance of the rights of unbelievers; definition of a number of concepts used by religious experts.

We believe in detail to dwell on some of the norms of the draft law, which were widely discussed in society, conditionally dividing them into three blocks. We will also try to justify the need for the adoption of these standards at the present stage of development.

The first block included amendments designed to prevent the use of religion for destructive purposes. In particular, it was proposed for the first time to introduce such new concepts as "destructive religious movement" and "religious radicalism".

So, according to the draft law, a destructive religious movement is a combination of religious views, ideas, as well as teachings that pose a threat to protected human rights and freedoms, which can disrupt public order, and damage the spiritual, cultural values and traditions of society. Also, the following definition of religious radicalism was proposed, according to which religious radicalism is calls and (or) actions to impose on others unquestioning observance of religious precepts and dogmas, based on the extreme, uncompromising adherence of an individual to religious views and beliefs.

Moreover, the draft law provided for a ban on wearing items of clothing in public places that impede the recognition of a person for whose violation administrative liability has been established.

The introduction of such measures is required for the safety of citizens and will make it possible to counteract the penetration into society of ideologies alien to our country.

International practice has positive experience with such norms. So, similar norms are found in the laws of Austria, Belgium, Bulgaria, Denmark, France, and a number of other states.

For example, in Belgium it is forbidden by law to wear clothes that hide the face and interfere with the identification of its owner. It is unacceptable to wear such clothes on the streets, in parks and official institutions. Violating the law, appearing in public with a closed face, faces a fine of 15 to 25 euros or an arrest for up to seven days. An exception can be made only during holidays, carnivals and other cultural events, if local authorities give consent to this [24].

Bulgaria has passed a law banning masks, shawls and the like (including just dense or translucent fabric) that can “cover or hide” a person. Exceptions for wearing them in this case are only religious institutions, as well as places of residence. A penalty is provided for violation of the law: for an initial violation of 200 leva (100 euros), for repeated violation - 1.5 thousand leva (750 euros). For officials, increased fines are envisaged – 250 and 1000 euros, respectively [24].

In 2016, a law was passed in the Netherlands prohibiting the wearing of religious clothing in public places. Niqab burqas were included in the ban along with face covers, such as ski masks and helmets. For violation of the law, a fine of 410 euros is provided [24]. According to article 14 of the Law “On Freedom of Conscience and Religious Organizations” of 1998, “The appearance of citizens of the Republic of Uzbekistan (with the exception of servants of religious organizations) in public places in religious robes is not allowed” [24].

According to the French law “LOIn°2010-1192: Loi interdisant la dissimulation du visage dans l'espace public", it is forbidden to wear hats, masks, helmets, balaclava, nikabet and other coatings covering the face in public places. The ban also applies to the veil covering the entire body if it covers the face. The law imposes a fine of up to 150 euros and also provides a fine of 30,000 euros and imprisonment for one year for coercion to wear prohibited clothing [24].

During the period of validity of these norms in European countries, some judicial practice has developed. So, having studied the practice of the European Court of Human Rights, we present one of the most resonant court cases.

S.A.S. against France (2014). Regarding the lawsuit filed by a French citizen of France, who is a practicing Muslim, that she is no longer allowed to wear a burqa and niqab in public after the entry into force of the Law of April 11, 2011 prohibiting the concealment of her face in public places, the court ruled that there was no violation of Article 8 (right to respect for private and family life) and there was no violation of Article 9 (right to respect for freedom of thought, conscience and religion) of the Convention. In particular, he emphasized that compliance with the terms of “coexistence” is the legitimate aim of the measure in question and that, since the state has a wide range of discretion regarding this general political issue, regarding which there were significant disagreements, the ban introduced by the Law of October 11, 2010, does not violate the Convention [24].

The second block is the norms containing provisions on the concretization of the rights and obligations of subjects of religious activity.

First, basic regulation of the behavior of public servants was proposed, namely: not to use one's official position in the interests of religious associations; not to force subordinates to religious activity; not to act as an initiator or participant (member) of a religious association.

In general, it is worth noting that the proposed norms do not affect the basic rights of this category of citizens in the field of religion, i.e. for example, committing or participating in religious events and rituals after hours, etc.

The purpose of these changes is to strengthen the secularism of the state and society, by introducing restrictions on the dissemination by civil servants of their religious views in working (office) time and in the performance of official duties.

We conducted an analysis of these standards, the results of which are presented below. So, according to paragraph 1 of Article 1 of the Constitution of the Republic of Kazakhstan, the Republic of Kazakhstan affirms itself as a democratic, secular, legal and social state, the highest values of which are a person, his life, rights and freedoms [2]. Paragraph 1 of Article 39 of the Constitution of the Republic of Kazakhstan

states that “the rights and freedoms of man and citizen may be limited only by laws and only to the extent necessary to protect the constitutional order, protect public order, human rights and freedoms, health and morality population” [2]. In accordance with paragraph 4 of Article 33 of the Constitution of the Republic of Kazakhstan, citizens of the Republic have an equal right to access public service. The requirements for a candidate for the position of civil servant are determined only by the nature of the duties and are established by law [2].

Based on these constitutional norms, a number of restrictions related to being in the public service are enshrined in the current legislation.

In accordance with article 8 of the Law of the Republic of Kazakhstan dated November 23, 2015 “On the civil service of the Republic of Kazakhstan [25], the status of a civil servant includes the general rights, freedoms and duties of a civil servant as a citizen of the Republic of Kazakhstan with the restrictions established by the laws of the Republic of Kazakhstan related to staying on public service, as well as the rights, duties and responsibilities arising from the specifics of public service.

Civil servants, in accordance with the Law of the Republic of Kazakhstan “On the Civil Service of the Republic of Kazakhstan”, are required to comply with the Constitution and legislation of the Republic of Kazakhstan (paragraph 1) of Art. 10); carry out functions in accordance with their official powers (paragraph 4) of Art. 10); in the exercise of official powers, to be impartial and independent of the activities of political parties, public and religious associations (paragraph 5) of Art. 10).

In addition, according to paragraph 6 of the Code of Ethics for Civil Servants of the Republic of Kazakhstan, approved by Decree of the President of the Republic of Kazakhstan dated December 29, 2015 No. 153, civil servants should not use their official position and related opportunities in the interests of public and religious associations, other non-profit organizations, in including to promote their attitude towards them. Civil servants, including those in senior positions, cannot openly demonstrate their religious convictions in a collective, force subordinate servants to participate in the activities of public and religious associations, and other non-profit organizations [26].

Thus, the additional restrictions proposed in the draft law were aimed at bringing the current legislation in line with the norms, as well as preventing decisions and actions using religion and religious beliefs, which are known to be able to disorganize the activities of state bodies and disrupt their smooth functioning.

Judging from the context of the proposed, they will not apply to public servants outside working hours, when a public servant can freely exercise his constitutional right to freedom of conscience. Moreover, according to paragraph 2 of Article 22 of the Constitution of the Republic of Kazakhstan, the exercise of the right to freedom of conscience should not stipulate or limit universal and civil rights and obligations to the state [2].

It is worth noting that the restrictions and prohibitions associated with public service are provided for in the laws of many countries. Thus, the Federal Law of the Russian Federation of July 27, 2004. No. 79-FZ “On the State Civil Service of the Russian Federation” [27] stipulates that in connection with civil service, a civil servant is prohibited from: accepting, without written permission from the representative of the employer, awards, honorary and special ranks (with the exception of scientific) foreign states, international organizations, as well as political parties, other public associations and religious associations, if his official duties include interaction with the indicated organizations and associations, to use official powers in the interests of political parties, other public associations, religious associations and other organizations, as well as publicly express their attitude to these associations and organizations as a civil servant, if this is not part of his official duties create structures of political parties, other public associations (with the exception of trade unions, veteran and other bodies of public initiative) and religious associations in state bodies or promote the creation of these structures [27].

In some European countries (for example, France, Germany), civil servants, including teachers in public schools, are prohibited by law from openly bearing religious symbols and demonstrating their religious affiliation. Thus, the restrictions imposed on civil servants do not contradict constitutional norms, are justified and necessary at the present stage of development.

Secondly, the draft law proposed to expand the functions of the Ministry of Internal Affairs of the Republic of Kazakhstan in the prevention of crimes related to religious activities, as well as extremism and terrorism.

Police officers could conduct individual preventive work with suspicious persons, officially warn them about the inadmissibility of actions that create the conditions for committing extremist and terrorist crimes, and administrative offenses in the religious sphere.

If the suspect commits actions that create the conditions for committing terrorist crimes, the police would be able to put such persons on forensic records and take other necessary measures. Such preventive accounting will be introduced in order to protect these individuals from committing offenses.

A similar practice is used in foreign countries. For example, the British "Counter-Terrorism and Security Act 2015" gives the right to register persons who are at risk of involvement in terrorist activities (Risk of being drawn into terrorism). In order to help these individuals (Chapter 2. Support etc. for people vulnerable to being drawn into terrorism), the Act provides that a special body (panel of persons is in place for its area) is created at the local level that evaluates the constable's report about the risk of involving individuals in terrorism and prepares an individual plan for such persons, indicating the nature of the support that is provided to the person (how and when such support is to be provided). Such an accounting can be called preventive [28].

The third block is amendments aimed at making the work of religious associations easier and more understandable.

So, for example, it was proposed to introduce basic changes and additions aimed at bringing legislation into line with international legal obligations, for example, in terms of observing the rights of non-believers, Kazakhstani legislation was brought into line with paragraph 2 of the General Comments of the UN Human Rights Committee No. 22 (48) of September 27, 1993 under article 18 of the International Covenant on Civil and Political Rights of December 16, 1966, according to which "Article 18 protects theistic, non-theistic and atheistic beliefs, as well as the right not to profess any religion or belief ". [19]

This supplement is consistent with the experience of most Western countries, where freedom of religion is guaranteed, including the freedom not to classify one religion. In world practice, freedom of religion by default includes freedom to choose one's religion and belief, as well as follow an atheistic worldview.

The protection of minors from illegal involvement in religious activities is also increased. It was proposed to normatively fix so that minors under the age of sixteen could not participate in divine services, religious rites, ceremonies and (or) meetings of a religious association when one of the parents of the minor or his other legal representatives objected. This is due to the fact that today it is becoming an established practice to involve children in religious activities, which does not meet the interests of the development of secular society. The experience of some CIS countries in regulating this issue is interesting. So, according to paragraph 5 of Article 3 of the Federal Law of the Russian Federation "On Freedom of Conscience and on Religious Associations" it is forbidden to involve minors in religious associations, as well as educate minors of religion against their will and without the consent of their parents or persons replacing them [29]. According to Art. 145 of the Criminal Code of the Republic of Uzbekistan, involving minors in religious organizations, as well as teaching their religion against their will, the will of their parents or persons replacing them, is punishable by a fine of 50 to 75 minimum wages or correctional labor from 2 to 3 years or by deprivation freedom up to 3 years [30]. According to the Law of the Republic of Belarus "On Freedom of Conscience and Religious Organizations," involving minors in religious organizations, teaching religion to minors contrary to their will and without the consent of their parents or their substitutes, entails liability established by law [31].

Thus, taking into account that in Kazakhstan the education and upbringing of children is secular, the introduction of this amendment seems to be very timely. According to the draft law, it was proposed to streamline the process of obtaining spiritual (religious) education abroad.

So, the draft law provided for norms that allowed receiving religious education abroad only for those citizens who had already received higher spiritual education in the country.

However, the exception is cases when training is carried out under an international agreement, or if the religious association does not have educational organizations in our country.

Today, young people in the absence of the basic foundations of an appropriate religious education fall under the influence of foreign educational institutions of a radical nature. This norm will allow streamlining the procedure for citizens of the Republic of Kazakhstan to receive spiritual (religious) education in foreign countries.

In international law enforcement practice, much attention is paid to obtaining spiritual (religious) education in foreign countries. On the example of those citizens who illegally studied in the countries of the Arab world (for example, the Kingdom of Saudi Arabia, Syria), it can be noted that the vast majority of them did not have basic religious literacy. In this connection, many of them fell under the influence of radical religious groups. According to the experience of Turkey and Malaysia, citizens of these countries can continue their religious education in universities of the Arab countries after receiving a basic level of knowledge at home. Also, thanks to memorandums of the official clergy of Turkey and Malaysia with leading universities of the Arab countries, citizens can freely go to undergraduate studies, while our citizens, due to the fact that foreign educational institutions do not recognize diplomas of domestic educational institutions, have to undergo pre-undergraduate studies for several years. This situation, in turn, leaves our citizens vulnerable to charitable organizations of radical movements [32].

Thus, the adoption of this rule is a necessity at the present time. According to statistics, the vast majority of the population supports the positions and religious views of registered religious associations.

A ban on studying in spiritual (religious) educational institutions of foreign countries without sending a religious association registered in the Republic of Kazakhstan is a necessary and important measure to stop cases of citizens joining the ranks of radical religious groups in the process of studying abroad. This is the main content of the draft law, the adoption of which, in our opinion, would increase the responsibility of subjects of religious relations in realizing their rights to religion, and minimize the conditions for using religion for destructive purposes. Also, the norms of the draft law will contribute to the effective implementation of state policy in the religious sphere, ensuring the protection of public safety and order, including on issues of combating religious extremism and terrorism. Thus, in our opinion, we should return to consideration of the indicated norms of the draft law for their subsequent adoption.

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ДІН САЛАСЫ БОЙЫНША ҚАЗАҚСТАН ЗАҢНАМАСЫ: ТАРИХЫ МЕН ДАМУ ПЕРСПЕКТИВАСЫ

Аннотация. Бүгінгі таңда заманауи Қазақстанның жалпыға танылған жетістігі – бүкіл халық үшін экономикалық, әлеуметтік, мәдени, рухани даму мүмкіндіктерінің теңдігі қамтамасыз етілетін демократиялық және зайырлы мемлекет құру. Этникааралық және конфессияаралық келісім қағидаттары республикалық деңгейде де, өңірлік деңгейде де іске асырылады.

Қазіргі кезеңде Қазақстанда дін саласы маңызды рөл атқарады және оның рөлі тек оң деп айтуға болмайды: әртүрлі деструктивті ағымдарды тарату, мектептегі оқу процесіне қандай да бір діни дәстүрді сіңіру әрекеттері және діни негіздерде туындайтын қоғамдық қақтығыстар теріс салдарды, діндарлар санының тез өсуін білдіреді

Қазақстан әлемдік қоғамдастықтың бір бөлігі бола отырып, соңғы жылдары дін саласындағы әртүрлі қақтығыстамен және радикалды исламның пайда болуымен күресіп келеді. Елдегі діни жағдайдың өзгеруіне байланысты мемлекетте конфессияаралық келісім құру жолындағы Қазақстанның жетістіктерін қайта қарастыру қажеттілігі туындайды.

Қазақстанда этносаралық және конфессияаралық келісімнің тұрақты моделі қалыптасқанына қарамастан, оны қолдау мемлекет тарапынан да, азаматтық қоғам тарапынан да тұрақты күш-жігерді талап етеді. Осыған байланысты діни ахуалға тұрақты мониторинг жүргізу – барлық мүдделі тараптардың өзара іс-қимылы, сондай-ақ діни саладағы заңнаманы жетілдіру қажет.

Зерттеу тақырыбының өзектілігі діни нормалардың қоғамға деген әсерін зерттеуге, сондай-ақ олардың құқықтық талдауына ықпал ететін қоғамда болып жатқан өзгерістерге байланысты. Бірінші кезекте, бұл, қазіргі қоғамда бар неғұрлым маңызды әлеуметтік байланыстарды көрсететін құқық нормаларын қалыптастыруға қатысты.

Жұмыстың мақсаты: діни саласындағы Қазақстан заңнамасының даму тарихының кейбір аспектілерін зерттеу, сондай-ақ одан ары жетілдіру жолдарын айқындау және негіздеу, оның ішінде шетелдік заңнамаларға салыстырмалы талдау жүргізу.

Жұмыс жүргізу әдісі немесе әдіснамасы келесі жалпы ғылыми әдістерді қолданумен ерекшеленеді: логикалық, құрылымдық, жүйелік талдау және салыстыру, индукция және дедукция әдістері, сонымен қатар

құбылыстар мен процестерді зерттеудің арнайы тәсілдері, әдістері (нақты-тарихи, диалектикалық, формальды-логикалық) қолданылды. Дін саласын реттейтін нормативтік құқықтық актілерге жан-жақты талдау жүргізілді.

Жұмыс нәтижелері: бұдан бұрын қабылданған нормативтік құқықтық актілерді, сондай-ақ дін саласы бойынша қолданыстағы Қазақстан заңнамасын талдау, халықаралық тәжірибені зерттеу, «Қазақстан Республикасының кейбір заңнамалық актілеріне діни қызмет және діни бірлестіктер мәселелері бойынша өзгерістер мен толықтырулар енгізу туралы» Қазақстан Республикасы Заңының жобасын қабылдау, негіздемесін анықтау.

Нәтижелерді қолдану саласы: заңнамалық және құқық қолдану қызметі.

Қорытынды: зерттеу жұмысының қорытындысы діни қызмет және діни бірлестіктер мәселелері бойынша заңнаманы жетілдіруге бағытталған тиісті түзетулерді қабылдау қажеттілігін негіздеумен байланысты.

Түйін сөздер: дін саласындағы заңнама, дін, діни бірлестіктер, дін саласындағы шетелдік заңнама, зайырлы мемлекет, заң жобасы.

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КАЗАХСТАНСКОЕ ЗАКОНОДАТЕЛЬСТВО В РЕЛИГИОЗНОЙ СФЕРЕ: ИСТОРИЯ И ПЕРСПЕКТИВЫ РАЗВИТИЯ

Аннотация. На сегодняшний день общепризнанным достижением современного Казахстана является построение демократического и светского государства, в котором обеспечивается равенство возможностей экономического, социального, культурного, духовного развития для всего населения. Принципы межэтнического и межконфессионального согласия реализуются как на республиканском, так и на региональном уровнях.

Религия в современном Казахстане играет все большую роль, и нельзя сказать, что эта роль однозначно положительная: распространение различных деструктивных течений, попытки привнести в школьный учебный процесс ту или иную религиозную традицию и возникающие на религиозной почве конфликты в обществе – это отрицательные последствия, причиной которых является быстрый прирост числа верующих.

Казахстан, будучи частью мирового сообщества, за последние годы столкнулся с различными вызовами в религиозной сфере и с наступлением радикального ислама. В связи с изменением религиозной ситуации в стране возникла необходимость переосмысления достижений Казахстана на пути создания межконфессионального согласия в государстве.

Несмотря на то, что в Казахстане сложилась устойчивая модель межэтнического и межконфессионального согласия, ее поддержание требует постоянных усилий как со стороны государства, так и со стороны гражданского общества. В связи с чем, необходим постоянный мониторинг религиозной ситуации, взаимодействие всех заинтересованных сторон, а также совершенствование законодательства в религиозной сфере.

Актуальность темы исследования обусловлена также происходящими изменениями в обществе, которые привели к необходимости обратиться к исследованию влияния религиозных норм, а также к их правовому анализу. В первую очередь, это касается проблемы повышения эффективности правотворческой деятельности и ее результатов в виде формирования норм права, отражающих наиболее значимые социальные связи, существующие в современном социуме.

Цель работы: исследовать казахстанское законодательство в религиозной сфере в историческом аспекте развития, а также определить и обосновать пути его дальнейшего совершенствования, в том числе посредством сравнительного анализа с зарубежным законодательством.

Метод или методология проведения работы характеризуется применением таких общенаучных методов познания, как логический, структурный, метод системного анализа и сравнения, индукции и дедукции, а также специальных приемов, методов исследования явлений и процессов (конкретно-исторический, диалектический, формально-логический). Вместе с тем, в представленном исследовании проведен всесторонний анализ нормативных правовых актов, регулирующих религиозную сферу.

Результаты работы. Анализ предыдущих нормативных правовых актов, а также действующего казахстанского законодательства в религиозной сфере, исследование международного опыта, обоснование принятия проекта Закона Республики Казахстан «О внесении изменений и дополнений в некоторые

законодательные акты Республики Казахстан по вопросам религиозной деятельности и религиозных объединений».

Область применения результатов: законодательная и правоприменительная деятельность.

Выводы: Итогом исследовательской работы является попытка обосновать необходимость принятия на данном этапе развития соответствующих поправок, направленных на совершенствование законодательства по вопросам религиозной деятельности и религиозных объединений.

Ключевые слова: законодательство в религиозной сфере, религия, религиозные объединения, зарубежное законодательство в религиозной сфере, светское государство, законопроект.

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STATE AND ANALYSIS OF DEVELOPMENT OF TRANSPORT AND LOGISTICS INFRASTRUCTURE IN KAZAKHSTAN

Abstract. The article deals with the issue that is relevant for many countries - transport and logistics infrastructure, since logistics, as the most effective, market-oriented way of planning, forming and developing commodity and related flows with the lowest costs in the entire logistics chain, has firmly gained its position in the world market. The authors also highlight the main factors of economic growth, which is the formation of integrated transport and logistics systems that cover individual areas of business, entire regions and countries. One of the effective ways of socio-economic development, both for individual regions of our country and the Republic of Kazakhstan as a whole, is the formation of transport and logistics infrastructure, which determined the relevance of the article taking into account the specifics of the Republic of Kazakhstan. The factors and problems that have the greatest impact on the efficiency and effectiveness of the functioning and management of transport and logistics systems are identified.

Keywords: logistics, transport system, integration, transport and logistics system, cargo transportation.

Introduction. The effectiveness of national economy, economic upturn, sustainability of territorial complexes and foreign economic activity development are defined by all means of transport functioning. On the one hand, it reflects development level of the country's national economy and its competitiveness, and on the other hand, it creates conditions for long-term strategic relations and cooperation building of all economic entities, regardless of forms of property and industry affiliation.

Sustainable development of the country will be provided by means of speeded up diversification and improving competitiveness of the national economy, namely, increase in productivity of manufacture and innovations introduction [1]. Thereupon, the country's transport and logistics complex is one of the priority innovative directions in the Government activities. Transport services cater to their recipients, namely the needs of the population, the economy, and solution of strategic issues for provision of unity, defense and security of the country.

Meeting existing and forecast needs in transport services, their quality improvement serve as a launchpad for transport system development. Therefore, the Concept of the state transport policy of the Republic of Kazakhstan sets the development of the transport system as its primary goal in order to increase transit transport efficiency within the territory of the Republic of Kazakhstan. It must be noted that the strategy covers all means of transport: railway, road, city passenger, air and water, the development and effective functioning of which largely depend on the state policy [2]. The primary objective defined in the Strategy is integration of Kazakhstan’s transport system into the world transport system by means of the level of development of transport infrastructure increase on the basis of the main meridional and latitudinal transport routes, connecting routes and hubs in East-West and North-South directions.

The main purpose of the Transport Strategy of the Republic of Kazakhstan is integration of Kazakhstan’s transport system into the global transport network by way of:

- level increase of transport infrastructure development on the basis of the main meridional and latitudinal transport routs, connecting routes and hubs in East-West and North-South directions;

- achievement of maximum efficiency of transport processes;

- decrease of transport component share in final products cost in inland, transit and export-import traffic;

- carrying-out of transport system passage to a whole new level of functioning, optimal transport network creation.

Methods. Domestic manufacturers are export-oriented, therefore, the TLCs provide positive factor affecting the development of economic activity in general, and is one of the significant directions of the scientific-technological progress development. It is essential to improve the legal and regulatory framework in order to provide “clear path” for logistics in the domestic market, to clarify and improve transport and customs mechanisms and procedures for cargo execution at cross-borders, as well as mechanisms of appropriate through tariff rates for transportation provision. Integrated control over transportation is necessary, based on common use of modern electronic, communication and information technologies. For creation of safe and reliable traffic flows, it is important to provide control authorities with complete and accurate information about traffic in “online” mode and lead information about possible changes, accidents on the road that can have an impact on traffic at scheduled routes or lead to break-down of tough and tight route schedules.

At present, developing countries, mainly Asian ones, produce about 60% of global GDP. At the regional level, Kazakhstan acts as a modern service center. Using existing potential, Kazakhstan must become a developed service center of the region for provision of a wide range of transport services meeting international standards.

Currently, Kazakhstan’s economy is gaining rapid growth in all sectors, relations with foreign countries are improving, cargo traffic and cargo turnover, domestic goods export are increasing, the country's transport industry is developing rapidly, all this leads to the fact that the TLC development is a necessary element for the whole economy, and plays vital role in improvement of socio-economic situation in the country.

In connection with that, in modern conditions there emerged a necessity of organizing a unified transport and logistics system as a national company in the Republic of Kazakhstan. TLC is a new innovative national company under the name “Transport Logistics of Cargo Delivery” and will be of great economic importance for each region and the country on the whole, it will track status and location of all consignments, time of dispatch and delivery, stages of all necessary procedures completion, unobstructed passage of cargo across borders. All companies operating on international points of transition, as well as companies having international agreements with foreign companies should use services of such TLC. Companies of such kind will have common information, transport, storage, purchase and distribution systems that will be responsible for safety of cargo, as well as for delivery of this cargo right on time.

Based on the above-stated, it should be noted that the main cost advantage of TLC is achieved by means of reduction in volume of material resources stocks and time of delivery of goods. The key advantage of integrated management is optimization of total expenditures for movement and storage of resources. According to expert estimates, application of logistics methods allows to reduce inventory levels by 30-50 % and reduce product promotion time by 25-45 %. Another important condition for transport flows is transport routes, roads of international importance: railway, automobile, marine, river, forming transport network. In other words, the presence of transport network is necessary condition for transportation of goods. Such roads have their own infrastructure: stations, ports, power supply, security facilities, communications, loading and unloading technologies, warehouses, and all necessary conditions for successful work and accommodation of workers, namely, improvement of social infrastructure. Due to such communication lines, the optimal distances of transport flows are defined.

Therefore, optimization of costs of purchase and distribution is the most important problem of the economic system efficiency increase. Nowadays, the basic reserves of the production are not only and not so much in principal production as in auxiliary production, the funds of which comprise material resources of TLC company.

After data studying of the Statistical agency of the RK, it can be noted that the proportion of volume of traffic that is made by means of transport of Kazakhstan is approximately from 57-73 %, and by non-

residents is within 35-45 %. Nevertheless, the use of territory as a transit for economic reasons is beneficial to neighboring countries. Realization of international container service on transcontinental railway line "Europe-Kazakhstan-China", according to the opinion of leading economists of the country, has great economic advantages due to shorter transportation distance compared to transportation along the Trans-Siberian railway (about 30 %). According to Feasibility Study source of “Free economic zone “Khorgos – East gate” creation, the income from transit traffic via the territory of our country can amount to 2 billion dollars per year.

It can be seen from table 1 that over the past ten years from 2008-2018 transport sector indicators increased significantly: transportation of cargo increased by 1.9 times, namely, by 1707.4 million tons, cargo turnover by 1.66 times, namely, by 194.5 billion tons / km, transportation of passengers by 2.15 times or by 11369.2 million people, passenger turnover by 2.4 times or by 148356 million kilometers. On the whole, there is an increase in all types of transportation, mostly in transportation of cargo and transportation of passengers [3]. Further development of the transport system of the Republic of Kazakhstan should provide its integration into international transport network and use all transit corridors for significant reduction of time and cost of cargo delivery.

Table 1 - Key economic indicators of transport sector in the RK

Years	Transportation of cargo (million tons)	Cargo turnover (billion t/km)	Transportation of passengers (million people)	Passenger turnover (million pkm)
2008	2124,2	350,5	11160,1	124366
2009	2188,7	309,7	11325,4	127455
2010	2103,3	337	11806,5	130834
2011	2439,4	385,3	13186,5	149065
2012	2974,9	448,8	16647,2	188939
2013	3231,8	478,0	18484,6	213036
2014	3508,0	495,4	20004,3	235738
2015	3634,4	490,8	21293,2	255959
2016	3 733,8	546,0	21 839,1	251 251
2017	3 729,2	519,2	22 332,8	266 784
2018	3 946,1	563,9	22 744,7	273 193
Note – drawn up by the author according to data of the RK Statistical agency.				

Share of transport in the country’s GDP in 2013 amounted to 7,76 %, in 2014 – to 8,05 %, in 2015 – to 8,61 %, in 2016 – to 8,25 %, in 2017 – to 8,37 %. Analyzing indicators of transportation and warehousing in production of goods, their share is constantly and steadily growing (table 2).

Table 2 - Indicators of development of transportation and warehousing sector in the RK for the period of 2013-2017

Indicators	Years				
	2013	2014	2015	2016	2017
Transportation and warehousing mln. tenge	2 736 538,1	3 144 595,3	3 520 545,5	3 876 007,8	4 442 189,6
Gross domestic product, mln. tenge	35 275 153,3	39 040 898,9	40 884 133,6	46 971 150,0	53 101 281,8
Share, in %	7,76	8,05	8,61	8,25	8,37
Note – drawn up by the author based on statistical data.					

Presently, the leader in transportation of cargo and passengers is road transport, where an increase of index by 33 % takes place compared to the previous year. This indicator increased by 438.1 million tons, or by 1.1 times from 2013 to 2017. The analysis of transportation of cargo by road transport suggests that many companies choose namely this type of delivery, because the services are relatively inexpensive, and the most important advantage is “door-to-door” cargo delivery.

Among all means of transport, railway transport has high rates of cargo turnover, but they are stable, which indicates the existing situation in the country's economy. Air transport cargo turnover is showing decreasing levels, transportation on maritime transport is sufficiently stable, and growth is observed in pipeline transport (figure 3) [3].

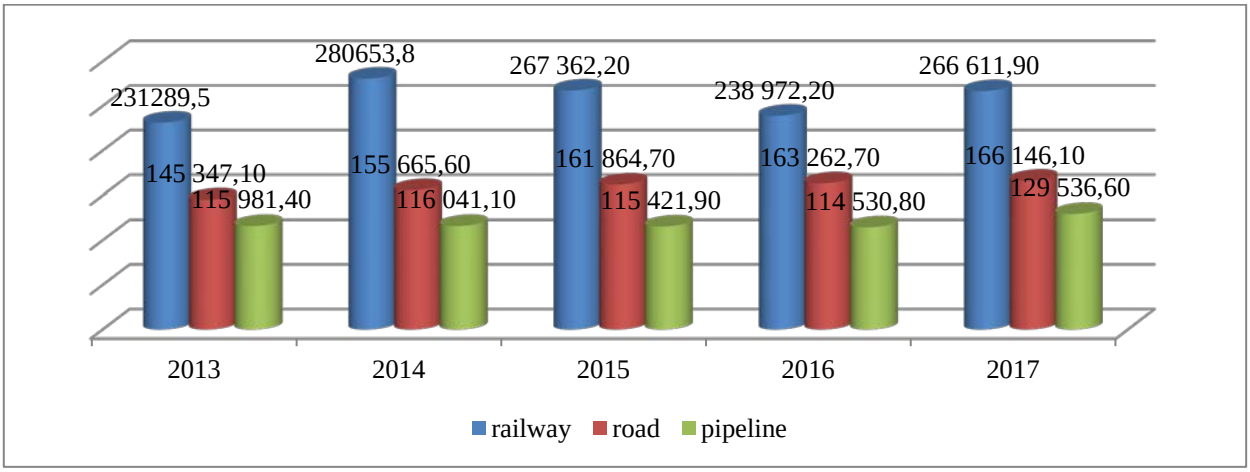

Figure 3 - Dynamics of cargo turnover by different means
of transport of the RK for the period of 2013-2017, billion tkm

A comparative analysis of cargo transportation indicators has shown that transportation is distributed more evenly by regions, except for Almaty, Karaganda, Kostanay and East Kazakhstan Region, where growth rates are high on road transport, the organizational functioning of TLC is much higher than in economically underdeveloped regions (figure 4).

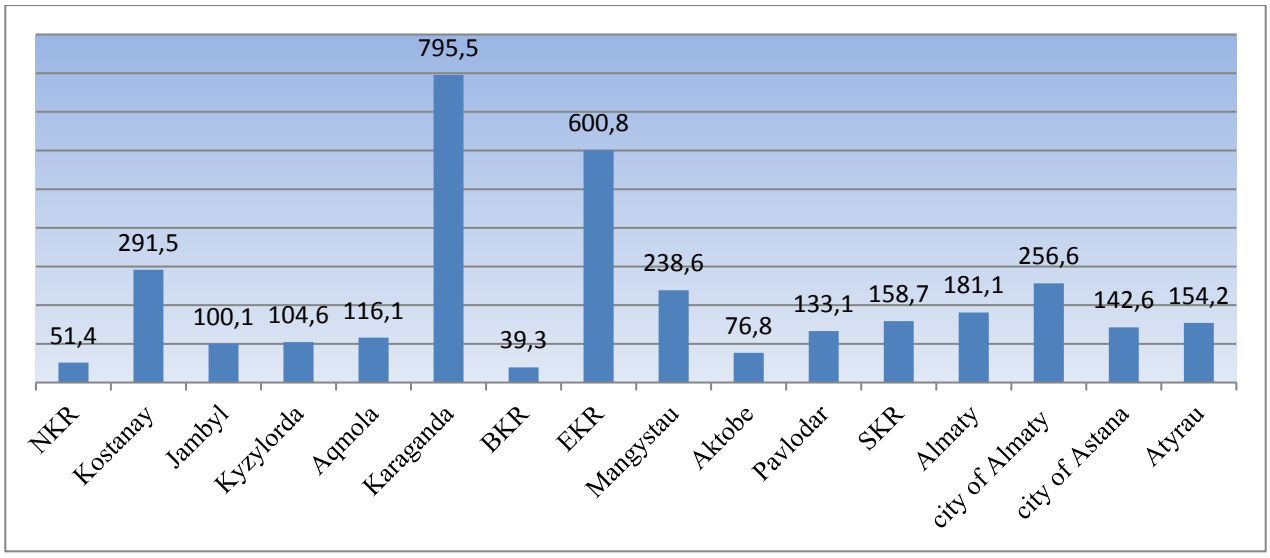

Figure 4 - Dynamics of development of road transportation indicators in the RK for the period of 2017

Configuration of the railway network was formed on influence of two factors: growth of interregional and interstate cargo traffic as a result of the development of mineral resources deposits and virgin ground, as well as growth of transit cargo traffic. In Kazakhstan, railway transport deals well with service of interregional, interstate, and transit cargo transportation; the railway network for cargo transportation between regions of the republic has some problems. More specifically, transportation of cargo between the regions of East and North Kazakhstan is carried out through the regions of Russia, between the regions of Central and Northern Kazakhstan through Western Siberia, the Urals, and sometimes through South Kazakhstan, such transportations increase time of transportation, and, at that, transport costs also increase.

In the country railway transport is in first place in terms of cargo turnover, and then comes road transport. The cargo turnover of railway transport in 2014 amounted to 216.6 billion tkm, and automobile transport amounted to 155.7 billion tkm. Structure of cargo sent by public railway transport is shown in the table; coal, construction and oil cargoes have the maximum share (table 12) [3]. Railway transport has

a significant impact on the development of interrepublican and transit traffic, and the role of road transport is invaluable for the development of interregional intrarepublican traffic.

There is also water transport in the republic, divided into marine and inland water transport. Marine transport is used only in the Caspian Sea, where Aktau, Bautino, Atyrau ports are in operation, through which Kazakhstan is connected with Azerbaijan, Lower Volga region, Turkmenistan and Dagestan [4].

The volume growth of cargo transportation was influenced by: in the field of railway transport – growth of loading of coal, non-ferrous ore, iron ore, oil cargo, and an increase in international transportation. In the field of road transport - an increase in requirements of international transportation volumes. In the field of road transport - an increase in demand of the population and economic sectors for auto transportation, in the field of water transport - an increase in volume of oil shipping in the direction of Aktau–Neka, Aktau–Makhachkala. In the field of air transport – an increase in demand for transit traffic through the territory of the Republic of Kazakhstan. As was mentioned above, the leader in transportation of cargoes is road transport.

Conclusion

For successful social and economic development of Kazakhstan, in order to include it into the global transport system, it is necessary to carry out: transition to international standards, development and improvement of international corridors that pass across the territory of the Republic of Kazakhstan, establishment of better transportation conditions, solution of other trade and transport problems and active development of its export, import and transit potential.

The Republic of Kazakhstan's entry into the number of the most developed countries in the world until 2030 suggests advanced development of transport system of the republic due to a number of its territorial features: vastness of area and its heterogeneous economic stability; distinguished transit functions of Kazakhstan; sizable differentiation of natural resources potential; relocation of the capital.

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ҚАЗАҚСТАНДАҒЫ КӨЛІК-ЛОГИСТИКАЛЫҚ ИНФРАҚҰРЫЛЫМНЫҢ ЖАЙ-КҮЙІ МЕН ДАМУЫН ТАЛДАУ

Аннотация. Мақалада көптеген елдер үшін көкейкесті мәселелелердің бірі болып отырған көліктік-логистикалық инфрақұрылым саласы қарастырылған, өйткені логистика әлемдік нарықтағы орнын, барлық логистикалық тізбектегі ең аз шығындармен тауарлық ағындарды жоспарлаудың, қалыптастырудың және дамытудың ең тиімді, нарықтық бағдарлы тәсілі ретінде, өз шешімін табанды түрде жеңіп алды.

Ғылыми мақала тақырыбының өзектілігі қазіргі әлемде көптеген елдерде мемлекеттік дағдарысқа қарсы жоспарды іске асырудың негізгі рөлі – көлік инфрақұрылымын дамытуға арналған, сондықтан көлік инфрақұрылымының тез өсуін қамтамасыз ету және бәсекеге қабілетті ұсынысты қалыптастыру үшін көліктік-логистикалық қызметтер, елдің транзиттік әлеуетін іске асыру, компанияны дамытудың барлық стратегиялық бағыттарындағы жұмысты жандандыру қажет.

Сонымен қатар бұл салада көліктің барлық түрлерінің өзара әрекеті болады, соның арқасында халықаралық және көліктік-логистикалық орталықтардың желісі құрылады, олар экономика мен тұрғындардың сенімді және қауіпсіз көлік қызметтеріне деген қажеттіліктерін барынша қанағаттандырады. Мұның бәрі Қазақстанның ғаламдық көлік-коммуникация жүйесінің құрамдас бөлігі болуға мүмкіндік береді және қазіргі кездегі хабтар – Қазақстан Республикасының барлық қалаларын ғана емес, сонымен бірге бүкіл әлемнің ірі қалаларын қосатын қуатты көлік хабтарын құруға ерекше басымдық беріледі.

Мақалада авторлар көліктік-логистикалық орталықтың ұйымдық нысанын енгізу және қалыптастыру, іскерлік және коммерциялық белсенділікті арттыруға, қосымша жүк ағындары мен инвестицияларды тартуға, жаңа жұмыс орындарын құруға және көмірсутек шикізатын экспорттаудан түсетін бюджеттің кірістерімен салыстыруға болатыны атап өтіледі. Сондай-ақ ірі қалаларда көлік-логистикалық орталықтың құрылуы экономикалық дамыған елдермен іскерлік қатынастарды кеңейтеді. Әрине, бүгінде ТМД елдері экономикалық қатынастардың негізгі серіктестері болып отыр, бірақ интеграцияланған көліктік-логистикалық жүйеге қосылу – әлемдік нарыққа қатысу үшін үлкен мүмкіндік.

Дамыған елдердегі көліктік-логистикалық жүйелерді пайдалану тәжірибесі көрсеткендей, бұл көлік шығындарының азаятынын, тиеу-түсіру, материалдық ресурстар мен дайын өнімді сақтау шығындары қысқарғанын, материалдық ресурстар айналымы жеделдетілгенін көрсетеді.

Сондай-ақ авторлар, өз еңбектерінде, кәсіпкерліктің жеке бағыттарын, бүкіл аймақтар мен елдерді қамтитын интеграцияланған көліктік-логистикалық жүйелерді қалыптастыру болып табылатын экономикалық өсудің негізгі факторларына назар аударады. Еліміздің жеке аймақтарының да, жалпы Қазақстан Республикасының да әлеуметтік-экономикалық дамуының тиімді жолдарының бірі – бұл Қазақстан Республикасының ерекшеліктерін ескере отырып, мақаланың өзектілігін анықтаған көліктік-логистикалық инфрақұрылымды қалыптастыру.

Көліктік-логистикалық жүйелердің тиімділігі мен нәтижелілігіне айтарлықтай көп әсер ететін факторлар мен мәселелер анықталған.

Түйін сөздер: логистика, көлік жүйесі, интеграция, көліктік-логистикалық жүйе, жүк тасымалы.

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СОСТОЯНИЕ И АНАЛИЗ РАЗВИТИЯ ТРАНСПОРТНО-ЛОГИСТИЧЕСКОЙ ИНФРАСТРУКТУРЫ В КАЗАХСТАНЕ

Аннотация. В статье рассматривается вопрос, который является актуальным для многих стран – транспортно-логистическая инфраструктура, так как логистика, как наиболее эффективный, рыночно-ориентированный способ планирования, формирования и развития товароматериальных и сопутствующих им потоков с наименьшими издержками во всей логистической цепи, прочно завоевала свои позиции на мировом рынке.

Актуальность темы научной статьи заключается в том, что в современном мире во многих странах основная роль реализации государственного антикризисного плана отведена развитию транспортной инфраструктуры, в связи чем нужно активизировать работу по всем стратегическим направлениям развития компании для обеспечения опережающего роста транспортный инфраструктуры, формирования предложения высококонкурентных транспортно-логистических услуг, реализации транзитного потенциала страны.

Также в этой сфере будет взаимодействие всех видов транспорта, благодаря чему будет создана сеть международных транспортно-логистических центров мультимодальных перевозок, которые позволят достигнуть максимальный уровень обеспечения потребностей экономики и населения в надежных и безопасных транспортных услугах. Все это позволит Казахстану стать частью мировой транспортно-коммуникационной системы и особый приоритет будет отдан созданию современных хабов – мощных транспортных узлов, которые позволят связать между собой не только все города Республики Казахстан, но и крупнейшие города всего мира.

В статье авторы отмечают, что внедрение и формирование организационной формы транспортно-логистического центра способствует повышению деловой и коммерческой активности, привлечению дополнительных грузопотоков и инвестиций, созданию новых рабочих мест и получению прибыли, сопоставимой с доходами бюджета от экспорта углеводородного сырья. Также строительство транспортно-логистического центра в крупных городах позволит расширить деловые отношения с экономически развитыми странами. Конечно, сегодня основным партнерами в экономических отношениях являются страны СНГ, но вхождение в интегрированную транспортно-логистическую систему – это огромный шанс участия на мировом рынке.

Приведен опыт использования транспортно-логистических систем в развитых странах, который показывает, что транспортные расходы при этом сокращаются, расходы на погрузочно-разгрузочные работы, хранение материальных ресурсов и готовой продукции уменьшаются, а также ускоряется оборачиваемость материальных ресурсов.

Также авторы в своей работе выделяют основные факторы экономического роста, которым становится формирование интегрированных транспортно-логистических систем, которые охватывают отдельные сферы предпринимательства, целые регионы и страны. Одним из эффективных путей социально-экономического развития, как отдельных регионов нашей страны, так и Республики Казахстан в целом является формирование транспортно-логистической инфраструктуры, что определило актуальность статьи с учетом специфики Республики Казахстан. Выявлены факторы и проблемы, оказывающие наибольшее влияние на результативность и эффективность функционирования и управления транспортно-логистическими системами.

Ключевые слова: логистика, транспортная система, интеграция, транспортно-логистическая система, перевозка грузов.

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THEORETICAL APPROACHES TO THE MODERN INTERPRETATION OF INTER-BUDGET RELATIONS IN THE REPUBLIC OF KAZAKHSTAN

Abstract. Currently, the inter-budget relations plays a crucial role in the life of states. In this regard, this article addresses the issues of inter-budget relations in Kazakhstan. The topic of reform was considered, which was mentioned in the message of the Head of State Kasim-Zhomart Tokayev to the people of Kazakhstan of September 2, 2019. Approaches to the content and organization of the concept of "inter-budget relations" have been analysed. Consideration of the opinion of Kazakhstan and abroad scientists. Shown descriptions of the principles on which inter-budget relations are based, conclusions on approaches to the organization of inter-budget relations. Regulation of inter-budget relations is the main mechanism for their effectiveness. Financial alignment is the way to provide financial resources. The entire analysis on the topic is based on economic literature and financial practice.

Keywords: inter-budget relations, budget system, financial alignment, budget divisionism (regionalism), reform, financial levers.

Introduction. The budget system of the state is based on permanently developing economic relations and political structure, is represented in various forms of formation and use of financial resources, in the totality of budgets of various levels regulated by regulatory legal acts.

The budget system has an important role to play in the implementation of the financial policy of the state, the goals of which are determined by its economic policy. At the same time, the importance of state financial regulation through the budget system is difficult to overestimate, although one cannot but take into account the current changes in the practice of redistributing financial resources. This redistribution is increasingly carried out through the financial market, based on their supply and demand.

Therefore, the role of state regulation of market relations should be strengthened through tax, financial sanctions and preferential systems.

In the Address of the Head of State Kassym-Zhomart Tokayev to the people of Kazakhstan dated September 2, 2019, he outlined a number of tasks in paragraph V Strong regions-a strong country. The first increase in the efficiency of local authorities. The second reform of intergovernmental fiscalrelations born in eformirovanie budget system and intergovernmental fiscal relations requires understanding gained national and international experience, budget allocation trends, their implementation in practice of the budget process, as well as the definition of measures aimed at solving the most important, priority issues in the public sector. The direction of transformations in the budget system should be carried out taking into account the requirements of quick adaptation of the measures taken to the existing conditions [1].

Methodology. In the works of foreign experts, the term "inter-budgetary relations" is not formulated, is identified with a well-known concept

“Fiscal federalism”, “fiscal federalism”. Meanwhile, these concepts characterize different economic categories.

The systematization of the analyzed definitions of the concept of “inter-budgetary relations” is presented in table 1.

Table 1 - Analysis of approaches to content organization
of the concept of "intergovernmental relations"

Author	Approaches to the concept of "intergovernmental relations"	Comment
Budget Code of the Russian Federation	The relationship between the bodies of state power of the Russian Federation, authorities of subjects of the federation and the local Selfmanagement	Target settings are not specified, application areas – budget Process
Budget Code of the Republic of Kazakhstan	Relationships are called budgetary. between upstream and downstream budgets in the budget process	Not specified for what about this relationship
Finances in and I constitution of Federal Republic of Germany	Inter-budgetary relations are relations between authorities at various levels regarding the differentiation of income and expenses; the distribution of joint taxes according to temporary standards, as well as the redistribution of funds between budgets of various levels.	Comprehensively reflect the financial aspects and the N th updated on what about are these relationship tools
Economicdictionary	Inter-budgetary relations (federalism) is a form of autonomously functioning budgets of various levels of state power, based on clearly formulated in fixed legislative norms, regulations.	Identification of concepts "Intergovernmental relations" and "federalism"
Vasilieva M.V., Maly N.A., Perekrestova L.V.	The totality of interactions between the government bodies of the Russian Federation and the authorities of the constituent entities of the federation and local self-government regarding the delimitation and consolidation of budget powers, the observance of the rights, duties and responsibilities of the authorities in the preparation, approval and execution of budgets ensuring the implementation of budgetseffective distribution and redistribution policies	Bulky definition. The concept of “effective distribution policy” needs to be clarified. This policy cannot be the t|arget setting of intergovernmental relations.
Babich A.M., Pavlova L.N.	The totality of relations between public authorities, authorities of the subjects of the federation and local self-government regarding the delimitation and consolidation of budget powers, respect for the rights, duties and responsibilities of authorities in the field of compilation, approval and enforcement budgets and budget process.	The possibility of deviation of authority of authorities from legal norms is allowed. The concepts of "drawing up, approval and execution of budgets" and " Budget process " Areidentical
Lyubimtsev Yu.	Systematically organized cash flows and relations between subjects of intergovernmental relations on the formation, distribution and use of budget funds and grants	Not specified sous The object of inter-budgetary relations. The notion of "grant" YaV wish to set up part of the budget and can be seen outside of his.
About Mirbaev S.M., Intykbaeva S.Zh., Adambekova A.A., Parmanova R.S.	M budgetary refers to the relationship between higher and lower budgets in the budget process	Interpretation is given in accordance with the Budget Code
Melnikov V.D.	M budgetary refers to the relationship between higher and lower budgets in the budget process	Interpretation is given in accordance with the Budget Code
Nurumov A.A.	An effective system of intergovernmental relations is a compromise, a product of the synthesis of the economic interests of the state, population and entrepreneurship	The basis of this compromise isnot clarified, the financial component of the independent Management
Isakhova P.B.	M budgetary refers to the relationship between higher and lower budgetsinthebudgetprocess	The interpretation is given in accordance with BudgetCode
Kuchukova N.K.	The current mechanism of intergovernmental relations does not stimulate the strengthening of the tax base of local budgets and budget alignment by region.	An assessment of the mechanism of regulation of intergovernmental relationship.

Note – Systematized by the author.

It should be noted that in Kazakhstani publications, the definitions of the term are mainly given in accordance with the current legislation.

Results of a research. The works of Kazakhstani scientists assessed the current practice of inter-budget relations and the authors' vision for this economic category. Kazakhstani scientists Omirbaev S.M., Intykbaeva S.Zh., Adambekova A.A., Parmanova R.S., revealing the essence and mechanism of regulation of inter-budget relations, note: “In Kazakhstan, inter-budget relations are understood by analogy with budget federalism [2].

Budget divisionism (regionalism) – relations between the authorities of the Republic of Kazakhstan and local authorities regarding the delimitation of budgetary powers, expenses and revenues, their distribution between the republican and local budgets on the basis of the need to ensure the unity of national interests of the population living in the country” [3].

In accordance with the legislation of the Republic of Kazakhstan, “inter-budgetary refers to the relationship between higher and lower budgets in the budget process.

Our author’s definition of inter-budgetary relations is the relationship that arises between public authorities and local government in the process of conducting budgetary procedures for the formation and execution of relevant budgets

Of important methodological importance for the organization of intergovernmental relations are the conceptual provisions that determine their principles. Principles are target settings that determine the vector of development of certain relationships [4].

Doctor of Economics, Professor Isakhova P.B. emphasizes: “The development of a mechanism for equalizing territories is not just an economic, but also a political task, requiring coordination and consideration of the interests of both poor and rich regions” [5].

Doctor of Economics , Professor Kuchukova N.K. notes: “The current mechanism of interbudgetary relations does not stimulate the strengthening of the tax base of local budgets and budget equalization by region.As shown, the mechanism for the use of transfers has led to the centralization of tax revenues to the national budget and their redistribution across regions at the discretion of Central s Foot authorized body" [6].

Doctor of Economics , Academician A. Esentugelov considers inter-budgetary relations through the prism of differentiation of functions and powers between levels of state power and administration: “Today, the functions and powers of the state as a whole and between its levels, various bodies of the same level are blurred. , the number of tasks and functions has an expanding tendency due to the increase in explicit and implicit state interference in the economy and social sphere ” [7].

Intergovernmental relations are based on the following principles:

– the equality of budgets of regions, cities of republican significance, the capital in relations with the republican budget, budgets of regions (cities of regional significance) in relations with a higher regional budget;

– effective distribution of revenues, taking into account the simultaneous compliance with the following criteria for their differentiation:

– lower budgets are assigned tax and non-tax revenues that are stable in nature and are not affected by external factors;

– tax and non-tax revenues representing fees for services rendered by state institutions come to the budget, from which these services are financed;

– taxes having a redistributive nature, as well as uneven distribution of the tax base, are assigned to higher levels of the budget system;

– when fixing taxes and other obligatory payments to the budget, preference is given to that level of the budget that will ensure the highest degree of their collection.

– alignment of budgetary levels of administrative-territorial units of the Republic of Kazakhstan;

– ensuring the provision by local executive bodies of the same level of public services;

– maximum efficiency and effectiveness of the provision of public services, their consolidation at the level of government that can ensure the most efficient and effective production and provision of public services;

– the maximum approximation of the level of provision of public services to its recipients is the transfer of services to the lowest possible level of the budget system in order to better take into account the needs of their recipients and improve the quality of public services;

– the responsibility of each budget level for the efficient and targeted use of received official transfers and loans [8].

The principles of the organization of intergovernmental relations defined by the current legislation of the Republic of Kazakhstan, in our opinion, do not provide due clarity, which conflicts with current practice and creates the basis for violation of legal norms. Consider the views of Kazakh scientists on this subject, Doctor of Economics, Professor Intykbaeva S.Zh. notes: “the existing mechanisms for regulating intergovernmental fiscal relations generate dependent sentiments in some regions and deprive other regions of serious incentives for development, not only generate, but also strengthen regional differentiation, and require ever greater redistribution of financial resources” [9].

Doctor of Economics, Professor Nurumov A.A., accentuating the existing regulatory mechanism of intergovernmental relations, suggests "taking into account the criteria set list enshrined and regulatory income and Execu acce combined methods of delimitation Nia revenues between budgets" [10].

Doctor of Economics, Professor Zeinelgabdin A.B. believes that “a Significant increase in tax revenues to the local budget will significantly reduce the amount of targeted transfers allocated from the republican budget. In this case, it is advisable to completely abolish the current targeted transfers to local budgets” [11].

Doctor of Economics, Academician Esentugelov A. to solve the problems of financial support of local budgets offers the following system of intergovernmental relations. To distinguish existing taxes on the principle of “one tax – one budget” and also allocate joint taxes distributed according to the norms between the republican and local budgets. Create a financial assistance fund from these taxes to allocate funds to depressed regions. “With this establishment of sources of budgetary funds in order to strengthen budgetary discipline and strengthen the responsibility of local authorities for the budget policy and fulfillment of financial obligations, inter-budgetary relations are supplemented by the exception in the legislative procedure of withdrawal of revenues that additionally arise in the process of execution of the local budget and compensation from the republican budget additional arising expenses of local authorities” [12].

A review of existing approaches to the organization of intergovernmental relations allows us to draw a number of conclusions. The sphere of intergovernmental relations includes not only financial, but to a greater extent legal, political, national and regional components. In this area, the complex economic, social and political interests of all participants in budgetary relations are intertwined [13-15]. This predetermines the multifactorial nature of the goals that determine the principles and tools of budget policy. In this regard, “an effective system of inter-budgetary relations is a compromise, a product of the synthesis of the economic interests of the state, population and entrepreneurship [16]. The central place in organizing an effective mechanism of inter-budgetary relations, in our opinion, is occupied by their regulation using appropriate financial levers. In most countries with developed market economies, each level of government has some degree of independence in making budget decisions; in some countries, delegation of authority to lower levels of government is practiced. The state at all stages of the budget process, using established principles and tools of inter-budget regulation, forms budget interconnections, methods and ways of providing financial assistance [17-20]. The organization of intergovernmental relations implies the existence of unified approaches to the organization of all types of financial assistance. It should maximize the realization of the potential of their combined targeted impact on the economy of the region. At the same time, the development of budget equalization mechanisms by providing financial assistance to the regions should be carried out in such a way as to increase the local government’s interest in expanding its own revenue base, developing investment activity, and conducting structural transformations in the regional economy [20].

The objective conditions conducive to regional differentiation necessitate intergovernmental regulation. Most authors, analyzing intergovernmental relations, consider them through the prism of budget equalization. The desire to ensure uniform development of territories that differ among themselves in a number of socio-economic parameters is ensured by measures of state support. Differentiation of regions within the country, unequal starting development for citizens living in different territorial entities,

uneven demographic conditions and tax potential make financial equalization necessary. In most countries of the world, taxpayers require equal access to public services, which is ensured by their constitutional rights [21, 22].

Meanwhile, as world practice shows, the bodies of state power and administration objectively cannot provide all citizens with state services. This is due to the different financial capabilities of the authorities and the difference in the tax potential of the territories. Thus, this problem is typical for most countries of the world. Financial equalization in the broad sense implies providing each level of government with financial resources sufficient to carry out its tasks. In this case, the elements of financial equalization include the distribution of expenditure and revenue powers, the adjustment of the initial tax distribution. In the narrow sense, this is actually the adjustment of the initial distribution of tax revenues between budgets in order to equalize their financial situation. In economic literature and financial practice, there are two types of financial equalization. Vertical financial alignment is overcoming the imbalance between budgets of various levels of the power vertical – central, regional and local [23, 24]. The number of levels, as you know, is determined by the national-state system and, accordingly, the levels of the budget system. In countries with a federal structure, there are 3 levels of the budget system – the federal budget, the budgets of the federal subjects and local. In unitary states 2 are central and local budgets. Horizontal financial equalization is a tool to ensure equal financial opportunities for entities to provide the population of the country with a standard set of socially significant services, i.e. alignment of financial potentials of budgets. In case of horizontal financial equalization, the object of regulation is budget differentiation, due to objective reasons and not connected with the direct activities of government bodies and the management of a specific territory.

Conclusion. An analysis of theoretical approaches and the practice of financial equalization allows us to conclude that their economic content is generally identical. Differences arise in the practical application of the forms and methods of financial equalization of regional differentiation [25]. Financial equalization can be represented as a mechanism, that is, a system of levers of public policy, enshrined in law, with its purpose, objectives, types and tools. Financial equalization – a system of forms andmethods of state financial support at each level of government, aimed at providing financial resources sufficient to solve the tasks. The ultimate goal of government support measures for financial equalization is to ensure that all citizens of the country have equal access to government services, regardless of where they live.

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БЮДЖЕТАРАЛЫҚ ҚАТЫНАСТАРДЫ ЗАМАНАУИ ТҮСІНДІРУДІҢ ТЕОРИЯЛЫҚ ТӘСІЛДЕРІ

Аннотация. Қазіргі уақытта бюджетаралық қатынастар мемлекет өмірінде маңызды рөл атқарады. Осыған байланысты бұл мақалада Қазақстандағы бюджетаралық қатынастарды түсіндірудің теориялық тәсілдері зерттелді. Мемлекет Басшысы Қасым-Жомарт Тоқаевтың 2019 жылдың 2 қыркүйегіндегі Қазақстан халқына Жолдауында айтылған реформалау тақырыбы қаралды. Мақалада «Бюджетаралық қатынастар» ұғымының мазмұны мен ұйымдастырылу тәсілдері талданды. Қазақстандық және шетелдік ғалымдардың пікірлері зерттелді. Бюджетаралық қатынастарға негізделген принциптер, бюджетаралық қатынастарды ұйымдастыру тәсілдері бойынша қорытындылар сипатталды. Бюджетаралық қатынастарды реттеу – олардың тиімділігінің негізгі тетігі. Тақырып бойынша барлық талдау экономикалық әдебиет пен қаржы практикасына негізделген. Теориялық ережелерді талдаудан көрінетіндей, әртүрлі авторлардың пікірінше, «бюджетаралық қатынастар» ұғымының мазмұны арасында принциптік айырмашылықтар жоқ. Олардың көпшілігі бюджет процесіндегі билік деңгейлері арасындағы қатынастар ретінде бюджетаралық қатынастарды анықтайды.

Жекелеген анықтамаларда осы қатынастар қандай себеппен қалыптасатыны нақтыланады.

Шетелдік мамандардың еңбектерінде «бюджетаралық қатынастар» термині тұжырымдалмайды, «бюджет федерализмі», «фискалдық федерализм» сынды кеңінен танымал ұғымдармен теңдестіріледі. Сонымен қатар бұл ұғымдар әртүрлі экономикалық санаттарды сипаттайды. Бюджетаралық қатынастарды ұйымдастырудың қолданыстағы тәсілдеріне шолу бірқатар қорытындылар жасауға мүмкіндік береді. Бюджетаралық қатынастар саласы тек қаржылық қана емес, көбінесе құқықтық, саяси, ұлттық және өңірлік құрамдастарды қамтиды. Бұл салада бюджеттік қатынастардың барлық қатысушыларының күрделі экономикалық,

әлеуметтік және саяси мүдделері тоғысады. Осымен бюджеттік саясаттың принциптері мен құралдарын айқындайтын мақсатты қондырғылардың көп факторлығы алдын ала айқындалады. Осыған байланысты «бюджетаралық қатынастардың тиімді жүйесі – бұл ымыраға келу, мемлекеттің, халықтың және кәсіпкерліктің экономикалық мүдделері синтезінің өнімі. Бюджетаралық қатынастардың тиімді тетігін ұйымдастыруда, біздің ойымызша, тиісті қаржылық тетіктерді пайдалана отырып, оларды реттеу орталық орынды алады. Нарықтық экономикасы дамыған елдердің көпшілігінде биліктің әрбір деңгейі бюджеттік шешімдер қабылдауда дербестіктің қандай да бір үлесіне ие, жекелеген елдерде басқарудың төмен тұрған деңгейлеріне өкілеттіктер беру тәжірибеленеді. Бюджет жүйесі мен бюджетаралық қатынастарды реформалау жинақталған отандық және шетелдік тәжірибені ұғынуды, бюджеттердің даму үрдістерін бөлуді, оларды бюджет процесі практикасына іске асыруға, сондай-ақ бюджет саласындағы неғұрлым маңызды, бірінші кезектегі проблемаларды шешуге бағытталған іс-шараларды айқындауды талап етеді. Бюджет жүйесіндегі қайта құрулардың бағыттылығы іске асырылатын іс-шаралардың қолда бар жағдайларға жылдам бейімделу талаптарын ескере отырып жүзеге асырылуы тиіс.

Түйін сөздер: бюджетаралық қатынастар, бюджеттік жүйе, қаржылық теңестіру, бюджеттік бөлу, реформалау, қаржылық тұтқалар.

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ТЕОРЕТИЧЕСКИЕ ПОДХОДЫ К СОВРЕМЕННОЙ ТРАКТОВКЕ МЕЖБЮДЖЕТНЫХ ОТНОШЕНИЙ В РЕСПУБЛИКЕ КАЗАХСТАН

Аннотация. В настоящее время межбюджетные отношения играют важную роль в жизни государства. В связи с этим в данной статье исследованы теоретические подходы к трактовке межбюджетных отношений в Казахстане. Рассмотрена тема реформирования, которая была сказана в Послании Главы государства Касым-Жомарта Токаева народу Казахстана от 2 сентября 2019 года. Проанализированы подходы к содержанию и организации понятия «межбюджетные отношения». Рассмотрены мнения Казахстанских и зарубежных учёных. Описание принципов, на которые основываются межбюджетные отношения, выводов по подходам к организации межбюджетных отношений. Регулирование межбюджетных отношений – основной механизм их эффективности. Весь анализ по теме основан на экономической литературе и финансовой практике. Как показал анализ теоретических положений, принципиальных различий между содержанием понятия «межбюджетные отношения» у разных авторов не выявлено. Большинство из них определяет межбюджетные отношения как отношения между уровнями власти в бюджетном процессе.

В отдельных определениях уточняется, по какому поводу складываются данные отношения.

В трудах зарубежных специалистов термин «межбюджетные отношения» не формулируется, отождествляется с широко известным понятием «бюджетный федерализм», «фискальный федерализм». Между тем, данные понятия характеризуют разные экономические категории. Обзор существующих подходов к организации межбюджетных отношений позволяет сделать ряд выводов. Сфера межбюджетных отношений включает не только финансовые, но в большей степени правовые, политические, национальные и региональные составляющие. В данной сфере переплетаются сложные экономические, социальные и политические интересы всех участников бюджетных отношений. Этим предопределяется многофакторность целевых установок, определяющих принципы и инструменты бюджетной политики. В этой связи «эффективная система межбюджетных отношений – это компромисс, продукт синтеза экономических интересов государства, населения и предпринимательства. Центральное место в организации эффективного механизма межбюджетных отношений, на наш взгляд, занимает их регулирование с использованием соответствующих финансовых рычагов. В большинстве стран с развитой рыночной экономикой каждый уровень власти обладает той или иной долей самостоятельности в принятии бюджетных решений, в отдельных странах практикуется делегирование полномочий на нижестоящие уровни управления. Реформирование бюджетной системы и межбюджетных отношений требует осмысления накопленного отечественного и зарубежного опыта, выделения тенденций развития бюджетов, их реализации в практику бюджетного процесса, а также определения мероприятий, направленных на решение наиболее важных, первоочередных проблем в бюджетной сфере. Направленность преобразований в бюджетной системе должна осуществляться с учетом требования быстрой адаптации реализуемых мероприятий к имеющимся условиям.

Ключевые слова: межбюджетные отношения, бюджетная система, финансовое выравнивание, бюджетный разделизм (регионализм), реформирование, финансовые рычаги.

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DIGITALIZATION IN THE DEVELOPMENT OF HUMAN CAPITAL AS A CONDITION FOR COMPETITIVENESS AND ECONOMIC GROWTH OF THE REPUBLIC OF KAZAKHSTAN

Abstract. Currently, the economy of Kazakhstan is in the process of global changes in the economic and technological structures. The situation in the labor market and educational services calls for changes in the content of education in relation to the modern requirements. Discloses a digital transformation sector: the importance of the balance of the strategy and tactics of business and society, issues involving the human capital and society in modernizing the management of the economy in terms of globalization.

In the article the human capital is considered as the driving force behind the development of innovation-based economy, capable of responding to the challenges of the world civilization. Without the human capital development of a country can neither achieve sustainable economic growth, nor to create a contingent of workers who will be willing to take require retraining of workers of the future places or to compete effectively in the global economy.

According to the authors the important role it is necessary to take digital technologies. It is necessary to completely review the contents of all levels of education and training in the IT-industry, in the field of organization of management through the development of digital skills.

Currently, the economy of the Republic of Kazakhstan is at the stage of global changes in the economic and technological structures. The situation on the labor market and educational services necessitates changes in the content of education in relation to modern requirements. The sector of digital transformation is revealed: the importance of balancing the strategy and tactics of business and society development, the issues of involving human capital and society in managing the modernization of the economy in the context of globalization.The formation of a multicomponent information and educational environment, information and digital technologies make it possible to build completely new communications, as well as new relationships among people, the restructuring of the entire economy and society, so that our life is better and “smarter”.

The modern economy is called the economy of effective human capital, which emphasizes its main role in the development and growth of the economy. Human capital is seen as the driving force behind the development of an innovative economy that can respond to the challenges of world civilization.It makes up more than half of the national wealth of each of the developing countries and the main intensive factor in economic growth and social development. The level of skills demanded by the labor market is changing rapidly, which creates both new opportunities and new risks.Without the development of human capital, countries will not be able to achieve sustainable economic growth, nor create a contingent of workers who will be ready to occupy advanced jobs for the future, or compete effectively in the global economic arena.

Keywords: human capital, human development, economic modernization, economic efficiency, digitalization, digital technologies, digital economy, labor market, education system.

Introduction. The issues of increasing the competitiveness of national economies are relevant for each of the countries of the world economy. They are particularly acute in the context of globalization and are based on the protection of national interests. Economic efficiency is expressed primarily in the dynamics of GDP and labor productivity, competitiveness of manufactured goods and services, increasing per capita income and general quality of life.

An analysis of the world economy by these indicators gives a rather mixed picture and does not allow us to identify criteria that would allow the economy of a country to be considered effective. So, in terms of GDP per capita income, the Middle East belongs to oil-producing countries, China leads in terms of GDP growth rates, Japan and Finland in terms of environmental level, and the United

States in terms of labor productivity growth. If we consider the EU countries, they have a number of advantages over other countries that can help transform them into the most developed and competitive countries in the world. These advantages include – compact living of the population in the country with a high standard of living, the availability of modern infrastructure, a high level of development of science, technology and culture.

The Republic of Kazakhstan is a resource-mining country. Studies by UN analysts led to a pessimistic conclusion: human potential can quickly deteriorate due to sales of natural resources, extremely slow development of high-value-added industries, the decline of basic science, culture, and the inaccessibility of high-quality public health services. In this regard, it can be noted that the availability of natural resources cannot always provide a country with a competitive advantage. The economy of these countries is sensitive to changes in world prices for raw materials, which is quite justified, since scientific and technical progress and resource-saving technologies significantly affect world market prices. It all depends on how efficiently the resources are used. Countries that have achieved a competitive advantage by correctly using their natural resources, have created an organization that acts in the common interest on the example of OPEC countries, are less vulnerable to changes in the situation, moreover, they control prices themselves.

Mainpart. The Republic of Kazakhstan needs to critically rethink the organization of raw materials industries, approaches to natural resource management. As you know, today one of the most competitive and dynamically developing industrial sectors of Kazakhstan is the mining and metallurgical complex (MMC). According to the total volume of extraction of solid minerals, the republic ranks 13th in the world among 70 mining powers. In the coming years, the main task of the development of the industry should be the phased creation of new manufacturing industries in the metallurgical industry, the release of high value-added products, ensuring both the growth in the production of high-tech products and the expansion of their exports to foreign markets, as well as the satisfaction of the needs of the domestic market. Technologies such as massive data analysis, advanced sensors and sensors, integrated information systems (ERP, MES), robotic operations and others should be introduced [1].

By 2018, the Kazakhstani economy was able to overcome the dire consequences of the global economic crisis and resume strong growth rates of gross domestic product and industrial production. GDP in 2017 increased by 4 %. The main catalysts for growth were the expansion of production, increased investment activity, the restoration of consumer demand in the domestic market, the growth of the global price situation for oil and metals, as well as the improvement of the economic situation in the states – the main trade partners of Kazakhstan. The manufacturing industry showed a five-year growth maximum of 5.1 %, which was made possible thanks to the implementation of projects under the Industrialization Map. Through the State Program for Industrial-Innovative Development of the Republic of Kazakhstan, 62 projects have already been introduced in the amount of about 850 billion tenge and 5.5 thousand job places have been created [2].

Currently, the economy of the Republic of Kazakhstan is at the stage of global changes in the economic and technological structures. The situation on the labor market and educational services necessitates changes in the content of education in relation to modern requirements. The sector of digital transformation is revealed: the importance of balancing the strategy and tactics of business and society development, the issues of involving human capital and society in managing the modernization of the economy in the context of globalization. The formation of a multicomponent information and educational environment, information and digital technologies make it possible to build completely new communications, as well as new relationships among people, the restructuring of the entire economy and society, so that our life is better and “smarter”.

The modern economy is called the economy of effective human capital, which emphasizes its main role in the development and growth of the economy. Human capital is seen as the driving force behind the development of an innovative economy that can respond to the challenges of world civilization. It makes up more than half of the national wealth of each of the developing countries and the main intensive factor in economic growth and social development. The level of skills demanded by the labor market is changing rapidly, which creates both new opportunities and new risks. There is ample evidence that without the development of human capital, countries will not be able to achieve sustainable economic growth, nor create a contingent of workers who are ready to take demanding jobs of the future, or compete effectively in the global economic arena.

Investing in human capital is the most profitable investment of the state. Given the fact that Kazakhstan is preparing for more advanced technology and the digital future, the country has the opportunity to equip their young people's health, knowledge and skills that will enable them and their country, and to achieve success. Human Capital Index – this is a very useful tool to compare Kazakhstan and see what else needs to be done.

Studies from around the world suggest that progress in this area is possible. In the years 1990-2015 Poland held a series of reforms in the sphere of education and rates of improvement in PISA survey here were among the highest among OECD countries. PISA survey indicators in Vietnam recently exceeded the average for the OECD. In Malawi, in less than twenty years, it was able to reduce the proportion of child stunting by 20 percentage points. But the index shows that there is still much more to do [3].

The list of countries with the highest level of human development. This was reported in the United Nations Development Program (UNDP), Of the 189 countries, 59 were included in the group with a very high level of human development. Among them are Estonia (30th place), Poland (33rd), Lithuania (35th), Latvia (41th), Russia (49th), Belarus (53th) and Kazakhstan (58- e). Moreover, in comparison with other countries, the indicators of the republic are at a level above the average value (only for the Central Asian region, as well as in the group of countries with the same income level). Indeed, for example, for only five years between 2012 and 2017, the indicator of the HDI in the country increased from 0.63 % to 0.75 %. The leader of the table is Singapore with 0.88 [4].

However, the National Human Capital (Human Capital) essentially divided in quality and cost per capita of the population, as well as their effectiveness in different countries. The ratio of the coefficients of per capita efficiency of human capital of the population is shown in table 1.

Table 1 - Human capital efficiency ratio

Country	Type of economy	Performance ratio	Commodity Economy Index	Index of Economic Freedom	Human Capital Quality Index
USA	Knowledge	1,225	1,0	0,78	1,67
Great Britain	Innovative	0,855	1,0	0,75	0,96
Germany	Innovative	0,93	1,0	0,72	1,14
Japan	Innovative	0,93	1,0	0,73	1,13
China	Industrial raw materials	0,49	1,0	0,52	0,45
India	Industrial raw materials	0,37	1,0	0,55	0,19
Russia	Industrial raw materials	0,30	0,75	0,51	0,31
Kazakhstan	Industrial raw materials	0,29	0,56	0,62	0,32
Note: [4]					

Kazakhstan should increase investment in education. The contribution to education in the Republic of Kazakhstan is 3.6 % of GDP, which is a low figure, given that in the countries of the Organization for Economic Cooperation and Development the figure is 3-4 times higher. The post-industrial development of the economy is characterized by high technology and accelerated technological renewal in the production of an intellectual product. In the world there is a tendency for the growth of the economy to depend on the quality of human resources that they possess. Quality indicators of human capital are increasingly affecting the country's competitiveness [5].

Human capital, as well as other capital physical, financial cost has, subject to renewal, modernization and development. And in this it is necessary to take important role digital technologies. The knowledge and skills of the future are educated from an early age, increase business efficiency and speed through automation and other new technologies, and a dialogue with their citizens States is easy and open. State enterprises and organizations, people can interact more effectively with each other.

The digitalization process today affects almost all countries of the world. At the same time, each country itself determines the priorities of digital development. The leading countries in digitalizing national economies are China, Singapore, New Zealand, South Korea, and Denmark. China in its Internet Plus program integrates digital industries with traditional ones, Canada creates an ICT hub in Toronto, Singapore forms a Smart Economy, which is driven by ICT, South Korea focuses on the development of human capital, entrepreneurship and dissemination of ICT achievements, and Denmark focuses on the digitalization of the public sector [6].

The state can provide a "digital leap" in the country due to the accelerated development of specific technologies. In such cases, the State assumes the role of investor, defining the key, the most promising areas of financing, based on an assessment of long-term return on investment, competitive position, trends, and is embedded in the fundamental conditions of success, such as education and vocational training.

As for long-term economic growth in the Republic of Kazakhstan developed a state program "Digital Kazakhstan", whose purpose - the progressive development of digitalization system to achieve sustainable economic growth, improving the competitiveness of the economy and the nation, improving the quality of life.

Latest IT development in education and other sectors of the economy steadily gaining a leading position in the labor market and education, a serious challenge to outdated business models. Modern specialist requires the development of skills, providing work in complex multifactorial dynamic environments: natural, technological, social, information required for output of the national economy on a path of accelerated growth in a rapidly changing world [7].

One of the most important areas of this program is “Development of human capital”, covering the creation of the so-called creative society to ensure the transition to new realities - the knowledge economy. Without the development of human capital, work within the framework of digital development programs aimed at the modernization of technological processes and the transition from industry 2.0 and 3.0 to industry 4.0 will be ineffective. The economic return from the introduction of advanced mining business solutions by large mining and metallurgical enterprises is already visible - but it can and should be even greater when intensifying work to improve staff skills and enhancing cooperation between domestic enterprises and applied domestic science and technology parks.

The digital economy requires the population to have digital skills to take advantage of it. Moreover, at present, the level of computer (digital) literacy of the population is about 80 %, and its growth is necessary in the coming years. For the successful development of human capital in Kazakhstan, it is planned to make changes to the work of the network of higher and secondary education, and it is also planned to create a network of competence centers, the work of which will be aimed at training qualified specialists in the IT sphere [8]. Thus, the subject “Information and Communication Technologies” is being taught in schools and higher educational institutions, which forms the general basic knowledge of working with modern information technologies for their effective use in school and everyday life. The number of robotics clubs expands on the general basics of programming in robotics.

At the same time, taking into account the new requirements for the younger generation matures the need to revise the content of secondary education through the development of creative thinking and technical skills. It requires the development of professional standards, which will become the main base for training of technical and professional programs of higher, postgraduate education. Students should develop basic knowledge of the use of ICT in practice, within the framework of the chosen profession.

Over 15 thousand educational grants have been allocated. Moreover, today in the country's economy there is a shortage of specialists in ICT specialties who have professional knowledge and skills in the chosen profession [9].

In addition to training specialists in the IT industry, quality training is needed in the field of management organization, i.e. in the field of systemic organization of the interaction of the ecosystem of people and machines, where routine operations will be performed by machines, and the intellectual control and regulatory function is management. Digitalization is far ahead of the existing system of production requirements for the composition of occupations in the labor market. The lack of an operational link between the labor market and the education system may lead simultaneously to the training of already demanded personnel and the release of personnel in “dying” professions [10]. It is necessary to completely review the content of all levels of education through the development of digital skills of all specialists.

There is a need for confident knowledge of modern technologies by representatives of any profession. Become an important application of digital technology in various aspects of human life, the development of the digital culture of the future experts for effective professional activity. It is necessary to create an educational environment in high school, rich with information and communication and value aspects.

The current average levels of digitalization of the economy of Kazakhstan today – not a barrier, and the opportunity to make a qualitative leap in the development, which will allow the country to reach the leading position on the world stage. For this, it is assumed that a set of measures and systematic work will

be taken in the five areas described in this Program and in the framework of the measures given in the annex to it. The list of events will be updated.

Considering the role and importance of human capital in the digital economy, it should be noted that each of the indicators that measure the degree of digitization of the economy, contains an assessment of the human capital, including in the form of digital knowledge and skills to use information and communication technologies. For example, human capital is one of the factors of electronic development of the information society as well as ICT infrastructure, economic environment, as well as access to and use of ICT.

The world's key ICT development ranking, calculated under the auspices of the UN – ICT Development Index – Kazakhstan in 2017 took 52th place out of 176, and have not changed their position since 2015 [11].

As a result of the implementation of the Program and other strategic directions, the country will rise in ranking to 30th place by 2022, 25th place by 2025 and 15th place by 2050. Kazakhstan is also a catching country in the e-intensity rating of the international consulting company The Boston Consulting Group in terms of the current level of digitalization. To overcome the catch-up status in the Program, revolutionary, breakthrough measures are required in all areas of digitalization that are on the agenda of the countries of the world [12]. These areas include the digital transformation of traditional sectors of the economy, the development of human capital, the digitalization of government agencies, the development of digital infrastructure, as well as a breakthrough in the development of the entrepreneurial ecosystem in the field of digital technologies and, as a result, changes in production models and creating added value in the real sector of the economy.

Radically changing modes of production and value added, there are new requirements for education and work skills of people. Industrial Internet of Things is shaping the future of industries, taking advantage of the flexible and intelligent production provides a revolutionary increase in productivity. Artificial intelligence is implemented, including in conservative industries such as financial services and medicine.

Global digitalization trends and international experience show that the Internet economy is growing at a rate of up to 25 % per year in developing countries, while no sector of the economy can even come close to such a pace. 90 % of all global data was created in just the last 2 years. Already 35 billion devices are connected to the Internet and exchange data - this figure is five times the total population of the world [13]. These changes are caused by the introduction in recent years of a multitude of technological innovations, "end-to-end" digital technologies, which understand the methods of processing "big data" (big data), wireless technology (including 5G), virtual and augmented reality (VR / AR) technologies, distributed registry systems (block chain), quantum technologies, new manufacturing technologies, the industrial Internet, robotics and sensor components, neurotechnologies and artificial intelligence. 3D printing technology is already contributing to the transformation of industries such as aviation, logistics, biomedicine and the automotive industry. Block chain has all the prerequisites to make a global transformation of the monetary system. Big data and the widespread availability of communications are some of the factors that underpin the “sharing economy” , which is spreading globally at an accelerated pace [14]. The leading companies in the segment of “joint consumption in the absence of physical assets” in terms of capitalization exceed the cost of traditional companies with multi-billion dollar physical assets on the balance sheet.In a changed world, people will need to develop new skills to adapt to the rapidly changing labor market. To win requires a willingness to invest in ambitious projects and focus on concrete results, and flexibility as a willingness to change everything at any time, and the desire to work hard and to experiment. But before the companies that manage to become leaders in the digital economy, and people have learned to take full advantage of the opportunities of the digital world, will open virtually unlimited prospects [15].

The obtained results (conclusions). In Kazakhstan, the state plays a key role in the launch and implementation of the program. The state provides support to the regulatory framework, synchronization and cooperation with key stakeholders (regional governments, and others.), as well as providing incentives for "digitalized" industries.

These changes are radical and occur within a few years or even months, not decades, as before. But this is only the beginning, and the world has to go through the bulk of the changes. The pace of change is increasing, but still not too late to be a part of these changes.

For the growth of the digital economy, it is necessary to develop the national IT sector, stimulate the creation of innovative technologies, and collaborate for their development at the international level. It is necessary to create conditions so that young talented specialists not only stop leaving the country, but also begin to return. It is necessary to stimulate investment and entrepreneurial activity in this industry. All parts of society - the state, and the private sector, and civil society, and the IT community must participate in digital economic activity. An important component is also the information security of information and innovative technologies, which ensures public confidence in the digital economy.

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ҚР ЭКОНОМИКАСЫНЫҢ ДАМУЫ МЕН БӘСЕКЕГЕ ҚАБІЛЕТТІЛІГІНІҢ ШАРТЫ РЕТІНДЕ АДАМ КАПИТАЛЫНЫҢ ДАМУЫНДАҒЫ АҚПАРАТТАНДЫРУ

Аннотация. Қазіргі уақытта Қазақстан Республикасының экономикасы экономикалық және технологиялық құрылымдардағы жаһандық өзгерістер кезеңінде. Еңбек нарығындағы және білім беру қызметтеріндегі ахуал қазіргі талаптарға сәйкес білім беру мазмұнын өзгертуді қажет етеді. Цифрлық түрлендіру секторы анықталды: бизнес пен қоғам дамуының стратегиясы мен тактикасын теңдестірудің маңыздылығы жаһандану жағдайында адами капиталды және қоғамды экономикалық модернизацияны басқаруға тарту мәселелерімен байланысты.

Мақалада адам капиталы әлемдік өркениеттің сын-қатерлеріне жауап бере алатын инновациялық экономиканы дамытудың қозғаушы күші ретінде қарастырылады. Адами капиталды дамытпай, елдер тұрақты экономикалық өсуге қол жеткізе алмайды немесе болашақ үшін алдыңғы қатарлы жұмыс орындарын алуға және әлемдік экономикалық аренада тиімді бәсекелесуге дайын жұмысшылар контингентін құра алмайды. Автордың пікірінше, цифрлық технологияларға маңызды рөл беру керек. Сандық дағдыларды дамыту арқылы IT саласындағы мамандарды даярлау мен оқытудың барлық деңгейлерінің мазмұнын толығымен қайта қарау қажет.

Қазіргі уақытта Қазақстан Республикасының экономикасы экономикалық және технологиялық құрылымдардағы жаһандық өзгерістер кезеңінде. Еңбек нарығындағы және білім беру қызметтеріндегі ахуал қазіргі заман талабына сәйкес білім беру мазмұнын өзгертуді қажет етеді. Цифрлық түрлендіру секторы анықталды: бизнес пен қоғам дамуының стратегиясы мен тактикасын теңдестірудің маңыздылығы, жаһандану жағдайында адами капиталды және қоғамды экономикалық модернизацияны басқаруға тарту мәселелері. Көп компонентті ақпараттық білім беру ортасын, ақпараттық және цифрлық технологияларды құру біздің өміріміздің жақсырақ және «ақылды» болуы үшін мүлдем жаңа коммуникацияларды, адамдар арасындағы жаңа қатынастарды, бүкіл экономика мен қоғамды қайта құруға мүмкіндік береді. Қазіргі заманғы экономика – тиімді адам капиталы экономикасы деп аталады, бұл оның экономиканың дамуы мен өсуіндегі басты рөлін атап көрсетеді. Адами капитал әлемдік өркениеттің сын-қатерлеріне жауап бере алатын инновациялық экономика дамуының қозғаушы күші ретінде қарастырылады. Бұл – әрбір дамушы елдердің ұлттық байлығының жартысынан көбін құрайды және экономикалық өсу мен әлеуметтік дамудың негізгі қарқынды факторы. Еңбек нарығында талап етілетін дағдылар деңгейі тез өзгеріп отырады, бұл жаңа мүмкіндіктер мен жаңа тәуекелдерді тудырады. Адами капиталды дамытпай, елдер орнықты экономикалық өсуге қол жеткізе алмайтынына, сондай-ақ әлемдік экономикалық аренада тиімді бәсекеге түсетін немесе болашақ үшін қажетті жұмыс орындарын алуға дайын жұмысшылар контингентін құра алмайтындығына көптеген дәлелдер бар.

Түйін сөздер: адами капитал, адамның дамуы, экономикалық модернизация, экономикалық тиімділік, цифрландыру, сандық технологиялар, цифрлық экономика, еңбек нарығы, білім беру жүйесі.

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ЦИФРОВИЗАЦИЯ В РАЗВИТИИ ЧЕЛОВЕЧЕСКОГО КАПИТАЛА КАК УСЛОВИЕ КОНКУРЕНТОСПОСОБНОСТИ И РОСТА ЭКОНОМИКИ РК

Аннотация. В настоящее время экономика РК находится в стадии глобальных изменений экономического и технологического укладов. Положение на рынке труда и образовательных услуг вызывает необходимость изменения содержания образования применительно к современным требованиям. Раскрывается сектор цифровой трансформации: важность баланса стратегии и тактики развития бизнеса и общества, вопросы вовлечения человеческого капитала и общества в управление модернизацией экономики в условиях глобализации.

В статье человеческий капитал рассматривается как движущая сила развития инновационной экономики, способной отвечать на вызовы мировой цивилизации. Без развития человеческого капитала страны не смогут ни

добиться устойчивого экономического роста, ни создать контингент работников, которые будут готовы занять требующие повышенной квалификации рабочие места будущего, ни эффективно конкурировать на мировой экономической арене.

По мнению автора в этом важную роль надо отводить цифровым технологиям. Необходимо полностью пересмотреть содержание всех уровней образования и подготовки специалистов в IT-индустрии, в области организации управления через развитие цифровых навыков.

В настоящее время экономика РК находится в стадии глобальных изменений экономического и технологического укладов. Положение на рынке труда и образовательных услуг вызывает необходимость изменения содержания образования применительно к современным требованиям. Раскрывается сектор цифровой трансформации: важность баланса стратегии и тактики развития бизнеса и общества, вопросы вовлечения человеческого капитала и общества в управление модернизацией экономики в условиях глобализации. Формирование многокомпонентной информационно-образовательной среды, информационные и цифровые технологии дают возможность выстроить совершенно новые коммуникации, а также новые отношения среди людей, перестройки всей экономики и общества, чтобы наша жизнь была лучше и «умнее».

Современную экономику называют экономикой эффективного человеческого капитала, что подчеркивает его главную роль в развитии и росте экономики. Человеческий капитал рассматривается как движущая сила развития инновационной экономики, способной отвечать на вызовы мировой цивилизации. Он составляет более половины национального богатства каждой из развивающихся стран и главным интенсивным фактором роста экономики и развития общества. Уровень востребованных на рынке труда профессиональных навыков быстро меняется, что создает как новые возможности, так и новые риски. Без развития человеческого капитала страны не смогут ни добиться устойчивого экономического роста, ни создать контингент работников, которые будут готовы занять требующие повышенной квалификации рабочие места будущего, ни эффективно конкурировать на мировой экономической арене.

Ключевые слова: человеческий капитал, человеческое развитие, модернизация экономики, эффективность экономики, цифровизация, цифровые технологии, цифровая экономика, рынок труда, система образования.

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THE IMPACT OF THE ACTIVITIES OF NON-RESIDENTS BANKS ON THE NATIONAL ECONOMY

Abstract. The paper examines the effectiveness of the operations of non-resident banks in Kazakhstan. Performance assessment of non-resident banks in the local banking market is based on the model developed by the authors. The model is based on the indicators of the system of national accounts, and includes three stages of analysis: evaluation of the impact on real economy, estimation of performance of the intermediation function of a bank and the assessment of the bank's stability. The object of study is Russian commercial banks operating in the Republic of Kazakhstan. In the study, the major factors contributing to the development of Russian banks in the financial market of the Republic of Kazakhstan are identified.

In the present day circumstances all countries in the world experience the impact of the dynamic processes of globalization and integration. It differs from country to country: these processes have a considerable, often adverse, impact on developing countries, as indicated by some prominent economists, for example, J. Stiglitz [1]. Promotion of regional economic integration in its essence is considered only with regard to trade and partly investment cooperation. At the same time, undeservedly less attention is paid to the activities of commercial banks as to important financial intermediaries participating in the replenishment process.

In these circumstances, it is important to analyze the issues associated with the improvement of performance efficiency of non-resident bank in the Kazakhstan banking sector. The aim of the paper is to investigate the impact of the activities of non-resident banks on the national economy and to develop an adequate methodology for their efficiency assessment.

The choice of the object has been determined by the following preconditions: integration economic development of the two countries; the transition of both countries to the innovative model of development and restructuring of the national economy, development of the legal and institutional infrastructure for establishment of the common financial area between the two counties; functioning of the Customs Union since 1 January, 2010, the presence of favorable financial conditions for the participation of Russian banks in the banking market of Kazakhstan and other factors.

The research methods used in this paper are: systematic approach, statistical, logical, and comparative analysis of the scientific literature, the analysis of bank annual reports.

The analysis revealed that the Russian banks in Kazakhstan are actively encouraging the sphere of circulation, increasing inflation in the country. The Russian banks in Kazakhstan contribute to increase of redistribution of incomes, but do not develop the real sector and its innovation component in the Republic of Kazakhstan.

The object of the research is Russian banking capital in the Kazakhstan market. The choice of the object has been determined by the following pre-conditions:

Integrated economic development of the two countries that provides for mutual commercial, economic, and cultural relations;

The transition of both countries to the innovative model of economic development and restructuring of the national economy;

Growing congruence between two countries with regard to the level of socio-economic development, selected models and resources for economic development;

Cooperation between the countries under discussion in the field of the planned synchronization of the WTO accession process;

Development of the legal and institutional infrastructure for establishment of the common financial area between the two counties;

Functioning of the Customs Union since 1 January, 2010, and other factors.

Financial pre-conditions for the development of the favorable environment for participation of the Russian banks in the Kazakhstan market include:

Uniformity of taxation systems of both countries, establishment of the national taxation systems

on the basis of the Tax Code and their unification, identical elements in the taxation systems, coordinated reforms of the taxation systems;

Considerable uniformity in the field of state finances: codification and harmonization of budgeting legislation on common principles;

Current macroeconomic indicators pointing at the convergence of the economic development trends in the two countries: inflation rate, average weighted rate on long-term loans, public debt, etc. The level of development of the two countries is similar considering basic economic indicators;

Provision of sufficient economic stability as a necessary premise for implementation of coordinated structural reforms of the economies of the two countries;

Transition of the economies of both countries to the innovative development model and establishment of the common innovation space based on the usage of production, intellectual, technical and scientific potential of two states;

Harmonization and unification of customs tariff policies aimed at support of new manufacturing enterprises and increase of investment potential of particular industries and agriculture.

Key words: economic impact, effectiveness of the operations, indicators of the system of national accounts, local banking market, methodology, model, non-resident bank.

Introduction. In the present day circumstances all countries in the world experience the impact of the dynamic processes of globalization and integration. It differs from country to country: these processes have a considerable, often adverse, impact on developing countries, as indicated by some prominent economists, for example, J. Stiglitz [1]. Promotion of regional economic integration in its essence is considered only with regard to trade and partly investment cooperation. At the same time, undeservedly less attention is paid to the activities of commercial banks as to important financial intermediaries participating in the replenishment process.

In these circumstances, it is important to analyze the issues associated with the improvement of performance efficiency of non-resident bank in the Kazakhstan banking sector. The aim of the paper is to investigate the impact of the activities of non-resident banks on the national economy and to develop an adequate methodology for their efficiency assessment.

Theoretical and methodological framework of the present research is based on the theories of credit relationships and publications on the issues of cooperation in integration processes. The research methodology is based on the application of dialectical logic, systemic economic approach, comparative analysis, and some methods of statistical and market analysis, etc.

The empirical basis of the present study is formed by laws and regulations, official statistical data, as well as scientific publications on the theme of the present research.

The issues concerning integration processes in the world economy, establishment and development of commercial and economic cooperation among of Commonwealth of Independent States (CIS) countries, establishment of regional integration unions have been widely discussed in the works of the local and foreign economists. Major contribution to the development of the theory and practice of integration cooperation was made by the following Kazakh economic scholars N. Issingarin [2,3,4], S. Primbetov [5] and other. These scholars having analyzed foreign experience have demonstrated the objective nature of integration processes and the role of the state in the launch and regulation of integration processes under the conditions of globalization.

Western scholars who addressed the relevant issues are M. Allais [6], B. Balassa [7], R. Cooper [8], J. Pinder [9], J. Stiglitz [1] and other. They have substantiated the need for coordination of economic policies and harmonization of legislations of cooperating states and proposed the idea of positive and negative integration, as well as classified and defined different forms of international integration.

Internationalization of business life is the factor that determines growing interconnection of the national replenishment processes. Many scholars valuated contribution of foreign banks in the development of the national economy: Claessens & Van Horen [10], Jimborean & Brack [11], Fiordelisi &, Marques-Ibanez and Molyneux [12], Ayranci [13], Hughes & Mester [14] and other. Commercial banks, being an important macroeconomic variable[15], Koutsomanol-Filippaki Margaritis and Staikouras [16], Adamauskas & Krusinskas [17], Sathye [18], Mileris, [19], Lakstutiene, Krusinskas and

Platenkoviene [20], Crespo-Tenorio, Jensen and Rosas [21] can give incentives for economic growth. At the same time, the overall efficiency of the economy depends on how close financial relationships and interconnection with the real economy are [21, 23]. However, it should be pointed out that there is virtually no scientific literature that would directly and essentially deal with the field of banking integration. Analysis of the process of banking integration in Kazakhstan and assessment of the performance of non-resident banks has not been performed by the economic scholars. Retrospective analysis of the works of the authors mentioned above demonstrates that investigations on the assessment of the impact of the activities of non-resident banks on the national economy have not been performed.

Analyzing the development of the banking systems of Russia and Kazakhstan in the recent years it may be noticed that certain achievements have been made, however, some problems have remained. It should be stressed that the banking systems of the countries are characterized by considerable similarity. In particular, two-level banking systems have developed in both countries; relevant legal and institutional frameworks have been established, which are also characterized by considerable similarity.

The transition to the international accounting standards has been implemented, banking supervision and regulation are maintained on the basis of the standards of the Basel Committee on Banking Supervision and the European Union, and measures aimed at the increase of bank capitalization have been taken. The system of deposit insurance has been introduced in both countries, transparency of the national banking systems is growing, and more advanced standards regulating banking activities are being introduced.

At the same time, despite considerable progress made by the banking systems of the countries, at present banking service markets are quite disparate, and they noticeably differ with regard to their structure and volume. There is also a significant concentration of banking assets in the national banking systems of both countries. For example, a significant concentration of banking assets is observed in the structure-forming banks of Kazakhstan according to the annual report of the National Bank of the country. According to annual reports of the Central Bank of Russia such a concentration of the assets is observed in Sberbank and Vnesheconombank, which are monopoly banks in the country [24].

Although the assets of the banking systems are growing at a relatively high rate, the role of the banking systems in servicing the economy is still not significant. Despite the high growth rates of assets of the banking systems of both countries their role in the service of economy is still low because the rate of financial intermediation remains low. Thus, according to the annual reports of the Central banks of the countries of the indicator of financial intermediation is about 0.5. Insignificant role the banking systems play in the economy of the two countries is the factor that determines their considerable dependence on the international debt capital markets (table 1).

The role of the banking system is particularly high in Kazakhstan, where the assets constitute about 80 % to GDP. At present in Russia almost every second loan is issued by a foreign bank, and the share of external debt in the liabilities of Kazakhstan banks grew up to 52 %. This conclusion follows from the data of the annual reports of the National Bank of Kazakhstan and the Central Bank of the Russian Federation [24, 25, 26].

Capital structure has a significant impact on the current development of the banking systems. For example, state capital plays a major role in the banking system of Russia (share of the state banks anks in total assets is more than 50 %) [//www.cbr.ru/statistics/bank system]. In Kazakhstan private capital used to predominate, however, as a result of the global financial crisis the process of state joining the capital of second-tier banks was initiated [Annual reports National bank of Kazakhstan and the Central Bank of the Russian Federation [25, 26].

It is widely known that the Kazakhstan banking system, being the second largest in terms of volume in the territory of Commonwealth of Independent States (CIS), is the most advanced one. Presence of the Russian banks is characterized by low relative indicators. Thus, the share of the subsidiaries of Russian banks in Kazakhstan in total assets of the banking system is below 1 %. For example by contrast, the same indicator in the European Union is 17 % [EU Banking Structures. European Central Bank].

Price differentiation is the factor that deters Russian banking capital from entering the Kazakhstan market. In this connection, the objective premise for creation of the integrated banking market is a harmonized price for the lending resources, which is set as a result of the competition both in the national and regional markets. At the some time, the dynamics of the bank margin, which is the difference between

credit and deposit interest rates, should be mentioned as another indicator for determining price differentiation in the banking product market.

Stimulation of the development of regional cooperation among the banks of the two countries is based on the establishment and improvement of the relevant legal and institutional framework

It should be noted that certain cooperation experience in the field of banking policies has been gained by both counties. This cooperation is exposed in the following forms of interaction:

An agreement within the framework of bilateral relations between the National Bank of Kazakhstan and the Central Bank of Russia: Memorandum of Understanding on Banking Supervision signed on 18 June, 2008 [33]. It determines interaction conditions and mechanisms in the field of information exchange, licensing, monitoring, supervision, combating money laundering.

Cooperation within the framework of international organizations.

1. The Commonwealth of Independent States – Agreement on Creation of Interstate Monetary Committee (Minsk, 26 May, 1995) [33]. The aim of the Agreement is to facilitate multilateral cooperation in the field of monetary exchange and credit relations, unification and improvement of monetary legislation, development of forms and methods of coordination of monetary and credit policies of the states members to the Agreement, and cooperation and engagement in concerted action on the issues of monetary control. The role of the Agreement is to coordinate supervisory functions in the development of the rules of creation of integral interstate financial and banking systems within the Monetary Union, introduction of advanced information technologies.

2. The Eurasian Economic Community. The Council of the Managers of the Central Banks of the Member States functions within the framework of the Eurasian Economic Community. The Council was established in 2001 to coordinate the work of national monetary, financial and banking systems, as well as to develop multilateral and bilateral payment and settlement relations [33]. The main functions of the Council are: to make non-regulatory decisions on basic directions of monetary and credit policies, banking supervision, monetary regulation and control, promotion of interaction of the national banking systems and payment relations, improvement of the exchange rate formation mechanism and convertibility of the national currencies.

Adoption of the Model Laws aimed at the unification and harmonization of the national legal frameworks of the member states is also an important aspect for expansion of cooperation in the field of banking [//www.evrazes.com]:

Model law ‘On Secrecy of Bank Deposits’ as of 16 October, 1999. The law regulates the relations arising with regards to obtaining, storage, protection, disclosure and furnishing of information, which constitutes banking secret, as well as the liability for infringement of the laws on banking secrecy.

Model law ‘Fundamentals of Banking’ as of 19 April, 2001.The Law lays down the main provisions on implementation and regulation of banking activities. The model project of the legal act ‘On Banks and Banking Activities’ was adopted by a resolution of the Interparliamentary Assembly of Eurasian Economic Community (EEC) on 15 November, 2001. It lays down common approaches to the structure of the banking system and legal, economic and organizational foundations for establishment, operations, reorganization and liquidation of the banks. Model law ‘On Bank Bankruptcy’ as of 18 November 2005. The law stipulates the procedures and terms and conditions for implementation of the measures aimed at financial restructuring of the banks, monitoring, appointing temporary administration of the banks, judicial restructuring of the banks and bankruptcy proceeding [28-30].

In compliance with the resolution of the Interparliamentary Committee on Cooperation between Russia and Kazakhstan, Sub-Committee on Investment and Banking Cooperation was established on 20 March, 2003. The main aim of the Sub-Committee is to create conditions for development of financial and banking infrastructure to facilitate commercial, trade, credit and investment relations between the countries.

The basis of bilateral cooperation agreement is formed by more than 300 interstate agreements. The establishment of the Council of the Managers of the Central Banks within the framework of the Eurasian Economic Community in 2001 is an important factor in the development of the infrastructure for promotion of banking integration. The Eurasian Development Bank (EDB), founded by Russia and Kazakhstan in 2006 (Armenia and Tajikistan are also participants of the bank), is functioning as an international financial institution. The mission of the EDB is to facilitate the development of the market

economy of the countries participants to the Bank, to stimulate their economic growth and expansion of trade and commercial relations among the countries by implementing investment activity.

A sustainable tendency of growth of credit investments of JSC 'Sberbank of Russia in Kazakhstan' into the economy of Kazakhstan has been observed in the last three years, and that, in its turn, influenced the scope of development of financial relations in Kazakhstan [32].

Methodology. The banking system is a sophisticated object to study. There are different ways and a multitude of measures used to assess bank performance, which can be applied for different purposes and information needs. Retrospective analysis of numerous works on the performance measurement shows that the most interesting and relevant to the banking sector, in our opinion, is the theory of Joseph Sinkey (1998). He notes several different although related performance criteria: efficacy, cost efficiency, profitability, quality, innovation, and others.

Both systematization of bank performance assessment methods and advantages of analytical tools based on the System of National Accounts are the methodological basis for the development of a model for evaluating the effectiveness of the operations of Russian banks in Kazakhstan. Moreover, their effectiveness should be linked to the role of the Russian banks in facilitating the socio-economic development of the republic. The approach proposed is to measure the economic impact of non-resident banks. It is characterized by a systemic approach to the analysis of the health of the economy through the prism of the cash flows. The authors applied the models of calculation of macroeconomic indicators included in the system of national accounts for estimation of their analogs on a bank level such as bank's gross output, intermediate consumption and gross value added. Bank's gross output is composed of two elements: bank's income from fees and commissions and service income. In general, gross output of any economic entity including a bank can be calculated with the following formula:

$$BGO = C + D + LC + PBT \quad (1)$$

where BGO – bank's (economic entity's) gross output; C – cost of consumed material resources; D – depreciation; LC – labour costs; PBT – profit before tax.

Intermediate consumption (IC) is equal to the value of goods and services, transformed or totally consumed in the current process of production. The intermediate consumption does not include consumption of fixed capital. The indicator is calculated on the basis of income statement.

Gross value added (GVA) is calculated as the difference between bank's gross output and intermediate consumption.

It can be calculated with the following formula:

$$GVA = BGO – IC = D+LC+PBT \quad (2)$$

GVA indicates the range of bank's activities and its contribution to the creation of the national income. The usually includes construction, equipment and renovation of office space, purchasing office equipment and computers, vehicles, communications equipment, alarm systems, etc. Banks may also invest in securities, land, and other assets.

The purpose of these investments is the creation of long-term stocks of highly liquid assets

which are not subject to inflation.

However, the indicators cannot be fully used as a criterion for assessment of effective operation of non-resident banks on the local banking market. Additional performance indicators should be taken into account while assessing the operations of non-resident banks. The authors propose the following approach to the analysis (figure 1).

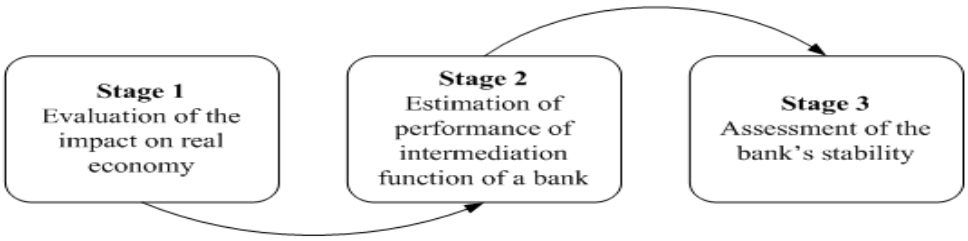

Figure 1 - Stages of analysis of performance efficiency of non-resident banks

Currently used indicators of the banking system of Kazakhstan are proposed to be taken as a starting point in the analysis evaluation of the impacton real economy, estimation of performing of intermediation function of a bank, assessment of the bank's stability.

We have defined the following requirements for the selection of these indicators: correspondence with the goals and objectives of the analysis, relationship between general and specific performance indicators, focus on objective and holistic assessment. The main influence of banks on the real economy through indicators of banks' contribution to the formation of the gross domestic product and their ability to serve the real economy are considered in the first phase of the proposed method. The impact of non – resident banks on the economic development of the resident countries is manifested through their participation in the financing of investment projects, lending to manufacturing and service sectors, considering loans granted to the real sector to, bank assets to and bank capital to ratios. The influence of the Russian banks on the real economy of Kazakhstan is very low. The performance indicators of the Russian banks operating in Kazakhstan are below the average indicators of both Russian and Kazakhstan banking sector indicators. Thus, as for January 1, 2016, every second KZT of Kazakhstani GDP was produced essentially by local commercial banks. The total contribution of the Russian banks was more than 100 times lower and was equal to 0.7 %. This means that the influence of the Russian bank capital on the real sector of the Kazakhstan economy is essentially reduced to zero. Particular criteria of this group of indicators such as production efficiency, scientific and technical efficiency (update base, lending innovations) have also reduced to zero. In the second stage of the analysis we are to perform assessment of the implementation of financial intermediation function by Russian non-resident banks in the Kazakhstan market. We will focus on three main directions of financial intermediation: the reallocation of resources between the parties; the maturity transformation, availability of banking services in operating regions.

In terms of the redistributive function the quantitative result can be defined by the value of the resources reallocated from those who make savings to those who need a loan. Index of resource reallocation between the parties through the banks can be selected as a measure to estimate gross transfer between allocated sectors through the banks. It is calculated as the sum of the positive balance of assets and liabilities in transactions with different sectors of the economy as a percentage to assets of banks:

$$I_J = \left| \sum_{j=1}^{n} R_{aj} \right| = \sum_{j=1}^{n} R_{pj} \Big| \qquad (3)$$

where I_J – index of resource reallocation between parties; Raj – surplus for the asset (net inflow) in transactions with the j sector of the economy as a percentage to assets; Rpj – surplus in liabilities (net outflow) in operations with the j sector of the economy as a percentage of assets; n – number of groups of parties.

Theoretically, the minimum rate must tend to zero. This value characterizes the condition where the amounts of liabilities and assets of the bank in each sector coincide. As a result, none of the sectors acts as a financial donor to other sectors.

The theoretical maximum value (100 %) is achieved in the reverse situation, when all resources of one sector are used for lending to other groups; where the bank does not form fixed assets by means of equity, and directs them to lending. Both of these extremes do not really exist. Index value may vary by groups of parties. Index redistribution of SB JSC 'Sberbank of Russia in Kazakhstan' on January 1, 2016, was 23.1 % indicating a low level of implementation of redistributive function of the bank. Analysis of the redistribution of financial resources between sectors showed that funds of the state and public organizations and households are directed to trade and construction. Essentially, households are the donors in relation to other sectors of the economy. The enterprises of industry, agriculture and other sectors of the real economy are not borrowers, but rather are themselves the main creditors. And their funds are directed not for the development of the real economy, but rather invested in the financial sector and other assets. In addition to assessing the effectiveness of the redistributive function, the importance of the analysis of the maturity transformations should be considered. Certain methodological difficulties can occur, as the analysis requires the use of a set of indicators characterizing the bank operations on the maturity transformation from different points of view. Firstly, there is a problem of determining the period of claims and some types of liabilities. Secondly, it is necessary to take into account the specifics of various

types of resources. Index measured as the sum of the positive balance of assets and liabilities in different ranges of maturity as a percentage of assets has been selected as an indicator of maturity transformation:

$$\mathbf{I_t} = \left| \sum_{j=1} P_n \right| = \left| \sum_{j=1} N_n \right| \quad (4)$$

where, It – index redistribution maturity; P_n – surplus in the range of maturity in % of assets; N_n – deficit operations in the range of maturity in % of assets; n – number of maturity ranges.

It should be noted that this indicator has a number of drawbacks. First, it does not consider the direction of redistribution, so the bank that finances long-term loans due to commitments upon the demand, and the bank that invests in long-term resources and liquid assets may have the same value of the index. Secondly, this indicator does not capture the differences between the resources with various maturity terms.

The index of maturity transformation should be used with an aim to eliminate these drawbacks. The bank covers this gap attracting new commitments in return of the funds paid by the customers. The index transformation is defined as the ratio of the difference between the amount of liabilities and assets to total assets. It reflects the amount of resources that the bank must attract during a month without panic, loss and with an equal distribution of the resources by paying off terms within the ranges of maturity:

$$I_{tr} = \sum_{j=1}^{n}(L_j \times S_{lj}) - \sum_{j=1}^{n}\left(A_j \times S_{aj}\right), \quad (5)$$

I_{tr}- index of transformation; A_j– asset share of j range of maturity in per cent of assets; L_j-share of liabilities of j range of maturity in per cent of assets; S_{aj}, S_{lj} – share of assets and liabilities of j range of maturity; n - number of ranges of maturity.

Table 1 - Redistribution of financial resources JSC ‘Sberbank of Russia in RK’ (01.01. 2016, % to assets)

Indicators in % to assets	Less than 1 month	From 1 to 3 months	From 3 to 12 months	From 1 to 5 years	More than 5 years	Maturity is not	Index of transformation	Index redistribution
.01.2015	-49,4	-13,8	+ 22,3	+ 15,1	+ 22,7	+ 3,1	4,5	63,2
1.01.2015	-23.0	+11,3	+5.3	+18.4	-15.1	+3.1	11.0	38.1

In terms of maturity transformation bank has problems. The bank analyzed is not playing a positive role in the Kazakh banking system as demonstrated in table 1. Operations of the subsidiary bank ‘Sberbank of Russia in Kazakhstan’ are characterized by a relatively high value of the index of resource redistribution in time (63.2 % of assets in last year), but the index of transformation of resources in time is not high. Essentially the bank does not use the advantage of relatively long-term liabilities to finance longer-term investments, because 34.3 % (www. Sberbank.kz) of the attracted funds of the bank consist of liabilities ranging in maturity up to 3 months. Analysis of the performance of the Russian bank considering the function of transformation of resources in time shows a significant weakness of the deposit base. The limited resource base makes the bank take a very large financial risk of differences of assets and liabilities to provide reasonable terms of lending. In our opinion, the growth in trade between the two countries in connection with the entry into force of the Customs Union will help stabilize the bank's resource base that will lead to a gradual increase of the credit resources and reduce the tension and bank risks. Efficiency of the bank implementing reallocation of resources between the economy sectors is low, and the rate of transformation of resources in time is not high. Note that 51.3 % of a high degree of liquidity assets are also being sent abroad, while the outflow has increased against the previous year by 63 % and has a tendency to increase. For a full analysis of the effectiveness of participation of the Russian banks in the banking sector of Kazakhstan we should consider indicators that adequately reflect the financial condition of the bank. At this stage of the study we should focus on the analysis of the funds attracted by the bank and therefore we need to estimate indicators that characterize the resources of the bank. Due to the instability of the national currency and the acute shortage of attracted funds, the main focus of the analysis is the amount of attracted funds in the national currency.

To increase the information content of this indicator, value of resources in the national currency was correlated with the total sum of attracted funds. This indicator which is equal to the ratio of attracted funds in the national currency to the total sum of attracted resources, defines the share in the national currency, served by the non-resident bank. This share in accordance with the data on the investigated bank as of 1 January, 2013, is 40 %. Efficient work of the bank is impossible without maintaining the required degree of liquidity of assets [22]. It should be noted that the profitability of banks is usually in inverse proportion to its liquidity. In our opinion, the bank's liquidity is well characterized by three parameters, which are established by the Resolution of the Board of the Agency of the Republic of Kazakhstan on Regulation and Supervision of Financial Market and Financial Institutions on September 30, 2005 № 358 "On Approval of the standard values and the method of calculation of prudential standards for commercial banks".

Conclusions and Discussion. In the process of research the following results have been obtained:

– the existing differences between the countries with regard to their legal and institutional framework of economic activity, standards, monetary, taxation and customs legislation to a certain extent impede the development of mutual trade and investment relations. It should be particularly stressed that the presence of differences in legal and institutional frameworks of economic activity may facilitate the transfer of certain forms of business activity to the countries with more favorable conditions [34];

– exogenous and endogenous factors conditioning penetration of the Russian banking capital to the Kazakhstan banking market have been discovered and systematized;

– institutional environment of the activities of the Russian banks in the Kazakhstan banking market has been determined;

– assessment of the impact of non-resident bank activities on the economy of Kazakhstan has been performed on the basis of the methodology developed by the authors, which demonstrated low efficiency of non-resident bank activities in the Kazakhstan market;

– research results demonstrate that non-resident banks (on the basis of the case study of the

– Russian banks) in Kazakhstan take an active part in redistribution of income and

– stimulation of circulation, thus promoting inflation factors within economy;

– the factors conditioning the drain of internal resources of the resident country to the foreign countries have been determined, in essence, national resources stimulate the development of the economies of other states.

Within the discussion issues the problem of assessment of the performance efficiency of non-resident banks in the domestic market and their impact on the development of the national economy has been put forward. In this regard main attention has been devoted to the need to stimulate the real sector of the economy and innovative production by non-resident banks.

The analysis conducted has demonstrated that there are cases of incongruence in the time of inflow and outflow of funds, and cases of lack of liquid assets necessary to cover disparities in cash flows, which has an adverse impact on the bank liquidity. Thus, Liquidity Coverage Ratio should be set as a tool to monitor liquidity. It is vital to impose such norm on non-resident banks due to the fact that they manipulate with domestic resources of resident countries.

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РЕЗИДЕНТ ЕМЕС ТҰРҒЫНДАР БАНКТЕРІНІҢ ҰЛТТЫҚ ЭКОНОМИКАҒА ӘСЕР ЕТУІ

Аннотация. Қазіргі жағдайда әлемнің барлық елдері жаһандану мен интеграцияның белсенді өрістеген үрдістерінің әсерін бастан кешіп отыр. Бұл ретте олардың түрлі елдерге әсері әртүрлі. Сондықтан дамушы елдерге олар айтарлықтай әсер етеді және кейде теріс әсер етуі де мүмкін.

Қалыптасқан жағдайларда өңірлік экономикалық интеграцияны дамыту мәні бойынша тек сауда және ішінара инвестициялық ынтымақтастық тұрғысынан ғана қаралады. Мұнда ұдайы өндіру үрдістеріне

қатысатын маңызды қаржы делдалдары ретінде коммерциялық банктердің қызметіне ерекше назар аударылып отыр, осыған байланысты, біздің ойымызша, Қазақстанның банк қызметтер нарығында резидент емес банктер жұмысының тиімділігін арттыруға қатысты мәселелерлі зерттеу өте өзекті.

Мақаланың мақсаты – резидент емес банктер қызметінің ұлттық экономикаға әсерін зерттеу және олардың тиімділігін бағалаудың әдістемесін әзірлеу.

Мақаланы зерттеудің теориялық және әдіснамалық негізі несиелік қатынастар теориясы, интеграциялық ынтымақтастық мәселелері бойынша жарияланымдардан құрайды.

Зерттеу әдістемесі диалектикалық логиканы, жүйелік экономикалық тәсілді, салыстырмалы, статистикалық және маркетингтік талдау әдістерін және т.б. пайдалануға негізделеді.

Зерттеудің ақпараттық базасы ретінде нормативтік-құқықтық құжаттар, ресми статистикалық деректер, сондай-ақ зерттеу тақырыбы бойынша ғылыми жарияланымдар бар.

Мақаланың зерттеу объектісі – Қазақстан нарығындағы ресейлік банктердің капиталы.

Қазіргі таңдау келесі алғышарттарға негізделген:

– өзара сауда-экономикалық және мәдени байланыстарды қамтамасыз ететін экономикалық дамудың ортақтығы;

– екі елдің экономикалық өсу мен шаруашылықты жаңғыртудың инновациялық моделіне көшуі;

– әлеуметтік-экономикалық даму деңгейін және экономикалық дамудың таңдалған модельдері мен ресурстары бойынша елдердің өсіп келе жатқан жақындығы;

– біздің еліміздің ДСҰ-ға болжамды мүшелікті синхрондау бойынша ынтымақтастығы;

– бірыңғай қаржы кеңістігін құру бойынша заңнамалық инфрақұрылым елдерінің өзара байланыстар жүйесін қалыптастыру;

– 2010 жылдың 1 қаңтарынан бастап Кеден одағының және т.б. жұмыс істеуі.

Мақалаға зерттеу жүргізу барысында келесі нәтижелер алынды:

– банктік ынтымақтастықтың нормативтік-құқықтық базасын талдау негізідері, елдер арасында өзара сауда және инвестициялық байланыстарды дамытуды тежейтін заңнамалық инфрақұрылым, стандарттар, валюталық, салық және кеден заңнамасы бойынша жекелеген айырмашылықтар анықталды. Шаруашылық қызметтің құқықтық-нормативтік базасында айырмашылықтар бар екенін ерекше атап өткен жөн, бұл кәсіпкерлік қызметтің қандай да бір түрлерінің қолайлы жағдайлары бар елдерге орын ауыстыруына ықпал етуі мүмкін;

– Қазақстанның банктік қызмет көрсету нарығына ресейлік банктіктер капиталының енуінің экзогенді және эндогенді факторлары орнатылды және жүйелендірілді;

– Ресей банктерінің Қазақстанның банктік қызмет көрсету нарығына қатысуының институционалдық ортасы анықталды;

– Қазақстан нарығында резидент емес банктер қызметінің төмен тиімділігін көрсеткен авторлық әдістеме

негізінде Қазақстан экономикасына резидент емес банктер қызметінің тиімділігін бағалау жүргізілді.

Түйін сөздер: Экономикалық тиімділік, операциялардың тиімділігі, Ұлттық шоттар жүйесінің көрсеткіштері, жергілікті банк нарығы, әдіснама, модель, резидент емес банк.

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ВЛИЯНИЕ ДЕЯТЕЛЬНОСТИ БАНКОВ НЕРЕЗИДЕНТОВ НА НАЦИОНАЛЬНУЮ ЭКОНОМИКУ

Аннотация. В современных условиях все страны мира испытывают влияние активно развернувшегося процесса глобализации и интеграции. При этом их воздействие на разные страны различно. На развивающиеся страны они оказывают значительное влияние и порой негативное воздействие.

В сложившихся условиях развитие региональной экономической интеграции по существу рассматривается только с позиции торгового и отчасти инвестиционного сотрудничества. При этом незаслуженно меньше внимания уделяется деятельности коммерческих банков как важных финансовых посредников, участвующих в воспроизводственном процессе. В этой связи, на наш взгляд, необходимость исследования проблем, касающихся повышения эффективности работы банков-нерезидентов на рынке банковских услуг Казахстана является весьма актуальным.

Целью статьи является исследование влияния деятельности банков – нерезидентов на национальную экономику и разработка адекватной методики оценки их эффективности.

Теоретическую и методологическую основу исследования составляют теории кредитных отношений, публикации по проблемам интеграционного сотрудничества. Методика исследования базируется на использовании диалектической логики, системного экономического подхода, сравнительного, приемах статистического и маркетингового анализов и др.

Информационной базой исследования послужили нормативно-правовые документы, официальные статистические данные, а также научные публикации по теме исследования.

Объектом исследования выступает российский банковский капитал на рынке Казахстана. Такой выбор обусловлен следующими предпосылками:

– общность экономического развития, обеспечивающая взаимные торгово-экономические и культурные связи;

– переход обеих стран к инновационной модели экономического роста и модернизации хозяйства;

– растущая близость стран по уровню социально-экономического развития, избранным моделям и ресурсам экономического развития;

– сотрудничество наших стран по ожидаемой синхронизации предполагаемого членства в ВТО;

– формирование в системе взаимных связей стран законодательной инфраструктуры по созданию единого финансового пространства;

– функционирование с 1 января 2010 года Таможенного Союза и т.д.

В процессе проведения исследования получены следующие результаты:

– на основе анализа нормативно – правовой базы банковского сотрудничества. выявлены отдельные различия между странами по законодательной инфраструктуре, стандартам, валютному, налоговому и таможенному законодательству, которые сдерживают развитие взаимных торговых и инвестиционных связей. Особо следует отметить наличие различий в нормативно-правовой базе хозяйственной деятельности, что может способствовать перемещению тех или иных видов предпринимательской деятельности в страны с наиболее благоприятными условиями;

– установлены и систематизированы экзогенные и эндогенные факторы проникновения российского банковского капитала на рынок банковских услуг Казахстана;

– определена институциональная среда участия российских банков на рынке банковских услуг Казахстана;

– проведена оценка эффективности влияния деятельности банков – нерезидентов на экономику

Казахстана на основе авторской методики, которая показала низкую эффективность деятельности банков-нерезидентов на рынке Казахстана.

В статье проводится оценка эффективности банков-нерезидентов на местном рынке банковских услуг на основе модели, разработанной авторами. Модель основана на показателях системы национальных счетов, и включает в себя три этапа анализа: оценка воздействия на реальную экономику, оценка выполнения функции посредничества банка и оценки стабильности банков. Объектами исследования являются российские коммерческие банки, работающие в Республике Казахстана. В исследовании определены основные факторы, влияющие на развитие российских банков на финансовом рынке РК. Эти предпосылки включают в себя следующее: интеграция экономического развития двух стран; переход обеих стран к инновационной модели развития и структурной перестройки народного хозяйства, развития правовой и институциональной инфраструктуры.

Ключевые слова: экономический эффект, эффективность операций, показатели системы национальных счетов, местный банковский рынок, методология, модель, банк-нерезидент.

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THE ROLE OF TAX POTENTIAL IN IMPROVING THE QUALITY OF THE FISCAL SYSTEM

Abstract. The term “tax potential” is studied in the article. In the introductory part of the article, the authors compared the meaning of two concepts, such as the tax and budget potential of the region, and showed the difference between the two concepts. The definitions of different authors of the tax potential as an economic category are given. The main section analyzes the dynamics of tax revenues to the republican and local budgets of the city of Almaty for 2016-2018. The factors affecting the tax potential of the region, including the influence of the shadow economy on the state budget, are identified. The concluding section presents specific ways to increase tax potential.

Key words: fiscal system, tax potential, tax policy.

At the present stage in the development of the country and its individual regions, the relevance of the concept of tax potential is increasing. Tax potential plays an important role in the methodology of forecasting and planning tax revenues in the budget system. Assessment and forecast of tax potential allow planning tax revenues correctly at different levels of the budget system.

The effectiveness of the budget system and budget policy depends on the budget potential, including the ability of the tax mechanism to accumulate financial resources at various levels. Currently, the capacity of the budget and its dynamics are influenced by new factors and conditions. Budget capacity can be considered as a set of relevant financial resources accumulated in the budget over a period. However, the terms tax and budget potential do not represent a single concept [1].

Therefore, there is a need to differentiate the concepts of tax and budget potential of the region. The concept of "tax potential" is deeply studied in the works of foreign and Russian scientists. In this understanding, several definitions are given.

First, the tax potential, according to the definition provided by T. Besley and T. Persson, is a measure to estimate how much tax revenue can be generated from a particular region [2].

As Le and Moreno-Dodson found out, tax potential is the forecast ratio of tax to GDP calculated by regression analysis taking into account the macroeconomic, demographic and institutional characteristics of a country [3].

According to the definition of the Russian scientist R.A. Prokopenko, tax potential is a set of objects of taxation located in a certain territory of the country within the framework of the tax system. The total size of the tax potential determines the ability to form the revenue part of the budget of the region, as well as the possible amount of income received by the Central budget of the state collected from this territory.

Thus, the concept of tax potential can be considered in a broad and narrow sense. In a broad sense, "tax potential" is the total amount of objects of taxation of the territory. "Tax potential" in the narrow sense means the maximum possible amount of tax revenues and fees calculated in accordance with the current legislation [4].

Lemeshko N. S. defines the tax potential as the objects of taxation, grouped by national, territorial, sectoral or other grounds [5].

Simonov A. Y. defines the tax potential as a per capita budget income in the application of uniform taxation conditions throughout the state for a certain period [6].

"Tax potential" in accordance with the current budget legislation is the maximum possible amount of tax revenues and other mandatory payments to the budget, calculated to determine the size of the region's revenues, that is, it is understood as the maximum amount of tax revenues and fees [7].

Thus, in the definition given in the essay Prokopenko R.A., we can agree with the definition of this scientist, as the essence of the concept of "tax potential" is fully disclosed.

If the concept of tax potential is relatively stable, the term “budget potential”, despite its frequent use, has no unity in interpretation. In the economic literature, this term is used mainly as a synonym for the term tax potential. Sometimes this concept characterizes the totality of all financial resources in a particular region.

The concept of "fiscal capacity" as a synonym for the concept of “tax potential”is often used in English literature, in relation to developed countries that adhere to models of fiscal federalism. This applies to countries with a Federal state system (USA, Canada, Brazil, Australia, Mexico), countries with a Confederate structure (Switzerland), as well as some unitary States (Japan, Sweden, Denmark).

The concept of budget and tax potential represents fundamentally different economic phenomena. If the tax potential is the basis for the formation of base tax revenues to the budget and provides a feasible income as the main source received from economic entities budgetary resources budget brings together the potential tax base of the budget and the basis for the formation of non-tax revenues, as well as the possibility of borrowing for budgetary purposes (financing of the budget programs or the financing of current deficit of the regional budget). At the same time, unlike the tax potential, the budget potential mainly determines the investment attractiveness of the region and the prospects for its economic development [8].

Thus, the tax potential is formedbased on actual tax revenues of a certain region, as well as additional reserves to increase them. In addition, tax revenues are the main source of budget revenues of any state, which we can see in the following table:

Table 1 - Dynamics of revenues of the Republican budget of Kazakhstan for 2016-2018

Name	2016		2017		2018		2018 to 2017, in %	Deviation	
	Amount, mln tg	Share, %	Amount, mln tg	Share, %	Amount, mln tg	Share, %		An absolute, million tg	Comparative %
Total revenues, including:	7 662 220	100	9 691 789	100	8 789 004	100	90,7	-902 785	-9,3
Tax yield	4 275 886	55,8	4 848 028	50,1	5 694 904	64,8	117,5	846 876	17,5
Non-tax income	3 386 334	44,2	4 843 761	49,9	3 094 100	33,2	63,9	1 749 661	-36,1
Note: table is compiled by the author on the basis of statistical bulletins of M.F. of RK for 2016-2018[9].									

Table 1 shows that the volume of revenues of the Republican budget increased in 2016-2017, only in the last 2018 budget revenues decreased compared to the previous year. Thus, the revenues of the Republican budget for 2018 amounted to 8 789 004 million tenge. In addition, we see stable growth in tax revenues, which happened despite a decrease in total revenues in 2018, that is, it is mainly due to a decrease in non-tax revenues, not tax revenues. Tax revenues in 2018 amounted to 5,694,904 million tenge, which is 846,876 million tenge or 17.5 % more than last year [9].

Since the tax potential is a planned indicator of a certain territory, consider the revenues of the local budget of Almaty for the last 3 years to consider the tax potential of a particular region, which are listed in the following table:

Table 2 - Dynamics of local budget revenues of Almaty city for 2016-2018

Name	2016		2017		2018		2018 to 2017, in %	Deviation	
	Amount, mln tg	Share, %	Amount, mln tg	Share, %	Amount, mln tg	Share, %		An absolute, million tg	Comparative %
Total revenues, including:	507 225	100	535 591	100	496 728	100	92,7	-38 863	-7,3
Tax yield	338 746	66,8	372 012	69,5	407 977	82,1	109,6	35 965	9,6
Non-tax income	168 479	33,2	163 579	30,5	88 751	17,9	54,2	-74 828	-45,8
Note: table is compiled by the author on the basis of statistical bulletins of M.F. of RK for 2016-2018[9].									

According to table 2, the local budget revenues of Almaty also show a trend at the national level, i.e. in 2016-2017 budget revenues increased and decreased in 2018. As for tax revenues, they have grown steadily. Tax revenues of the local budget of Almaty for the last year amounted to 407 977 million tenge, which is 35 965 million tenge or 9.6 % more than last year. The share of tax revenues in the local budget of Almaty increases significantly. In recent years, the share of tax revenues has increased significantly and in 2017 its share was 70 %, in 2018 even 82 %. This means an increase in the accumulation of tax revenues in the region [9].

However, this does not mean that all the potential opportunities in the region are working. According to the study of the domestic scientist D. B. Baizakov, the shadow sector of the economy in 2017 amounted to 29 % of the gross domestic product of the country. The largest scale of shadow activity is a priority in such sectors of the economy as trade (23 %), agriculture (16 %), transport (14 %) and real estate operations.

The share of the shadow economy in trade in 2017 amounted to 4.6 % of GDP and reached an absolute value of 1 487.3 billion tenge. The shadow sector in the sphere of agriculture amounted to 2.5 % of GDP and in absolute value 887.4 billion tenge. The shadow sector of the transport industry occupies 2.4 % of GDP and amounted to 834.5 billion tenge. The main form of tax evasion in this area is the provision of services for the informal transportation of passengers and goods, i.e. 130.2 thousand people carry out their activities independently (without registration with the tax authority), using their own vehicles. The shadow sector of real estate transactions is carried out mainly by secret service, i.e. rent of housing with rent from taxes.

In addition, entrepreneurs operating without registration with the tax authorities also restrain the economic and social development of the region by non-payment of taxes to the regional budget. The main reason for the informal receipt by employers of people to work – disrespect for the conclusion of additional costs for taxes and social benefits. The main losses received in the income of the consolidated budget of the Republic of Kazakhstan are for the following taxes:

- corporate income tax: 31 %
- value added tax: 42 %
- social tax: 13 %
- Individual income tax: 7 % [10].

Based on these data, we consider the factors affecting its value, which can lead to an increase in the tax potential of the region as a way to solve these problems. It is reflected in the following table:

Table 3 – Group of factors influencing tax potential

Group of factors	Composition
Economic	GRP level The level of inflation and employment Investment climate
Tax administration	Tax planning Tax forecasting Tax regulation The efficiency of the tax control
Legislative	Tax legislation Budget legislation Fiscal policy
Political	Implementation of strategic goals Socio-economic development of the region
Financial	Financial position of the region
Geographical and natural resources	Climate Geographical location Natural resources of the region
Socio-demographic	Population size Standard of living Quality of education Level of production development
Note: compiled by the author on the basis of the literature [11].	

As can be seen from table 3, the value of the tax potential of a certain region is influenced by various factors, the main of which are:

- economic forces;
- investment climate
- legal and legislative factors;
- tax policy;
- tax administration:
- social factor.

Let us focus on each of them.

- Economic factors-internal and external.

Internal factors include tax policy, economic conditions, business activity, investment climate, and external factors-the sectoral structure of the economy, employment, as well as inflation, etc.

When forecasting the tax potential it is necessary to take into account the following economic indicators:

(a) Regional economic development by type of economic activity (e.g. average annual rate of production growth);

(b) The level of use of property, plant and equipment by organizations in the zone;

(c) Changes in employment in the economy;

(d) Gross regional product per capita;

(e) Average annual income of the population and others [11].

- A favorable investment climate is the basis for business development, because of the growth of gross regional product and tax revenues. Therefore, it is necessary to pay great attention to improving the investment climate of the region [12].
- Legal-legislative factors, that is, tax, budget legislation, as well as amendments to them.

The tax legislation defines the mechanism of calculation of taxes and fees, tax rates, benefits and other elements of taxation. Budget legislation distributes tax revenues at the levels of the budget system.

Regional tax policy. One of the important conditions for the formation of the tax potential of the region is to conduct a rational tax policy. Tax policy in the region is a set of economic and legal measures at the regional level to improve the tax system to meet the financial needs of the region and the state as a whole, the implementation of planned political, social and economic programs to redistribute financial resources and change the direction of financial flows. In accordance with the Tax code, tax policy is a system of legal norms and organizational and economic measures of a regulatory nature adopted and implemented by state and local authorities in the field of tax relations. Regional tax policy should be aimed primarily at creating economic conditions for the implementation of tax potential [13].

- The most important elements of the regional tax policy are the system of organization of tax planning in the region and tax administration. At the regional level, the tax rates established by the Tax code of the Republic of Kazakhstan, the legislative regulation of taxation, tax benefits, the procedure and timing of payments includes the establishment. The tax rate has a significant impact on the tax potential. Unreasonably high tax rates lead to a decrease in the tax base, strengthening the processes of tax evasion, which will reduce the realized part of the tax potential and increase the shadow sector of the economy.
- The efficiency of tax control and the level of professional training of tax authorities influence tax administration.
- Social factor. This includes the level of social responsibility of the taxpayer, the level of tax culture of the population.

To increase the tax revenues coming to the budget, it is necessary, first, to increase the tax culture in the country, because in this case the taxpayer thinks about the development of society and the welfare of the population. As a result, the reimbursement of the revenue part of the budget is carried out, and not tax evasion [14].

Summing up the above, we can formulate that the condition for a more complete formation and implementation of the tax potential is a full consideration of all factors affecting its value. In this regard, it is not enough to formulate and plan the tax potential of the region, to implement it in the tax revenues of the region. Through increasing the tax potential, there is an opportunity to develop the tax and budget system of the state and accelerate the socio-economic development of the regions. This issue is voiced in the Address Of the President of Kazakhstan.

The Message of the President of Kazakhstan N. Nazarbayev to the people of Kazakhstan dated September 2, 2019 "Constructive public dialogue-the basis of stability and prosperity of Kazakhstan

"States:" improving the quality of the modern tax system is a special issue. The government needs to develop a set of measures to support medium-sized high-performance businesses in the framework of the program of industrial and innovative development of the country. In particular, tax incentives should be provided, " he stressed. "The country's budget should be aimed at two main goals-the development of the economy and the solution of social problems. To address these issues, it is necessary to form reserves by reducing inefficient costs and increasing revenues, " the head of state stressed [15].

The achievement of these results is inextricably linked to the tax potential, the question of increasing the above-mentioned revenues will be possible by increasing this tax potential. Specific ways to increase the tax potential are provided in the forecast of social and economic development of Kazakhstan for 2020-2024. According to this forecast, there will be a gradual increase in excise rates on e-tobacco due to the growth of demand for e-tobacco.

Within the framework of inter-budgetary relations, it is planned to expand the independence of local Executive bodies. For these purposes, to stimulate the economic activity of the regions, the development of small and medium-sized businesses, increase local budget revenues, starting from 2020, proceeds from corporate income tax from small and medium-sized businesses are transferred to local budgets [16].

This should lead to an increase in the tax potential of the regions and, as a consequence, to an increase in actual tax revenues.

In conclusion, the strengthening of the tax potential of the region is associated with the solution of a number of tasks aimed at ensuring economic stability, improving tax legislation and optimizing the system of tax administration and tax mechanism.

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САЛЫҚ ЖҮЙЕСІНІҢ САПАСЫН АРТТЫРУДАҒЫ САЛЫҚ ӘЛЕУЕТІНІҢ РӨЛІ

Аннотация. Мақалада «салық әлеуеті» ұғымы зерттелген. Авторлар салық әлеуетінің елдің салық-бюджет жүйесіндегі орнын көрсете отырып, оның маңызын айқындады. Зерттеу жұмысының мақсаты – өңірлік салық әлеуетіне әсер ететін факторларды анықтай отырып, оны жоғарылату жолдарын табу. Мақаланың міндеттері: өңірлік салық әлеуетінің экономикалық мәнін ашу; салық әлеуеті ұғымына берген шетелдік авторлардың анықтамаларын салыстыру; салық әлеуетіне әсер ететін факторларды анықтау; салық әлеуетінің шамасын жоғарылату бойынша нақты қадамдар ұсыну. Мақалада ғылыми танымның салыстыру, дедукция, индукция, талдау, жалпылау әдістері қолданылды. Кіріспе бөлімінде аймақтың салықтық әлеуеті түсінігінің өзектілігі ашып көрсетілді. Салықтық әлеуетке экономика саласындағы әртүрлі авторлардың анықтамасы берілген. Негізгі бөлімде 2016-2018 жылдардағы республикалық бюджетке және Алматы қаласының жергілікті бюджетіне түскен салықтық түсімдердің динамикасы талданған. Өңірлік салықтық әлеуетке әсер ететін факторлар анықталған, соның ішінде, көлеңкелі экономиканың мемлекет бюджетіне келтіретін залалдарына баса көңіл бөлінген. Қорытынды бөлімде салықтық әлеуетті арттырудың нақты жолдары қарастырылған. Салық әлеуетін жоғарылату үшін оған әсер ететін барлық факторларды ескеру қажеттігі айтылады. Шағын және орта бизнес субъектілеріне салынатын корпоративті табыс салығының жергілікті бюджетке берілуі арқылы салық әлеуетінің, соның нәтижесінде салықтық түсімдердің жоғарылауы күтілетіні туралы ой қозғалған.

Мақаладан шыққан қорытындыларды ұсыныс ретінде қолдануға болады, сонымен қатар мақаладағы негізгі ойлар мен тұжырымдамалар зерттеу нәтижелерінен алып жинақталды. Келешекте зерттеу жасағанда, назар аударуға болатын, ұсынуға болатын мәліметтер легі мен маңыздылығын айта кеткіміз келеді.

Шағын және орта бизнестің еліміздегі және нарық әлеміндегі ең бірінші қозғаушы күш екенін де айта кеткіміз келді.

Түйін сөздер: бюджет жүйесі, салық әлеуеті, салық саясаты, салықтық түсімдер, жергілікті бюджет.

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РОЛЬ НАЛОГОВОГО ПОТЕНЦИАЛА В УЛУЧШЕНИИ КАЧЕСТВА НАЛОГОВОЙ СИСТЕМЫ

Аннотация. В статье исследуется понятие «налоговый потенциал». Авторы подчеркнули важность налогового потенциала в фискальной системе страны. Целью исследования является выявление путей повышения

регионального налогового потенциала путем определения влияющих на него факторов. Задачи статьи: выявление экономической значимости регионального налогового потенциала; сравнение определений зарубежных авторов о налоговом потенциале; выявление факторов, влияющих на налоговый потенциал; предоставить конкретные шаги по увеличению величины налогового потенциала. В данной статье используются методы научного познания как сравнение, дедукция, индукция, анализ, обобщение. Во вступительной части статьи подчеркивается актуальность регионального налогового потенциала. Дано определение различных авторов в области экономики налоговому потенциалу. В основном разделе анализируется динамика налоговых поступлений в республиканский бюджет и местный бюджет города Алматы за 2016-2018 годы. Выявлены факторы, влияющие на налоговый потенциал региона, в том числе влияние теневой экономики на государственный бюдже. В заключительном разделе рассматриваются конкретные способы повышения величины налогового потенциала. Для повышения налогового потенциала необходимо учитывать все факторы, влияющие на него. Было высказано предположение, что за счет передачи подоходного налога с предприятий малого и среднего бизнеса из республиканского на местный бюджет, можно ожидать, что местный бюджет увеличит свой налоговый потенциал и, следовательно, налоговые поступления.

Выводы из статьи могут быть использованы в качестве предложения, а также ключевые моменты и выводы в статье, и взяты из результатов исследования. Мы хотели бы указать на важность и важность данных, которые могут быть приняты во внимание в будущих исследованиях.

Следует отметить, что малые и средние предприятия являются первыми драйверами в стране и на рынке.

Ключевые слова: бюджетная система, налоговый потенциал, налоговая политика, налоговые поступления, местный бюджет.

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THE CONCEPT OF LEGAL REGULATION OF ELECTRONIC COMMERCE

Abstract. The social relations taking place in electronic commerce and the category “electronic commerce” are studied, the qualifying features of this activity are identified, the correlation of the concepts “trade” and “electronic commerce” is made and the author’s definition of the concept and subject of legal regulation of public relations in the field of electronic commerce is developed.

Thus, electronic commerce is often considered as a special form of transactions, in which their conclusion and execution is carried out using electronic means of communication. At the same time, the legal characteristics of transactions remain unchanged, and they must be regulated by the rules of law that regulate relations of the appropriate type (purchase-sale, transportation, contract, rent, etc.). According to this position, electronic data exchange does not change the essence of the relationship between the parties and affects only the form in which these relations are built. Within this approach, several points of view have been formed. A number of specialists consider electronic commerce as the production, advertising, sale and distribution of goods using telecommunication networks. Others interpret it as electronic business.

In the world practice, the term “trade” has also been widely interpreted so that it covers issues arising from all relations of a commercial nature, both contractual and non-contractual. Trading relationship includes the transactions as follows: any trade transactions for the supply of goods or services or the exchange of goods or services; distribution agreements; commercial representation and agent relations, factoring; leasing; construction of industrial facilities; consulting services; engineering; purchase and sale of licenses; investment; financing; banking services; insurance; operating or concession agreements; joint ventures and other forms of industrial or business cooperation; transportation of goods and passengers by air, sea, train or car. One should recognize that such a broad understanding of trade does not contribute to a detailed study of this concept and it is not suitable in practice. Therefore, the economic meaning of the term "trade" is widely spread in modern science. In a broad sense, trade is considered as a branch of the national economy that ensures the circulation of goods, their movement from the sphere of production to the sphere of circulation.

In a narrower sense, trade is defined as economic intermediation between producers and consumers which is carried out by the purchase of goods from producers in order to sell them to consumers and their further sale to other consumers.

Electronic commerce is proposed to understand the implementation of actions provided for by law, other operations in the execution of transactions for the sale of goods, work and services based on electronic procedures by the parties of the transaction. At the same time, it is proposed to understand electronic procedures as a special procedure (rules, regulations) for electronic operations in a transaction, and electronic operation on a transaction as performing certain actions by the parties to the transaction to execute the transaction through remote interaction of the parties of the transaction, other entities and their information systems in electronic commerce.

Keywords: Electronic commerce, electronic trade, digital signature, product, agreement, Internet.

Being the ancient craft, in modern society the trade has not lost its main function - the circulation of means of production and personal belongings.

Being the sphere of goods circulation, it is an active and necessary intermediary between production and consumption. Trade activities have a significant impact on the producer and the consumer encouraging production to develop the output of necessary goods and services, and forming the demand for goods and services related to their consumption due to the research and forecasts.

In international relations, trade is often considered as of a balancer, determining state priorities and the potential of representatives of the political elite. First of all, being an economic relationship arising in economic and civil circulation, the activity in the field of trade affects the interests of various social groups. Based on the significance and impact of trade on various spheres of social life, this activity needs legal regulation.

As S.S. Alekseev notes, the subject of law is of great importance for understanding legal regulation, and from the other, broader point of view, it is the environment in which, and under the influence of its special features, the law affects social relations. The subject of legal regulation is a variety of social relations, which due to their nature may take objectively to the regulatory and organizational impact in these social and political conditions, they require such an impact which is made through the legal norms and other legal means that form the mechanism of legal regulation [1, p. 712].

The determination of the subject of legal regulation in the field of electronic commerce is perhaps the most important in the whole concept of legal regulation of these relations. Regarding the concept and role of methods of legal regulation of any social relations, S.S. Alekseev points out that all sorts of techniques with which legal influence on social relations is carried out, do not exist on their own, but "only in this specific regulatory material and are closely related to the corresponding group of public relations, i.e. the subject of legal regulation".

Therefore, without determining the subject of legal regulation of relations in the field of electronic commerce, it is impossible to determine other elements of the concept of legal regulation of these relations correctly: goals, principles, methods, ways and a system of their legal regulation. It may seem that in this case there is no problem, since the subject of legal regulation is all social relations that arise in the field of electronic commerce.

Things are not so simple, indeed. Firstly, from the whole range of public relations in the field of electronic commerce, it is necessary to isolate only those that are subject to legal regulation and for which legal impact is required. Many relations in the field of electronic commerce, as well as in traditional trade, are not regulated by law, but by ethical, technical and other social norms, business customs, which are related to sources of civil law (article 6 of the Civil Code of the Republic of Kazakhstan), however, in the strict sense they are not legal norms. For example, while giving characteristics to the quality of a product, such a non-legal category as “usually made requirements” is used [2].

Secondly, and this is a much more difficult objective, it is necessary to narrow and specify the range of social relations related to the field of electronic commerce as much as possible. Taking into account the above mentioned, it becomes quite understandable why in this paper we are studying the issue regarding the concept of electronic commerce in detail, not only in legal, but also in economic aspects. This need arises since in both economic and legal literature there is a tendency to expand the concept of trade as a whole.

The scientist G.F. Shershenevich believed that the purpose of trade was to deliver goods to the place and time where and when they were in demand from consumers. Change in goods is not peculiar to the trade. The scientist wrote: “An activity aimed at mediating between producers and consumers in the circulation of economic goods is called trade” [3, p. 44].

The scientist distinguished the legal concept of it from the economic concept of trade and noted that, first of all, trade in the legal sense is the subject of regulation of commercial law. In his work G.F. Shershenevich noted that initially the trade law was really applied only regarding the transactions for the circulation of goods. However, as the author stated, each new codification introduced something new. He illustrates these remarks with references to the French, Italian and German trade laws, which recognized the commercial nature of the transactions of an entrepreneur of public views, the holder of reference offices, transactions of publishing, maintaining the printing houses, buying and selling the real estate made for speculative purposes, and keeping factories and manufactories and etc.

Thus, according to the definition given by G.F. Shershenevich, trade in a legal sense is a system of transactions, the regulation of which is the subject of commercial law. Drawing a distinction between commercial and civil law transactions, the author suggested that the difference is not based on the peculiarities of the legal nature of these transactions, but only on the purposes for which they serve. Purchase and sale, loan, luggage, etc. in their legal construction are always similar whether they are concluded in the trade turnover or beyond it. A transaction becomes a trade because it is made for sale.

As you can see, a scientist in Kazakhstan did not consider the understanding of the legal significance of trade as a simple sum of transactions for the purchase and disposal of goods; it covered any other actions aimed of mediating the provision of compensating any material goods to those who need them, i.e. to consumers not only on the right of ownership [4].

In accordance with the State Standard of the Russian Federation SS R 51303-99 "Trade. Terms and definitions", *trade is a type of business activity related to the purchase and sale of goods and the provision of services to customers*, while a wholesale is the trade of goods with their further resale or professional application, and a retail trade is the trade of goods and the provision of services to customers for personal, family, home use which are not related to business activity [5].

Services to customers mean directly the sale of goods, as well as package of purchased goods, acceptance of preliminary orders for goods, acceptance of orders for mail order trade, loading and delivery of heavy and oversized products, storage of goods and belongings of buyers, provision of a room for mother and child and the services like this. These actions (services) are the seller's obligations arising from the law or the contract on purchase and sale or the seller's actions that do not have independent legal significance and are carried out within the contract of purchase and sale, although it is possible for the extra fee.

There is no doubt that unlike a regular civil and legal transaction, and even a series of ordinary sale and purchase transactions, a trade as an activity is professional, i.e. entrepreneurial activity. This feature is an essential integral feature of the concept of trade, regardless of the scope of intermediary activities for moving goods and services from the manufacturer to the consumer.

It follows that, from a legal point of view, a trade is a sphere of public relations, and within its framework a method of business activity is implemented, which is the sale of goods, formalized through the systematic execution of civil and legal transactions of purchase and sale, as well as the provision of services to customers within the contract of purchase and sale.

The term "electronic" is widely used in public life. This is due to the emergence and widespread introduction of electronic communication and electronic equipment in all spheres of human life. The phrase "electronic computer", more often replaced by the word "computer" recently has become trivial. The adjective "electronic" is an integral part of a number of categories: electronic bargaining, electronic document, electronic signature, electronic payments and electronic government.

In the Law of the Republic of Kazakhstan "On Regulation of Trading Activities", the following legal definition of the term *"electronic"* is proposed: "it is an adjective as a definition that characterizes the subject which is sent to as related to information and communication technology using digital, analog, electrical, magnetic, optical, electromagnetic, acoustic, any other wired and wireless or similar properties" [6].

As you can see, the authors made an attempt to give a legal definition of the category of "electronic" based on the practice of using means of communication to organize civil and, in particular, commodity circulation.

There is no legal concept for the category of "electronic commerce" in the legislation of Kazakhstan. There is no common understanding of this term in foreign civil law as well.

The dictionary by S.I. Ozhegov and N.Yu. Shvedova gives the following definition of the concept of "electronic". "Electronic has the meaning "associated with the application of the electrons' properties based on their properties. Electronic computing machine". In its turn - "Electron (spec.) is the elementary particle with the smallest negative electric charge". As can be seen from this definition, the term "electronic" refers to special terms that denote the name of elementary particles used in physical science [7, p. 102].

The issue of the concept of electronic commerce is the subject of research by specialists in the field of civil, commercial law, as well as specialists in the field of economic sciences. A variety of different approaches to this phenomenon has been formed.

So, electronic commerce is often considered as a special form of transactions, in which their conclusion and execution is carried out using electronic means of communication. At the same time, the legal nature of transactions remains unchanged, and they must be regulated by the rules of law that regulate relations of the appropriate type (purchase and sale, transportation, contract, rent, etc.). According to this position, electronic data exchange does not change the essence of the relationship between the

parties and affects only the form in which these relations are established. Some viewpoints have been formed within this approach.

A number of specialists consider electronic commerce as the production, advertising, sale and distribution of goods using telecommunication networks. Others interpret it as electronic business. For some researchers, electronic commerce is commercial transactions made using electronic communications.

V.S. Belykh can be called as the author of the first position. A specialist in the field of business law considers electronic commerce as an independent type (stage) of the production process. It is part of the exchange of labor products. Therefore, he believes that the interpretation of electronic commerce as a simple set of transactions is hardly acceptable. V.S. Belykh states that trade, in its economic content, is entering the stage of exchange, distribution and redistribution of material resources. Being an integral part of the production process, electronic commerce consists of separate actions, including lawful acts of civil and legal obligations aimed at transferring property, performing work, providing services or paying money [8, p. 81].

The author notes that, based on the main areas of electronic commerce, the first of them is retail trade with the participation of consumers of goods, works, services and businessmen offering goods, works and services based on the civil and legal transactions. The second area includes all levels of information and managerial interaction between legal entities and state structures. In the latter case, it concerns the electronic wholesale.

The experts in the field of economics most often keep up the second point of view. In particular, E.V. Balyberdin defines electronic commerce as a set of technologies covering various areas of commercial activity and providing a complete closed series of operations using electronic means of data exchange [9, p.13]. He explains the lack of mention of the word “trade” in the definition by the fact that trade is only a special case of electronic commerce. In his work, the author notes that the main forms of electronic commerce are not only trading through online stores, trading platforms, etc., but also providing access services to information and communication networks, information services, financial services in the form of payment systems, advertising business, distance learning.

In its turn, in her work S.V. Afonina indicates that electronic commerce should be understood as “specialized Internet technology, which gives trade participants new opportunities to expand the scope of their activities. Electronic commerce is a branched business structure which is divided into several areas that perform various functions. At the same time, electronic commerce is business system using the latest information technologies during various business operations”. In the author’s opinion, electronic commerce includes not only on-line transactions, but also conducting marketing research, identifying opportunities and partners, organizing workflow, maintaining contacts with manufacturers and consumers. In this case, electronic commerce is a method of conducting electronic business [10, p.128].

As can be seen from the opinions of experts in the field of economics, it can be concluded that they consider electronic trade (commerce) as a technological way of organizing the enterprise’s trade and production process and a way of doing business that allows them to increase the entrepreneur’s capabilities and improve the work of entities of economic relations, including the introduction of electronic workflow and, thus, to reach a higher level of economic relations. Moreover, the expansion of economic relationships and trading opportunities through electronic commerce is assessed as rising to a new, higher level of economic relations. In addition to the directly production and trade organizations, there is a wide range of other participants among the subjects, the participants of electronic commerce. These are credit organizations, insurance companies, organizations that provide various services, for example, consulting, information, warehouse ones, etc.

Noting the absolute economic effect of electronic commerce, the specialists in the field of economics do not take into account the specifics of this category in the legal sense. In our opinion, the categories of “electronic business” and “electronic commerce” are not identical. The concept of “electronic business” rather characterizes the social relations which are related to the category “entrepreneurial activity”, and its legal definition is formulated in Art.10 of Civil Code of the Republic of Kazakhstan.

The scientists S.P. Maroz, V.V. Kazantsev have a different opinion. Taking into account the degree of using the Internet in Kazakhstan, they consider the electronic trade as purchase and sale of goods and services through electronic networks, including via the Internet, which provides access to the Network to

search for a trading partner, select goods or services, place an order, provide a guarantee of payment, deliver goods or provide services and obtain the seller's contractual value.

As a qualifying feature of electronic commerce, a number of authors focus on the type of activity and the way counterparties interact. V.V. Kazantsev believes that "electronic commerce" should denote entrepreneurial activity carried out electronically, in which electronic communication networks are used as a means of interaction between participants in the corresponding relations. Moreover, the author suggests using the categories of indirect and direct electronic commerce depending on whether computer networks are used only for transactions or offenses, as well as the fulfillment of obligations [11].

Some authors have the opinion that electronic commerce is "a set of issues arising in connection with all relations of a commercial nature, which include (but not limited) the following transactions: purchase and sale, supply, distribution agreement, trade office or agency, factoring, leasing, designing, consulting, engineering, investment contracts, insurance, operation and concession agreement, banking services, joint ventures and other public relations of industrial and business cooperation, the transportation of goods or passengers by air, sea, train".

"Electronic commerce is the conclusion of the following transactions provided (but not limited) by exchange of electronic documents: purchase and sale, delivery, provision of paid services, transportation, loan and credit, financing against the assignment of a monetary claim, bank deposit, bank account, calculations, storage, insurance, commission, agency service, fiduciary management, commercial concession, partnership, public promise of a reward, public tender, as well as acquisition and implementation using electronic means, other rights and obligations in the field of entrepreneurship". In this definition there is no word concerning the trade. The authors equated almost all transactions named by civil law and the legal category – "trade".

The others unfairly simplify this category. For example, M. Otstanov defines electronic commerce as "a part of the digital economy" broadly, and as "trade of intangible goods that can be transmitted and defined digitally" in a narrow sense. The author of the publication relates the information in text, graphic or sound presentation to "intangible goods".

We disagree with this opinion, since it does not accurately reflect the essence of electronic commerce. The object of an electronic transaction can be any object of the material and intangible world that is able to participate in the commodity circulation.

Electronic commerce is proposed to understand the implementation of actions provided for by law, other operations in the execution of transactions for the sale of goods, work and services based on electronic procedures by the parties of the transaction. At the same time, it is proposed to understand electronic procedures as a special procedure (rules, regulations) for electronic operations in a transaction, and electronic operation on a transaction as performing certain actions by the parties to the transaction to execute the transaction through remote interaction of the parties of the transaction, other entities and their information systems in electronic commerce.

And, in its turn, an electronic transaction is any transaction within the Civil Code of the Republic of Kazakhstan, which is executed by the parties through electronic transaction operations [2].

In this definition, a method for taking actions in the execution of transactions for the sale and delivery of goods, the performance of work, and the provision of services based on the performance of electronic procedures was chosen as a qualifying feature. It is unclear what the authors of the bill mean by electronic procedures, technical or legal means?

All the above definitions of the studied category do not give a complete idea of this social phenomenon. In particular, this is caused by the fact that the world community did not formulate this concept either.

The Standard Law on Electronic Commerce, adopted by the United Nations Commission on International Trade Law does not reveal directly the content "electronic commerce". In this act, electronic commerce is mainly referred as a special way to carry out trade operations - through electronic data exchange. While the Standard Law was prepared, the Commission took a decision that "when considering this theme, it will be based on the broad concept of electronic data exchange (EDE), which will cover a variety of trade-related application of EDE, which in a broad meaning can be included in the category "electronic commerce" although other descriptive terms may be used".

In this document the data transmission tools covered by the concept “electronic commerce” include the following methods of transmission based on the use of electronic methods: data transmission by EDE in narrow meaning of this concept as data transmission of a standardized format between computers; transmission of electronic messages using either public or patented standards; transmission of free text by electronic means, for example via the Internet. It was also noted that in some cases, the concept “electronic commerce” could cover the use of tools such as telex and telefax.

Thus, despite the variety of scientific approaches to resolving the issue regarding the qualifying features that define the category “electronic commerce”, one can distinguish its main essential characteristics.

1. Electronic commerce mediates economic and civil circulation. Like traditional commerce, the electronic one is a form of commodity circulation that ensures the movement of goods from the manufacturer, through an intermediary to the final consumer. Public relations in the field of electronic commerce are property relations of a commodity-money nature.

2. Unlike the traditional commerce, electronic commerce is connected with the method of conducting commercial operations - in remote access, and the mechanism by which they are committed. In electronic commerce, all commercial operations to promote goods and services from a producer to a consumer or some of them are carried out in electronic form.

3. Electronic commerce is one of the types of professional entrepreneurial activities for businessmen who are engaged in trade activities and related trading in the accordance with the charter, etc.

4. The actions for the sale, the supply of goods and the provision of services within the framework of electronic commerce are associated with the additional actions when the transactions are executed. The additional actions of electronic commerce participants are connected mainly with organizational issues, namely: the need for a computer availability and other equipment, software, access to a telecommunication network, additional tools of addressing (domain name, e-mail), etc. But it is these organizational actions that provide the opportunity to participate in electronic commerce.

Having studied the qualifying features of electronic commerce, we can draw the following conclusions.

As it can be seen, except for some aspects, electronic commerce practically has the same set of basic characteristics as the traditional one. Unlike the traditional commerce, the peculiarities of electronic commerce are associated with the method of conducting commercial operations - in conditions of remote access, additional organizational actions and the mechanism by which they are completed. But it is these factors that determine the specific features of public relations in this area.

Such concepts as “digital product” and “digital service” are used in electronic commerce. Nowadays, the definition of these concepts has not been developed. In most studies, digital goods mean literary, graphic, musical, audiovisual works, software, which can be downloaded directly from the seller’s website. A digital service means a service provided via the Internet.

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ЭЛЕКТРОНДЫҚ САУДАНЫ ҚҰҚЫҚТЫҚ РЕТТЕУДІҢ ТҮСІНІГІ

Аннотация. Электронды саудада жинақталған қоғамдық қатынастар зерттеледі, «электронды сауда» категориясы оқытылады, осы қызметтің топтастырылу белгілері анықталады, «сауда» және «электронды сауда» ұғымдарының арақатынасы айқындалады, электронды сауда саласындағы қоғамдық қатынастарды құқықтық реттеудің ұғымы мен пәніне авторлық анықтама жазылады.

Осылайша, электронды сауда, көбінесе олардың жасалу мен жүзеге асырылу коммуникацияның электронды құралдарының көмегімен жүзеге асырылатын мәміле жасаудың ерекше нысаны ретінде қарастырылады. Мәміленің құқықтық табиғаты мұндай жағдайда өзгеріссіз қалады және олар тиісті түрлерді (сатып алу-сатуды, тасымалдауды, мердігерді, аренданы және тағы басқаларды) тәртіпке келтіретін қатынастардың құқық нормаларымен реттелуі қажет. Осындай позицияға сәйкес, мәліметтермен электронды айырбас тараптардың өзара қатынасының мәнін өзгертпейді, тек осы қатынастарды құратын нысандарға ғана

әсер етеді. Осы тәсіл аясында бірнеше көзқарастар қалыптасты. Бірқатар мамандар электронды сауданы телекомуникациялық желіні пайдаланған өндіріс, жарнама, сату және тауарларды тарату деп түсінеді. Басқалары бизнестің электронды түрде жүргізілуі деп айтады.

Сондай-ақ әлемдік тәжірибеде «сауда» терминін шарттық және шарттан тыс сауда сипатындағы барлық қатынастардан туындайтын мәселелерді қамту үшін кеңінен түсіндіру қабылданған. Ал сауда сипатындағы қатынастар мұнымен шектелмей, мынадай мәмілелерге бөлінеді: кез келген сауда мәмілелері тауарларды немесе қызметтерді жеткізуге, тауарлармен немесе қызметтермен алмасуға арналған; дистрибьюторлық келісімдер; коммерциялық өкілдік және агенттік қатынастар, факторинг; лизинг; өнеркәсіп объектілерін салу; консультациялық қызметтер көрсету; инжиниринг; лицензияларды сатып алу-сату; инвестициялау; банк қызметтері; сақтандыру; пайдалану немесе концессия туралы келісімдер; бірлескен кәсіпорындар және өнеркәсіптік немесе кәсіпкерлік ынтымақтастықтың басқа да нысандары; тауарлар мен жолаушыларды әуе, теңіз, темір жол немесе автомобиль көлігімен тасымалдауды қамтиды.

Сауданы мұндай кең түрде түсіну осы ұғымды егжей-тегжейлі зерттеуге ықпал етпейтінін және практикалық тұрғыдан жарамдылығы төмен екенін мойындау керек. Сондықтан да қазіргі ғылымда экономикалық «сауда» терминінің маңызы кең таралған. Кең мағынада сауда тауарлардың айналымын, олардың өндіріс саласынан айналыс саласына қозғалысын қамтамасыз ететін халық шаруашылығы саласы ретінде түсініледі.

Неғұрлым тар мағынада, сауда, өндірушілер мен тұтынушылар арасындағы экономикалық делдалдық ретінде айқындалады, кейіннен басқа тұтынушыларға сату мақсатында өндірушілерден тауарларды сатып алу жолымен жүзеге асырылады

Электрондық сауда-саттықта тараптардың электрондық рәсімдерді орындау негізінде тауарларды жеткізу, жұмыстарды орындау, қызметтерді көрсету бойынша мәмілелерді ресімдеу және жасау кезінде, заңдарда көзделген әрекеттерді, өзге де операцияларды жүзеге асыруын түсіну ұсынылды. Бұл ретте электрондық рәсімдер деп мәміле бойынша электрондық операцияларды жасаудың ерекше тәртібін ұсыну ұғынылады (ережелерін, регламентін), ал мәміле бойынша, электрондық операция – тараптардың жекелеген мәмілелер жасауы және оны орындау үшін белгілі бір әрекеттерді, басқа субъектілердің және олардың ақпараттық жүйелерінің қашықтықтан электронды түрде өзара әрекеттестік жасауы.

Түйін сөздер: электронды комиссия, электронды сауда, цифрлы қолтаңба, тауар, келісім, интернет.

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ПОНЯТИЯ ПРАВОВОГО РЕГУЛИРОВАНИЯ ЭЛЕКТРОННОЙ ТОРГОВЛИ

Аннотация. Исследуются общественные отношения, складывающиеся в электронной торговле, изучается категория «электронная торговля», выявляются квалифицирующие признаки этой деятельности, производится соотношение понятий «торговли» и «электронной торговли», вырабатывается авторское определение понятию и предмету правового регулирования общественных отношений в сфере электронной торговли.

Так, нередко электронная торговля рассматривается как особая форма совершения сделок, при которой их заключение и исполнение осуществляется с помощью электронных средств коммуникации. Правовая природа сделок остается при этом неизменной, и ои должны регулироваться нормами права, упорядочивающими отношения соответствующего виды (куплю-продажу, перевозку, подряд, аренду и прочее). Электронный обмен данными, согласно такой позиции, не меняет сущности взаимоотношений сторон и влияет только на форму, в которой эти отношения строятся. В рамках этого подхода сформировалось несколько точек зрения. Ряд специалистов понимают под электронной торговлей производство, рекламу, продажу и распространение товаров с использованием телекоммуникационных сетей. Другие трактуют как электронное ведение бизнеса.

В мировой практике также принято термин «торговля» толковать широко с тем, чтобы он охватывал вопросы, вытекающие из всех отношений торгового характера как договорных, так и внедоговорных. А отношения торгового характера включают следующие сделки, не ограничиваясь ими; любые торговые сделки на поставку товаров или услуг или обмен товарами или услугами; дистрибьюторские соглашения; коммерческое представительство и агентские отношения, факторинг; лизинг; строительство промышленных объектов; предоставление консультативных услуг; инжиниринг; купля – продажа лицензий; инвестирование; финансирование; банковские услуги; страхование; соглашения об эксплуатации или концессии; совместные

предприятия и другие формы промышленного или предпринимательского сотрудничества; перевозка товаров и пассажиров воздушным, морским, железнодорожным или автомобильным транспортом.

Следует признать, что столь широкое понимание торговли не способствует детальному исследованию этого понятия и малопригодно в практическом отношении. Поэтому в современной науке распространено экономическое значение термина «торговля». В широком смысле торговля понимается как отрасль народного хозяйства, обеспечивающая обращение товаров, их движения из сферы производства в сферу обращения.

В более узком значении торговля определяется как экономическое посредничество между производителями и потребителями, осуществляемое путём покупки товаров у производителей с целью продажи потребителям с последующей реализацией другим потребителям.

Электронной торговлей предложено понимать осуществление сторонами сделки, предусмотренных законодательством действий, иных операций при оформлении и совершении сделок по продаже поставке товаров, выполнению работ, оказанию услуг на основе исполнения электронных процедур. При этом под электронными процедурами предлагается понимать особый порядок (правила, регламент) совершения электронных операций по сделке, а под электронной операцией по сделке – совершение сторонами сделки отдельных действий по оформлению и совершению сделки посредством дистанционного взаимодействия сторон сделки, иных субъектов и их информационных систем в электронной

Ключевые слова: электронная коммерция, электронная торговля, цифровая подпись, товар, соглашение, интернет.

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THE ROLE OF MARKETING RESEARCH IN IMPROVING THE EFFICIENCY OF HOTEL ENTERPRISES IN KAZAKHSTAN

Abstract. This article justifies the need for marketing research and provides an analysis of the situation in the hotel services market.

When carrying out research the following methods were used: scientific abstraction, statistics-economical, analysis and synthesis.

The following results were obtained in the course of scientific research: firstly, the role and importance of marketing research were considered; secondly, the analysis of Kazakhstan accommodation places by categories and visitors was conducted; thirdly, the prospects for the development of hotel business in Kazakhstan were justified.

Keywords: marketing, policy, hotel business, accommodation, hotel service, visitor.

In a competitive climate, hotel service enterprises are careful in conducting marketing research. this is explained by the fact that consumers pay attention to the quality of service and make certain demands on the level of comfort and service. The final results of their activities depend on the occupancy rate of hotels.

Each enterprise selects its own market segment, surveys the needs and motives of its consumer behavior. The main factor influencing consumer preferences is the income by visitors. In this connection, without conducting marketing research, hotel enterprises cannot operate effectively. The client chooses where to move in, what type of accommodation to prefer and subsequently recommend to his/her acquaintances and friends.

Table 1 - Distribution of accommodation in Kazakhstan according to categories in 2014 and 2018

Categories	2014		2018	
	units	%	units	%
5-star	20	0.98	23	0.70
4-star	61	2.97	79	2.38
3-star	122	5.93	120	3.61
2-star	20	0.98	24	0.72
1-star	19	0.92	14	0.42
hotels without category	1184	57.58	1753	52.77
other accommodations	630	30.64	1309	39.40
Total	2056	100.0	3322	100.0
Note: compiled based on the source [1, p.26]				

In the hotel services market of Kazakhstan, changes occur systematically due to the influence of both internal and external factors. For effective hotel management, enterprises need to conduct a SWOT analysis, explore the strengths and weaknesses, timely respond to threats and take advantage of opportunities.

As can be seen from Table 1, in Kazakhstan, in 2018, the number of accommodations amounted to 3322 units. Of these, 92.17 % are represented by hotels without a category and other accommodations. The share of hotels with categories is 7.83 %.

Compared to 2014, the following changes are noticeable. The number of accommodations increased by 1266 units, including 5-star hotels – by 3 units, 4-star category – by 18 units, 2-star category – by 4 units, hotels without a category – by 569 units, other accommodations – by 679 units. For 3-star hotels, there was a decrease of 2 units, for 1-star category – by 5 units. The share of hotels without a category and other accommodations in 2014 was 88.22 %. The share of hotels with categories reached 11.78 %.

Thus, influenced by demand for hotel services, the ratio between accommodations of different levels of comfort is changing. To stay afloat, hotel business enterprises take into account the market conditions for the hotel services. This fact is evidenced by the dynamics of accommodation development. So, for the analyzed 5 years, the number of other accommodations increased 2.08 times, hotels without categories - 1.48 times, hotels with categories – 1.07 times.

In 2018, 23 5-star hotels, 79 4-star hotels, 120 3-star hotels, 24 2-star hotels and 14 1-star hotels operated in Kazakhstan.

As a result of the analysis, it was found that all the hotels differ among themselves in terms of procurement, the range and quality of the services provided, the comfort and service level. In general, they comply with the requirements for a specific category.

As a rule, the reasons for choosing hotels without a category and other accommodations are lower prices. At the same time, visitors with financial opportunities prefer to stay in hotels with categories. In this case, clients are offered spacious rooms equipped with comfortable furniture, a wide range and stability of the quality of the provided services.

The presence on the market of different category hotels and accommodation without a category allows visitors, depending on the availability of financial resources, to plan living expenses, focus on the level of expected service and satisfy their needs in the best way.

Table 2 - The number of visitors served
in the accommodations of Kazakhstan in 2018, people

Category	Visitors, total	non-residents	residents
Total	5526864	830922	4695942
including			
5-star	617237	314793	302444
4-star	521530	144910	376620
3-star	529394	127535	401859
2-star	61564	3180	58384
1-star	45999	1904	44095
hotels without category	2436543	209635	2226908
other accommodations	1314597	28965	1285632
Note: compiled based on the source [1, p.27].			

In 2018, the number of served clients in all accommodations amounted to 5526864 people, of which in 5-stars hotels – 617237 people, in 4-stars – 521530 people, in 3-stars – 529394 people, in 2-stars – 61564 people, in 1-star – 45999 people. In hotels without a category, 2436543 people were served, or 44.08 % of the total number of visitors. Other accommodations were chosen by 23.78 % or 1314597 people.

Meanwhile, residents prevailed in the structural ratio among visitors to the accommodations of Kazakhstan. Their number in 2018 reached 4,695,942 people or 84.97 %. Non-residents accounted for 15.03 % or 830,922 people, respectively.

According to the studies, 37.88 % of non-residents used the services of 5-star hotels; 17.44 % – of 4-star hotels; 15.35 % – of 3-star hotels; 0.38 % – of 2-star hotels; 0.23 % – of 1-star hotels; 25.23 % – services of hotels without a category and 3.49 % – of other accommodations.

Among residents, in contrast, 5-star hotels were preferred by 6.44 %; 8.02 % – for 4-star hotels; 8.56 % – for 3-star hotels; 1.24 % – for 2 stars hotels; 0.94 % – for 1-star hotels; 47.42 % – for hotels without a category and 27.38 % for other accommodations.

Thus, the consumer behavior of residents and non-residents differ fundamentally. If 71.28 % of non-residents chose hotels with categories, then 74.8 % of residents preferred hotels without a category and other accommodations.

In turn, a comprehension of the motives of visitors' behavior, a customer-oriented approach help hotel business enterprises to determine their segment, pursue a successful marketing policy and have their own niche in the hotel services market.

It should be noted that in recent years, Kazakhstan has seen a positive trend in the development of the hotel business. This is evidenced by both an increase in the number of enterprises providing accommodation services, and an increase in the number of served visitors. So, if in 2018, 5526864 people were served, then in 2014 – 3804447 people. The number of residents who used the accommodation services during this period increased by 1570513 people, the number of non-residents by 151904 people, respectively.

Table 3 - Distribution of accommodations of Kazakhstan by a form of property in 2018

Form of property	Units	Percentage
Totally	3322	100,0
including		
State property	77	2,32
Private property	3204	96,45
Property of other states, their legal entities, and citizens	41	1,23
Note: compiled based on the source [1, p.25].		

Accommodations in Kazakhstan are private, state properties and in the ownership of other states, their legal entities and citizens. The ratio is as follows. 3204 units or 96.45 % belong to private individuals. The share of state property is 2.32 % and the share of other states properties, their legal entities and citizens is 1.23 %.

For the whole, in 2018 there were 71,858 rooms; the one-time capacity was 168,603 beds. The occupancy rate of hotel beds was 23.2 %, which has a direct impact on the efficiency of enterprises. The number of rented rooms varies by placement category. So, 2207335 rooms were handed over to hotels without a category, 572965 rooms to 5-star hotels respectively. The average cost of bed-days also varies significantly. In hotels without categories, the value of this indicator was 7410 tenge, for 5-star hotels – 34934 tenge, for 4-star hotels – 19872 tenge, for 3-star hotels – 12892 tenge, for 2-star hotels – 9375 tenge, for 1-star hotels – 6134 tenge and for other accommodations – 5365 tenge [1, p.27].

As can be seen from the above analysis, there is an obvious tendency in Kazakhstan to intensify entrepreneurial activity in the hotel business. In the future, an influx of visitors and an increase in demand for all types of hotel services are foreseen. To increase the attractiveness of a hotel product, it is necessary to study and adjust world standards of service, best practices and use marketing tools for market research, planning a list of services, and setting up an advertising campaign.

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ҚАЗАҚСТАН ҚОНАҚ ҮЙ КӘСІПОРЫНДАРЫНЫҢ ЖҰМЫС ІСТЕУ ТИІМДІЛІГІН АРТТЫРУДА МАРКЕТИНГТІК ЗЕРТТЕУЛЕРДІҢ РӨЛІ

Аннотация. Бәсекелестік жағдайында қонақ үй сервистік кәсіпорындары маркетингтік зерттеулер жүргізуге мұқият қарайды. Бұл тұтынушылардың сервис сапасына назар аударатынымен және жайлылық пен қызмет көрсету деңгейіне белгілі бір талаптар қоюымен түсіндіріледі. Қонақ үйлердің толтыруы олардың қызметінің түпкілікті нәтижелеріне байланысты.

Әрбір кәсіпорын нарықта өзінің сегментін таңдайды, өз тұтынушыларының қажеттіліктерін және мінез-құлық себептерін зерттейді. Тұтынушылардың таңдауына әсер ететін негізгі фактор – келушілердің табыстары. Осыған байланысты, маркетингтік зерттеулерсіз қонақ үй кәсіпорындары тиімді жұмыс істеуі мүмкін емес. Тұтынушы қайда қоныстанатынын, орналастыру орнының қай түріне артықшылық беруді таңдайды және кейіннен өзінің таныстары мен достарына ұсынады.

Қазақстан қонақ үй қызметтерінің нарығында ішкі және сыртқы факторлардың әсерінен туындаған жүйелі өзгерістер болып жатыр. Қонақ үйлерді тиімді басқару үшін менеджерлерге SWOT-талдау жүргізу, әлсіз және күшті жақтарды зерттеу, дер кезінде қауіп-қатерлерге әрекет ету мен мүмкіндіктерді пайдалану қажет.

Қонақ үйлер нарығында әртүрлі санаттағы және санатсыз орналастыру орындарының болуы келушілерге қаржылық қаражаттың болуына байланысты тұруға арналған шығыстарды жоспарлауға, күтілетін сервис деңгейіне бағдарлауға және өзінің қажеттіліктерін барынша жақсы түрде қанағаттандыруға мүмкіндік береді.

Зерттеу нәтижелері көрсеткендей, резидент еместердің 37,88 %-ы – 5 жұлдызды қонақ үйлерді; 17,44 %-ы – 4 жұлдызды қонақ үйлерді; 15,35 %-ы – 3 жұлдызды қонақ үйлерді; 0,38 %-ы – 2 жұлдызды қонақ үйлерді; 0,23 %-ы – 1 жұлдызды қонақ үйлерді; 25,23 %-ы – санатсыз қонақ үйлер және 3,49 %-ы өзге орналастыру орындарының қызметтерін пайдаланды.

Резиденттердің арасында, керісінше, 6,44 %-ы – 5 жұлдызды қонақ үйлерге; 8,02 %-ы – 4 жұлдызды қонақ үйлерге ; 8,56 %-ы – 3 жұлдызды қонақ үйлерге; 1,24 %-ы – 2 жұлдызды қонақ үйлерге; 0,94 %-ы – 1 жұлдызды қонақ үйлерге; 47,42 %-ы – санатсыз қонақ үйлерге және 27,38 %-ы – өзге орналастыру орындарына артықшылық береді.

Осылайша, резиденттер және резидент еместердің тұтынушылық мінез-құлықтары түбегейлі түрде ерекшеленеді. Егер резидент еместердің 71,28 %-ы санаты бар қонақ үйлерді таңдаса, онда резиденттердің 74,8 %-ы санаты жоқ қонақ үйлерге және басқа да орналастыру орындарына артықшылық береді.

Өз кезегінде, келушілердің мінез-құлық уәждерін түсіну, клиентке бағытталған тәсіл қонақ үй сервисі кәсіпорындарына өз сегментін анықтауға, табысты маркетингтік саясатты жүргізуге және қонақ үй қызметтері нарығында өз орнын иеленуге көмектеседі

Атап өту керек, соңғы жылдары Қазақстанда қонақ үй бизнесінің дамуында оң динамика байқалады. Дәлел ретінде орналастыру қызметімен айналасатын кәсіпорындар сананың өсуін, сондай- ақ қызмет көрсетілген келушілер санының өсуін қарастыруға болады.

Келтірілген талдаулар көрсеткендей, Қазақстанда қонақ үй бизнесі саласында кәсіпкерлік қызметті жандандыру үрдісі байқалады. Болашақта келушілер ағынының және қонақ үй қызметтерінің барлық түрлеріне сұраныс өседі деп болжанады. Қонақ үй өнімінің тартымдылығын арттыру үшін, әлемдік қызмет көрсету стандарттарын, озық тәжірибелерді зерделеу және бейімдеу, сондай-ақ нарықты зерттеу, қызметтер тізбесін жоспарлау, жарнамалық науқанды ұйымдастыру үшін маркетингтік құралдарды пайдалану қажет.

Зерттеу жүргізу кезінде келесі әдістер пайдаланған: ғылыми абстракция, статистикалық-экономикалық тәсіл, анализ және синтез.

Ғылыми зерттеулерді орындау кезінде келесі нәтижелер алынған: біріншіден, маркетингтік зерттеулердің рөлі мен маңызы қарастырылған; екіншіден, Қазақстанның орналастыру орындарын келушілер мен санаттары бойынша талдау жүргізілді; үшіншіден, Қазақстанда қонақ үй бизнесінің даму перспективалары негізделді.

Түйін сөздер: маркетинг, саясат, қонақ үй бизнесі, орналастыру, қонақ үй қызмет, келуші.

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РОЛЬ МАРКЕТИНГОВЫХ ИССЛЕДОВАНИЙ В ПОВЫШЕНИИ ЭФФЕКТИВНОСТИ ФУНКЦИОНИРОВАНИЯ ГОСТИНИЧНЫХ ПРЕДПРИЯТИЙ КАЗАХСТАНА

Аннотация. В условиях конкуренции предприятия гостиничного сервиса к проведению маркетинговых исследований подходят тщательно. Это объясняется тем, что потребители обращают внимание на качество сервиса и предъявляют определенные требования к уровню комфорта и обслуживания. От заполняемости гостиниц зависят конечные результаты их деятельности.

Каждое предприятие выбирает свой сегмент на рынке, изучает потребности и мотивы поведения своего потребителя. Основным фактором, влияющим на потребительские предпочтения, является доход посетителей. В связи с чем, без проведения маркетинговых исследований гостиничные предприятия не могут эффективно функционировать. Потребитель выбирает, где ему поселиться, какому типу места размещения отдать предпочтение и рекомендовать впоследствии своим знакомым и друзьям.

На рынке гостиничных услуг Казахстана систематически происходят изменения, вызванные влиянием как внутренних, так и внешних факторов. Для того, чтобы эффективно управлять гостиницами, менеджерам необходимо проводить SWOT- анализ, исследовать слабые и сильные стороны, своевременно реагировать на угрозы и использовать возможности.

Наличие на рынке гостиниц разной категории и мест размещения без категории позволяет посетителям в зависимости от наличия финансовых средств планировать расходы на проживание, ориентироваться на уровень ожидаемого сервиса и удовлетворить наилучшим образом свои потребности.

Как показали исследования, среди нерезидентов 37,88 % воспользовались услугами гостиниц 5-звезд; 17,44 % – гостиниц 4-звезды; 15,35 % – гостиниц 3-звезды; 0,38 % – гостиниц 2-звезды; 0,23 % – гостиниц 1-звезда; 25,23 % – гостиниц без категории и 3,49 %- прочих мест размещения.

Среди резидентов, напротив, гостиницам 5-звезд отдали предпочтение 6,44 %; 8,02 % – гостиницам 4-звезды; 8,56 % – гостиницам 3-звезды; 1,24 % – гостиницам – 2 звезды; 0,94 % – гостиницам 1-звезда; 47,42 % – гостиницам без категории и 27,38 % – прочим местам размещения.

Таким образом, потребительское поведение резидентов и нерезидентов коренным образом отличается. Если 71,28 % нерезидентов выбирали гостиницы с категориями, то 74,8 % резидентов отдавали предпочтение гостиницам без категории и прочим местам размещения.

В свою очередь, понимание мотивов поведения посетителей, клиентоориентированный подход помогают предприятиям гостиничного сервиса определять свой сегмент, проводить успешную маркетинговую политику и иметь свою нишу на рынке гостиничных услуг.

Необходимо отметить, что за последние годы в Казахстане прослеживается положительная динамика в развитии гостиничного бизнеса. Об этом свидетельствуют как увеличение числа предприятий, оказывающих услуги размещения, так и увеличение количества обслуженных посетителей.

Как видно из приведенного анализа, в Казахстане прослеживается очевидная тенденция активизации предпринимательской деятельности в сфере гостиничного бизнеса. В перспективе прогнозируется приток посетителей и рост спроса на все виды гостиничных услуг. Для повышения привлекательности гостиничного продукта необходимо изучать и адаптировать мировые стандарты обслуживания, передовой опыт и использовать маркетинговые инструменты для исследования рынка, планирования перечня услуг, организации рекламной кампании.

При проведении исследований использованы следующие методы: научной абстракции, статистико-экономический, анализа и синтеза.

При выполнении научных исследований получены следующие результаты: во-первых, рассмотрены роль и значение маркетинговых исследований; во-вторых, проведен анализ мест размещения Казахстана по категориям и посетителям; в-третьих, обоснованы перспективы развития гостиничного бизнеса в Казахстане.

Ключевые слова: маркетинг, политика, гостиничный бизнес, размещение, гостиничная услуга, посетитель.

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ANALYSIS OF FINANCING OF EXPENDITURES ON SOCIAL SECURITY AND SOCIAL PROTECTION OF CITIZENS OF THE REPUBLIC OF KAZAKHSTAN

Abstract. The actualization of social protection of the population consists in the fact that the concept of “social protection” is associated with the concept of “social care” of the state, when individual assistance to a person, groups of people organized by professionally trained people and expressed by the concept of “social work” will have the support of confidence as its ultimate goal man in his strength, his capabilities. That is why in recent years, most specialists of social protection of the population refuse from such a broad, but non-specific concept as "state regulation of the social sphere", and use the term "social support of the population by the state" more and more.

The social policy of any state is the most important part of its domestic policy. In the context of Kazakhstan's transition to sustainable development, the problem of improving the social security system of the population becomes especially acute and relevant. The right to social security of citizens is exercised in practice using a specific organized financial mechanism, which includes a set of interrelated organizational, economic, legislative and other measures.

Keywords: social security, social protection, sphere, finances, mechanism, population, budgets.

Introduction. The functions of social security in the Republic of Kazakhstan are performed by various government bodies, ministries, departments, services and institutions, social protection and non-governmental institutions that form the organizational structure of social security. The economic basis of social security is the state budget and state social insurance, which differ from each other in terms of funding sources. Social insurance payments are made from insurance funds formed from social insurance contributions. They are charged both from employing enterprises and from workers. State funding is provided through appropriations from the Republican and local budgets.

There are four directions for the development of the system of financial support for social protection of the population: social insurance based on the formation of trust funds through contributions from participants; social security, involving the payment of universal benefits or financing of services from national revenues; social assistance in the form of benefits or material services provided with the condition of a personal need test at the expense of national revenues; state support of corporate and personal insurance of social risks. Financial relations within the framework of these areas are regulated by law and are implemented in the course of activities of special organizations, which together form public institutions for financial support of social protection of the population.

Main part. At the beginning of the new millennium, most countries of the world are in the process of implementing deep reforms or, at least, are seriously considering the possibility of their implementation, including in the field of social protection of the population. Common factors for states that have a decisive influence on the content of necessary reforms are population aging, globalization of markets leading to a radical reassessment of social costs and wages, the growth of the informal sector, which is outside the state social protection system, and the cost of social services due to growth standard of living and technological progress. At the present stage, due to a number of objective economic factors, as well as reasons caused by prevailing informal norms, the predominant institution of financial support for social protection in Kazakhstan is social security. The insufficient size of the tariff base, the underdevelopment of insurance principles in the activities of state extra-budgetary funds, and the actual economic lack of independence did not allow them to take the social insurance institution to leading positions in the

provision of social security, as is the case in countries with developed market economies. As a result, the level of social guarantees and the size of payments remain low in our country.

The need to reform the system of financial support for social protection of the population in the Republic of Kazakhstan is universally recognized. At the government level, the concepts of pension reform and modernization of the compulsory health insurance system are being adopted, however, until now, a scientifically sound, based on unified methodological principles, integrated concept of financial support for social protection of the population has not been adopted. The lack of a systematic approach reduces the effectiveness of managerial decisions, which are often made under the influence of economic and political processes that are far from the goals of social protection. Research aimed at developing the theoretical and methodological foundations of the conceptual construction and economic analysis of financial support for social protection of the population as an integrated system and studying its features in the Republic of Kazakhstan are relevant. Social protection is a system designed to provide a certain level of access to vital goods and a certain level of well-being of citizens who, due to circumstances (old age, state of health, loss of breadwinner or job and other legal grounds) cannot be economically active and provide themselves with income by participation in well-paid work.

The International Labor Organization, of which Kazakhstan is a member, defines a social protection system as a set of measures, including:

- stimulation of stable, paid labor activity;
- prevention and compensation of a part of income in the event of a major social risk through social insurance mechanisms;
- the provision of social assistance mechanisms designed for vulnerable groups that are not participants in the social insurance system.

Favorable changes in the economy in recent years and measures taken to ensure sustainable growth allow us to move on to creating an integrated system of social protection in the event of social risks. In this regard, it became necessary to develop a new concept of social protection of the population, taking into account the priorities and opportunities of Kazakhstan in the present and future.

The main directions of development of the social protection system are based on the analysis of international experience and current status. It is proposed to build such a system that meets market conditions and contributes to the formation of incentives for stable paid labor with a higher level of population coverage with minimal administration costs.

The new system is mixed and includes elements of both a joint and a personalized system, both compulsory and voluntary insurance, and is designed to ensure social protection of the population from the main risks that a person may face throughout his life.

The fulfillment by the state of all social obligations assumed by the population (the payment of wages to employees of state organizations, social security and social assistance to citizens in the form of pensions, allowances and scholarships for students in universities and colleges) is a natural priority in financing the social sphere.

Pension benefits of citizens of Kazakhstan

Kazakhstan was the first among the CIS countries to begin the transformation of the old joint citizen pension system with a systematic transition to a funded pension system, which was of historical importance for the whole country.

Today, Kazakhstan’s pension provision is a three-level system combining simultaneously the mechanisms of the joint and funded systems, this is the joint pension system inherited by Kazakhstan from the USSR after the collapse of the latter and based on “generational solidarity”, in which the state budget becomes mandatory source of pension payments funded pension system with a fixed 10% amount of pension deductions from monthly income for citizens of Kazakhstan, foreigners and individuals stateless, permanently resident in Kazakhstan and 5% compulsory professional pension contributions in favor of workers employed in work with harmful (particularly harmful) working conditions, and a funded system based on voluntary pension contributions.

To ensure a decent level, pension payments are indexed annually.

For the Statistics Committee of the Ministry of National Economy of the Republic of Kazakhstan for 2019, 13 632 405, 9 thousand tenge were allocated, execution for the reporting period amounted to 13 630 986.5 thousand tenge, including in the context of programs:

According to the program 001 “Services on the formation of state policy on attracting investments, the development of economic, trade policy, the policy in the field of consumer protection, the regulation of activities of natural monopolies and in the field of statistical activity, the protection of competition, the coordination of activities in the field of regional development and entrepreneurship "For the reporting period, according to the payment plan, funds are provided in the amount of 8 966 172 thousand tenge, paid obligations amounted to 8 9 65,028.1 thousand tenge, or 100 %.

The balance of unused funds amounted to 1,143.9 thousand tenge, including: 237.1 thousand tenge - savings in payroll; 1,1 thousand tenge – the balance of funds for travel expenses; 898.6 thousand tenge - in connection with the completion of the state examination in the Department of Statistics of the Kostanay region; 7.1 thousand tenge – the balance of funds for purchased goods, works and services.

Program 081 “Ensuring the presentation of statistical information” for the reporting period, according to the payment plan, funds are provided in the amount of 4 557 803.0 thousand tenge, paid obligations amounted to 4 557 577.8 thousand tenge, or 100 %.

The balance of unused funds amounted to 225.2 thousand tenge, including: 76.6 thousand tenge – savings on the layout of statistical information in the Department of Statistics of the Aktobe region; 10.6 thousand tenge – the balance of funds in connection with a decrease in the sample of respondents; 5.7 thousand tenge – savings in the payroll of non-staff employees; 0.5 thousand tenge – the balance of funds for travel expenses; 121.6 thousand tenge – cost savings as a result of public procurement; 10.2 thousand tenge - the balance of funds for purchased goods, works and services.

Program 101 "Carrying out events at the expense of funds for entertainment expenses" for the reporting period, according to the payment plan, funds are provided in the amount of 1 424.6 thousand tenge, paid obligations amounted to 1 424.5 thousand tenge, or 100 %.

Program 138 “Providing advanced training for civil servants” for the reporting period, according to the payment plan, funds are provided in the amount of 40 626.3 thousand tenge, paid obligations amounted to 40 612.8 thousand tenge, or 100 %. The balance of unused funds amounted to 13.5 thousand tenge.

Program 159 "Ensuring the conduct of research on the socio-economic situation of the Republic of Kazakhstan in the framework of cooperation between the Republic of Kazakhstan and the Organization for Economic Cooperation and Development" for the reporting period, funds in the amount of 61,620.0 thousand tenge are provided for according to the payment plan, paid obligations amounted to 61,583, 5 thousand tenge, or 99.9 %. The balance of unused funds in the amount of 36.5 thousand tenge was formed due to exchange rate differences.

Program 164 "Kazakhstan's participation in the initiatives and tools of the Organization for Economic Cooperation and Development within the framework of Kazakhstan's cooperation with the Organization for Economic Cooperation and Development" for the reporting period, according to the payment plan, funds are provided in the amount of 4,760.0 thousand tenge, paid obligations amounted to

4 759.8 thousand tenge, or 100 %.

In Kazakhstan, families with children receive maternity and childcare benefits until they reach one year of age. The amount of the allowance depends on the number of children in the family. Poor families with children and families raising children with disabilities are also provided with benefits.

Social assistance in a new format

In Kazakhstan, the system of providing social assistance to poor citizens will be revised with the introduction in 2018 of a new format of targeted social assistance for people with incomes below 50% of the subsistence level and with an emphasis on the participation in active measures to promote the employment of able-bodied family members.

To ensure the social protection of the rural population it is necessary:

- creation of economic conditions for the growth of wages and other cash incomes of rural workers;
- phased repayment of all types of social payments, pensions and wages that they have not seen for years;
- introduction of registration cards for low-income citizens in all settlements;
- Providing targeted social support to rural residents.

Conclusion. To improve the quality of education for the period up to 2005, the state program “Auyl metebi” was developed in Kazakhstan, the purpose of which was to determine the main directions of

development of a rural school in the country for the coming years. This program is very important as there are no schools in many rural areas. Within the framework of the Program, the Ministry of Education and Science of the Republic of Kazakhstan set a goal to provide all rural schools with qualified subject teachers. The state program “Education” has been approved and is operating in the country, aimed at creating conditions for the development of education, providing everyone with wide access to quality education.

Thus, the sustainable development of human potential, stabilization of the standard of living must be achieved by creating conditions for realizing labor potential, ensuring accessibility and improving the quality of education, medical services, increasing the level of incomes of the population, implementing targeted poverty reduction based on measures of social adaptation, economic rehabilitation and social support for the most vulnerable segments of the population.

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ҚАЗАҚСТАН РЕСПУБЛИКАСЫ АЗАМАТТАРЫН ӘЛЕУМЕТТІК ҚАМСЫЗДАНДЫРУ МЕН ӘЛЕУМЕТТІК ҚОРҒАУ ШЫҒЫСТАРЫН ҚАРЖЫЛАНДЫРУДЫ ТАЛДАУ

Аннотация. Халықты әлеуметтік қорғауды өзектендіруде "әлеуметтік қорғау" ұғымы "мемлекеттің әлеуметтік қамқорлығы" ұғымымен байланысты, адамға, адамдар тобына кәсіби даярланған адамдар ұйымдастырған және "әлеуметтік жұмыс" ұғымымен айқындалған жеке көмектің түпкі мақсаты – адамның өз күшіне, өз мүмкіндіктеріне деген сенімділігіне қолдау көрсету. Сондықтан соңғы жылдары халықты әлеуметтік қорғау мамандарының көпшілігі «Әлеуметтік саланы мемлекеттік реттеу» сияқты кең, бірақ нақты емес тұжырымдамадан бас тартып, «Мемлекет тарапынан халықты әлеуметтік қолдау» терминін көбірек қолданады.

Кез келген мемлекеттің әлеуметтік саясаты – оның ішкі саясатының маңызды бөлігі. Қазақстанның орнықты дамуға көшу жағдайында халықтың әлеуметтік қамсыздандыру жүйесін жетілдіру өте мәселе болып отыр. Азаматтардың әлеуметтік қамсыздандыру құқығы өзара байланысты ұйымдастырушылық, экономикалық, заңнамалық және басқа да шараларды қамтитын нақты ұйымдастырылған қаржылық механизмді қолдану арқылы жүзеге асырылады.

Қажетті реформалардың мазмұнына шешуші әсер ететін мемлекеттер үшін жалпы факторлар – халықтың қартаюы, әлеуметтік шығындар мен жалақыны түбегейлі қайта бағалауға әкелетін нарықтардың жаһандануы, мемлекеттік әлеуметтік қорғау жүйесінен тыс бейресми сектордың өсуі және өсуге байланысты әлеуметтік қызметтердің құны. Өмір сүру деңгейі және технологиялық прогресс те бар. Қазіргі кезеңде бірқатар объективті экономикалық факторларға, сондай-ақ бейресми нормалардың басым болу себебіне байланысты, Қазақстан Республикасында әлеуметтік қорғауды қаржылай қолдаудың басым институты әлеуметтік қамсыздандыру болып саналады. Тарифтік базаның жеткіліксіз мөлшері, мемлекеттік бюджеттен тыс қорлар қызметіндегі сақтандыру қағидаттарының жеткіліксіз дамуы және экономикалық тәуелсіздіктің нақты болмауы, нарықтық экономикасы дамыған елдердегідей, олардың әлеуметтік сақтандыруды қамтамасыз етудегі жетекші орындарға шығуына мүмкіндік бермеді. Соның салдарынан біздің елімізде әлеуметтік кепілдіктер деңгейі мен төлемдер мөлшері төмен болып қалады.

Түйін сөздер: әлеуметтік қамсыздандыру, әлеуметтік қорғау, сала, қаржы, механизм, халық, бюджет.

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АНАЛИЗ ФИНАНСИРОВАНИЯ РАСХОДОВ НА СОЦИАЛЬНОЕ ОБЕСПЕЧЕНИЕ И СОЦИАЛЬНУЮ ЗАЩИТУ ГРАЖДАН РЕСПУБЛИКИ КАЗАХСТАН

Аннотация. Актуализация социальной защиты населения состоит в том, что понятие «социальная защита» ассоциируется с понятием «социальная забота» государства, когда индивидуальная помощь человеку, группам людей, организованная профессионально подготовленными людьми и выражаемая понятием «социальная работа», своей конечной целью будет иметь поддержку уверенности человека в своих

силах, своих возможностях. Именно поэтому в последнее время большинство специалистов социальной защиты населения отказываются от такого широкого, но неконкретного понятия, как «государственное регулирование социальной сферы», а все больше пользуются термином «социальная поддержка населения со стороны государства».

Социальная политика любого государства является наиболее важной частью его внутренней политики. В условиях перехода Казахстана к устойчивому развитию проблема совершенствования системы социального обеспечения населения становится особенно острой и актуальной. Право на социальное обеспечение граждан осуществляется на практике с помощью определенного организованного финансового механизма, который включает в себя комплекс взаимосвязанных организационных, экономических, законодательных и других мер.

Общими для государств факторами, которые оказывают решающее влияние на содержание необходимых реформ, являются старение населения, глобализация рынков, приводящая к кардинальной переоценке социальных затрат и заработной платы, рост неформального сектора, который находится вне системы государственной социальной защиты, удорожание социальных услуг в связи с ростом уровня жизни и техническим прогрессом. На современном этапе, в силу ряда объективных экономических факторов, а также причин, обусловленных сложившимися неформальными нормами, преобладающим институтом финансового обеспечения социальной защиты в РК является социальное обеспечение. Недостаточный размер тарифооблагаемой базы, неразвитость страховых принципов в деятельности государственных внебюджетных фондов, фактическая экономическая несамостоятельность не позволили им вывести институт социального страхования на ведущие позиции в финансовом обеспечении социальной защиты, как это имеет место в странах с развитой рыночной экономикой. В результате уровень социальных гарантий и размер выплат остаются в нашей стране низкими.

Ключевые слова: социальное обеспечение, социальная защита, сфера, финансы, механизм, население, бюджет.

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ECONOMIC ASPECTS OF BANK MARKETING AND THE REAL SECTOR

Abstract. In an era of rapid technological development and increasing competition, the value of the mass customer as a source of profit is growing steadily. The client becomes the main asset of the bank, its needs and requirements are in the focus of the banking business. The survival strategy in the struggle for the mass customer is based on the submission of all business processes and procedures to one single goal – customer satisfaction. In the future, business performance will be determined by the degree of customer satisfaction. The economic crisis, the crisis of industrial production is pushing for a review of key aspects of banking marketing, which should explore the interaction of the industrial and banking sectors and generate solutions to increase the effectiveness of their interaction. The crisis confirms that it is necessary to improve the tools of banking marketing in the industrial sector of the economy of the region. Computer models, where the atoms are agents, are called agentbased models. In most works devoted to the construction and study of agent-based models, the rules for interaction between agents are extremely simple. Nevertheless, the result is quite meaningful meaningful results.

The issues of improving the use of bank marketing tool to improve the efficiency of interaction between the industrial and banking sectors of the economy are considered. Reasoning upon the economic aspects of the effectiveness of bank marketing, the authors state that a marketing performance evaluation system should have not only mechanisms for a posteriori analysis (that is, analysis of the results of acceptance or rejection of an offer), but also possibility of priori assessment of marketing offers, campaigns, profitability, and even marketing budgets. The system should contain a tool that simulates the appearance of clients, the selection of offers to clients and assessing the acceptance or rejection of offers, probable consumption or non-consumption of the proposed product.

Key words: bank marketing, bank product, industrial enterprises, the theory of artificial societies, sustainable development, economic crisis.

Introduction. Bank marketing, as an instrument of a market economy, has been fully investigated and has a number of definitions. A thorough market study, analysis of the changing tastes and preferences of consumers of bank services is necessary. This definition is a concretization of more general approaches, the essence of which is that marketing (from the English word market) is a purposeful application of various instruments of market policy, focused on satisfying the interests of consumers, to overcome the differences arising between supply and demand [1]. In the work of Khabarov V.I. and Popov N.Yu. [5] is indicated that bank marketing can be defined as the search and use by the bank of the most profitable banking products markets, taking into account the needs of the clientele.

The financial and economic crisis of 2008 showed all the shortcomings in the interaction of the banking and industrial sectors of the economy. The regional aspects of the problem also emerged as a result of the crisis. That is, it is necessary to talk about the lack of effectiveness of bank marketing in modern conditions. Obviously, bank marketing needs to improve its own tools.

Research methods. Reasoning upon the economic aspects of the effectiveness of bank marketing, the authors state [5], that a marketing performance evaluation system should have not only mechanisms for a posteriori analysis (that is, analysis of the results of acceptance or rejection of an offer), but also possibility of priori assessment of marketing offers, campaigns, profitability, and even marketing budgets. The system should contain a tool that simulates the appearance of clients, the selection of offers to clients and assessing the acceptance or rejection of offers, probable consumption or non-consumption of the proposed product.

Results and discussion. In the time of rapid technological development and increasing competition, the value of the mass customer as a source of profit is growing steadily. The client becomes the main asset

of the bank, its needs and requirements are in the focus of the banking business. The survival strategy in the struggle for the mass customer is based on the subordination of all business processes and procedures to one single goal - the satisfaction of customer needs. In the future, business performance will be determined by the degree of client satisfaction.

The economic crisis, crisis of industrial production is pushing for a review of key aspects of bank marketing, which should explore the interaction of the industrial and banking sectors and generate solutions to increase the effectiveness of their interaction.

The crisis confirms that it is necessary to improve the tools of bank marketing in the industrial sector of the region's economy.

Makarov V.L. positions artificial societies as a fundamentally new tool of cognition [3]. He believes that the key phrase of the new methodology can be considered a quote from the book of Epstein and Axtell: "Once people in relation to a social phenomenon, instead of the question "Can you explain this?" will ask another question: "Can you build (grow) it?". What is the essence of an artificial society? For its existance, first of all, a certain environment is required, where "members of society" should live. It can be a certain landscape, or space, or even a point. And in this environment some creatures function, which are usually called "agents".

Computer models, where the atoms are the agents, are called agentbased models. In most works devoted to the construction and study of agent-based models, the rules for interaction between agents are extremely simple. Nevertheless, the result is quite meaningful informative results.

Makarov V.L. notes there [3]: "Nowadays there is a crisis in mathematical economics and in mathematical modeling in general. Why? The second half of the twentieth century can be called the "golden age" of the use of mathematics in economics. The achievements of all the great economists of this period are connected with mathematics. Paul Samuelson, Jan Tinbergen, Kenneth Arrow, Gerald Debre, Vasily Vasilyevich Leontyev, my teacher Leonid Vitalievich Kantorovich are Nobel laureates, and their main achievements were possible because they used mathematics to explain economic phenomena. But now mathematics, one might say, is at a dead end, because the models operated by these remarkable scientists reflect reality in a simplified way, and they need to be complicated. As, for example, in the ingenious Arrow-Debreu model to consider ethical standards – at least the fact that an entrepreneur does not always seek to maximize profits by any means. You come to a model where mathematics is already useless. That is, the complexity has reached the limit in mathematics." Models based on the theory of artificial societies are a new tool where unlimited complication of the model is possible. In research works on the economics of knowledge currently being conducted in the Russian Federation and the Republic of Kazakhstan, the most interesting are studies related to the use of social networks in the formation of the "knowledge society", the creation of virtual laboratories for the formation of "world knowledge", and the modeling of artificial societies [2].

Among the research results, the following main provisions of the basic version of the computer model of society can be noted.

1. Agents are in one of several possible states (actions). States or actions are divided into two types. The first type includes actions that are not directly related to interaction with other agents. The second type, on the contrary, includes actions affecting other people. More formally, these are actions in a group of two or more agents, that is, group actions. Moreover, individual actions are set once and for all, their set is fixed. As for group actions, their set is variable.

2. In the simulation process, an agent is randomly activated, which selects an action in a certain period of time. The choice of action is determined by the level of attractiveness expressed by the number. The agent chooses the action that is currently the most attractive.

3. As mentioned earlier, the set of group actions (and the groups themselves) is changing. If the set of actions as such is relatively small and fixed, then the same action from this set, but carried out in different groups, is by definition different actions. Therefore, theoretically group actions are unimaginably many. Under the conditions of the well-known postulate of limited rationality, the agent's memory is limited, for example, by the maximum number of group actions that he can remember.

For bank marketing, the most appropriate model is based on the concept of partner attractiveness. That is, the model by which social networks are formed.

There are N agents in this model. Each i agent is characterized by ai number, showing its attractiveness to other agents, (0 <ai <1). Ai is not known in advance to either itself or other agents.

It is revealed in the process of interactions (as market value).

The definition given in the article by Misharin Yu.V. [4], also corresponds to the construction of such a model of bank marketing in the industrial sector of the economy, the essence of which is that attractiveness is such a concentration of interests at which their effective intersection begins. Through this definition, the author enters into a balance of supply and demand, which is necessary for the effective interaction of the banking and industrial sectors of the region's economy in present and in the future.

Numerous studies and models confirm the cyclical development of the economy. Development management is feasible only with an understanding of the nature and properties of economic cyclicality. There are quite a lot of views. Misharin Yu.V. proposes the following approach.

Balance of supply and demand - the coordination of interests of the interacting parties, including in the real sector of the regional economy, is, in fact, a technological process if the technological process is considered as a set and sequence of actions aimed at the final, predetermined result [4].

Conclusion. The balance of supply and demand is in essence a balance of effectively crossed interests of the parties engaged in certain activities. As a result of the intersection of interests, a certain result or effect is obtained. From the point of view of sustainable development, it is advisable to consider this effect as a combination of its social, economic, environmental and institutional components. Obviously, the interests agreed upon within the framework of the "artificial society" model are reflected in the aggregate of certain values – state, regional, municipal, corporate, individual/private, public group, etc.

Based on the above written, it can be assumed that the concept of "artificial societies" is a key aspect of improving the tools of bank marketing in the industrial sector of the region's economy.

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ЭКОНОМИЧЕСКИЕ АСПЕКТЫ БАНКОВСКОГО МАРКЕТИНГА И РЕАЛЬНОГО СЕКТОРА

Аннотация. В эпоху бурного развития технологий и нарастающей конкуренции ценность массового клиента как источника прибыли неуклонно растет. Клиент становится основным активом банка, его нужды и потребности оказываются в фокусе банковского бизнеса. Стратегия выживания в борьбе за массового клиента основывается на подчинении всех бизнес-процессов и процедур одной единственной цели – удовлетворению потребностей клиента. В дальнейшем эффективность бизнеса будет определяться степенью удовлетворенности клиента. Экономический кризис, кризис промышленного производства подталкивает к пересмотру ключевых аспектов банковского маркетинга, который должен исследовать взаимодействие промышленного и банковского секторов и генерировать решения для повышения эффективности их взаимодействия. Кризис подтверждает, что необходимо совершенствование инструментария банковского маркетинга в промышленном секторе экономики региона. Компьютерные модели, где атомами являются агенты, называются агенториентированными моделями (agentbased models). В большинстве работ, посвященных построению и изучению агент-ориентированных моделей, правила взаимодействия между агентами чрезвычайно просты. Тем не менее, в результате получаются вполне осмысленные содержательные результаты.

Рассмотрены вопросы совершенствования использования инструментария банковского маркетинга для повышения эффективности взаимодействия промышленного и банковского секторов экономики. Рассуждая с точки экономических аспектов об эффективности банковского маркетинга, авторы утверждают, что система оценки эффективности маркетинга должна иметь не только механизмы апостериорного анализа (то есть анализа результатов принятия или неприятия предложения), но и возможность априорной оценки маркетинговых предложений, компаний, рентабельностей и даже бюджетов маркетинга. Система должна содержать инструмент, моделирующий появление клиентов, подбор предложений клиентам и оценивающий принятие или неприятие предложений, вероятностное потребление или не потребление предлагаемого продукта.

Ключевые слова: банковский маркетинг, банковский продукт, промышленные предприятия, устойчивое развитие, экономический кризис.

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DEVELOPMENT POLE AND GROWTH POINTS OF INNOVATIVE ECONOMY: KAZAKHSTAN AND FOREIGN EXPERIENCE

Abstract. The article discusses the innovative development of the poles, as well as monitoring a comprehensive assessment of the innovative activities of the regions. This study indicates that increased innovation activity provides economic growth. "Growth points", which should be understood as a company, "the effect of enthusiasm, form the "development zone" in the region or country.

From single-valued and high-time to the basics of unpolished theory, the theory of polar poles (PRT) is derived. By the middle of the great part, in regional economy the theory of the polar poles – this concept, the theoretic object of the duality of the divergence of the differentiation of the duality of the duality of the duality in the market of products In keeping with this concept, the mid-region is characterized by the propagating (dynamically divisive, diverging) propulsion. It stimulates the dilatation of the dilapidated territory, in the opposite direction, in accordance with the instructions of the addictive, addictive and obsessive persons, presiding over the polar pole of the border, with a higher concentration in the subordinate area of the recital zone. Rather central mogwt how razvïvatsya stïxïyno, so, and celenapravlenno way optïmalnogo razmeşçenïya sootvetstvwyuşçïx Enterprise and blagoprïyatnıx create wslovïy Their xozyaystvennoy Activities pomoşçyu razlïçnıx ïstoçnïkov fïnansïrovanïya (of State vlojenïy, çastnogo capital, subsidies, nalogovıx lax and others.). Once you have developed in the region, you will have a far more complex development of the whole process, as you would expect, under the mechanisms of market economy.

Key words: innovative and technological pole of growth, industrial poles of growth, agroindustrial poles of growth, perspective poles of growth, concept of poles of growth, integration, processes of innovative activity.

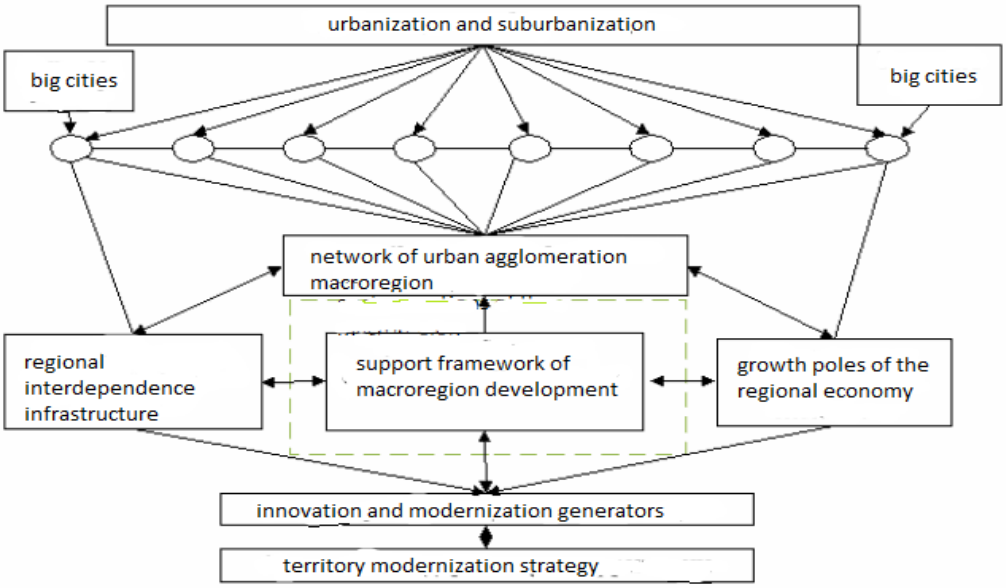
Introduction. In scientific works, it was emphasized that the use of poles as a category that forms the functions of the state in ensuring the development of regions with the conditions for their achievement. In the early 1950s. The world-famous economist Francois Perroux , by the poles, understood the placed and dynamically developing industries that generate a chain reaction of the emergence and growth of industrial centers. This theory was the basis for regional programs in many countries. The Swedish economist, Nobel Prize winner in economics G. Myrdal confirmed that the basic model of cumulative growth shows how, with the help of specialization and economies of scale, the small advantages of territories can grow and be multiplied over time [1]. The extension of this effect to regions or the so-called "diverging effects" allowed us to conclude that the advantages of certain localities, growth poles lead to an acceleration of their development and a large lag in backward regions. Consequently, the growth of the economy is uneven and the levels of economic development of the territories do not converge [2].

Also interesting is the French experience in the formation of the so-called poles of competitiveness – consortia (clusters) that combine research organizations, educational centers and industrial enterprises. At the same time, the goal is to form enterprises that are attractive for implanting a private initiative in research and development. Competitiveness in terms of the international division of labor, and at the same time provide an effective solution to regional and social problems. It should be noted that in France, research and production complexes that combine high-tech enterprises and research institutes working in various industries are considered poles of competitiveness [3].

Table 1 - Types and functions of growth poles

Innovative technological growth pole	Industrial growth poles	Agroindustrial growth poles	Promising growth poles
Agglomeration forming a single territorial socio-economic system with a population in which organizational and managerial "capital" functions are concentrated and a significant innovative and technological reserve in the economy is formed	Urbanization of a territory with an industrial type of economy characterized by high investment activity and the presence of a diversified diversified industry	Medium and small cities with a developed production base and service sector and an active business environment in the field of agriculture	The largest settlements, which are the organizing centers of rural areas, with the potential for the formation of agro-industrial growth poles
Compiled by the second: based on the source [4].			

The concept of growth poles is a network of growth poles as an effective tool for raising the region, which provides alignment and support for the development of the region. The development of the world community testified to the increasing influence of innovation on the rate of economic growth. In the global market, innovative activity of the widespread use of innovations indicates that enhanced innovation activity has been identified in high-tech industries at the regional level.

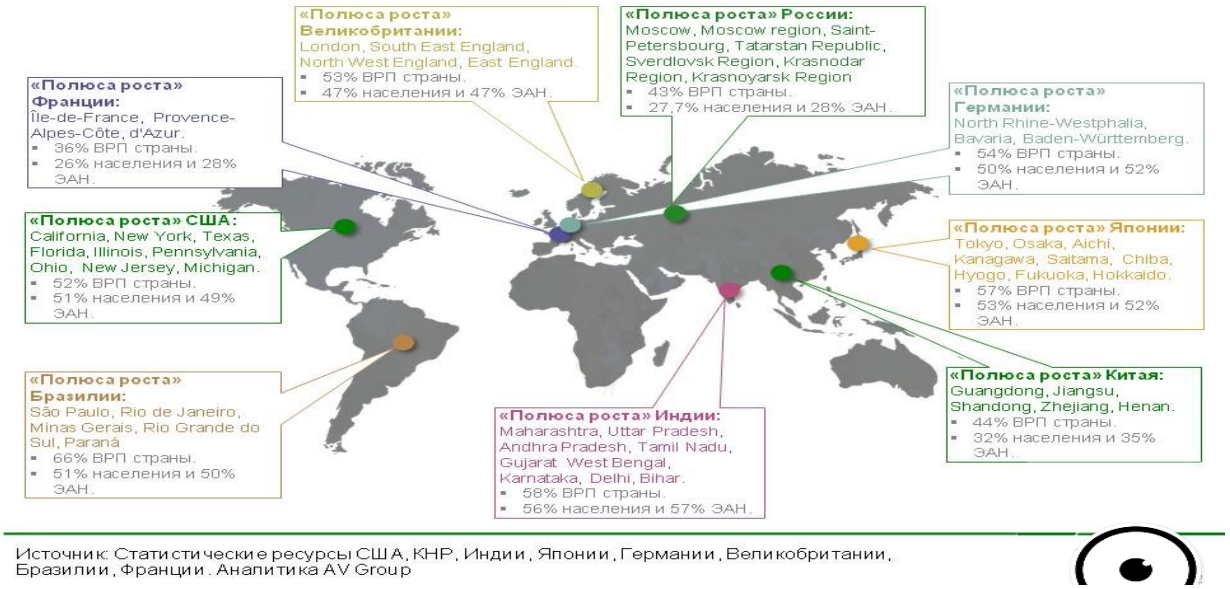


The scheme of territorial development and deployment of productive forces Kazakhstan is at the stage of transition to an industrial-innovative form of development. The progress of the ongoing reform in the country shows that interregional differentiation and transport problems continue to adversely affect the growth rate of GRP, the volume of FDI, the export potential of SMEs and private entrepreneurship, and the integrated use of the economic potential of the regions [5].

The identification of "growth poles" is a key model for the development of countries that are distinguished by advanced levels of economic and social development.

Foreign experience shows that the innovation policy of the region, especially in that part related to the material production industry, and in particular the production of building materials, should be formed taking into account the general resource capabilities of the region. At the same time, in the development of innovation policy, a special place is occupied by the general analysis of the resource potential of the region as a starting point for assessing the material prerequisites for the innovative development of enterprises in the region. An assessment of the region's resource potential is a quantitative characteristic that takes into account the main macroeconomic indicators, the saturation of the territory with production factors (natural resources, energy resources, production and transport infrastructure, labor force, etc.),

innovative infrastructure and its development level, consumer demand for products inside and outside the region, etc [6-7].



Source: Static Resource USA, CHR, India, Germany, UK, Brazil, Analytics AV Group.

An important component of the resource potential of the regions is its scientific and technical potential. The existing and existing system of state and non-state scientific institutions is, in essence, the basis of the innovation infrastructure, designed to provide modern scientific and technical developments and technologies to the innovation process in the region and the republic. The activities of scientific institutions are focused on four main areas:

– fundamental, applied, research and development work (R&D) in the field of priority areas for the development of science and technology and republican and sectoral level;

– participation in the development and implementation of republican and sectoral scientific and technical programs;

– training and retraining of highly qualified scientific and engineering personnel in the field related to the research topic of a particular scientific institution.

Depending on the criterion by which the classification is carried out, there are several groups of typification of innovation. The classification of innovations by the criterion of their importance in the development of the productive forces of society provides for:

– basic innovations are those innovations that realize the largest inventions and become the basis of revolutionary upheavals in technology, the creation of new industries;

– radical (or fundamental new) innovations, as a result of which there is a change of generations of technology or the emergence of new technology within the industry while maintaining the original fundamental scientific principle;

– medium (or combinatorial) innovations that realize the average level of invention and know-how, allowing to create a basis for the development of new models of this generation of technology, significantly improve the basic technical and economic characteristics of products, improve the existing technology;

– false innovations (or pseudo-innovations) aimed at mastering new models of technology or improving production methods when this generation of equipment or technology is already obsolete. In general, false innovations always lead to technical regression and cannot be confused with actual innovations.

The mechanism organizing the innovative development of enterprises is targeted innovation programs. In their opinion, the innovative target program is a set of measures (actions) aimed at achieving the goals of innovative development. An enterprise may have several innovative programs, each of which

is oriented toward achieving a specific goal, or one comprehensive targeted innovation program consisting of several subprograms may be developed [8-10].

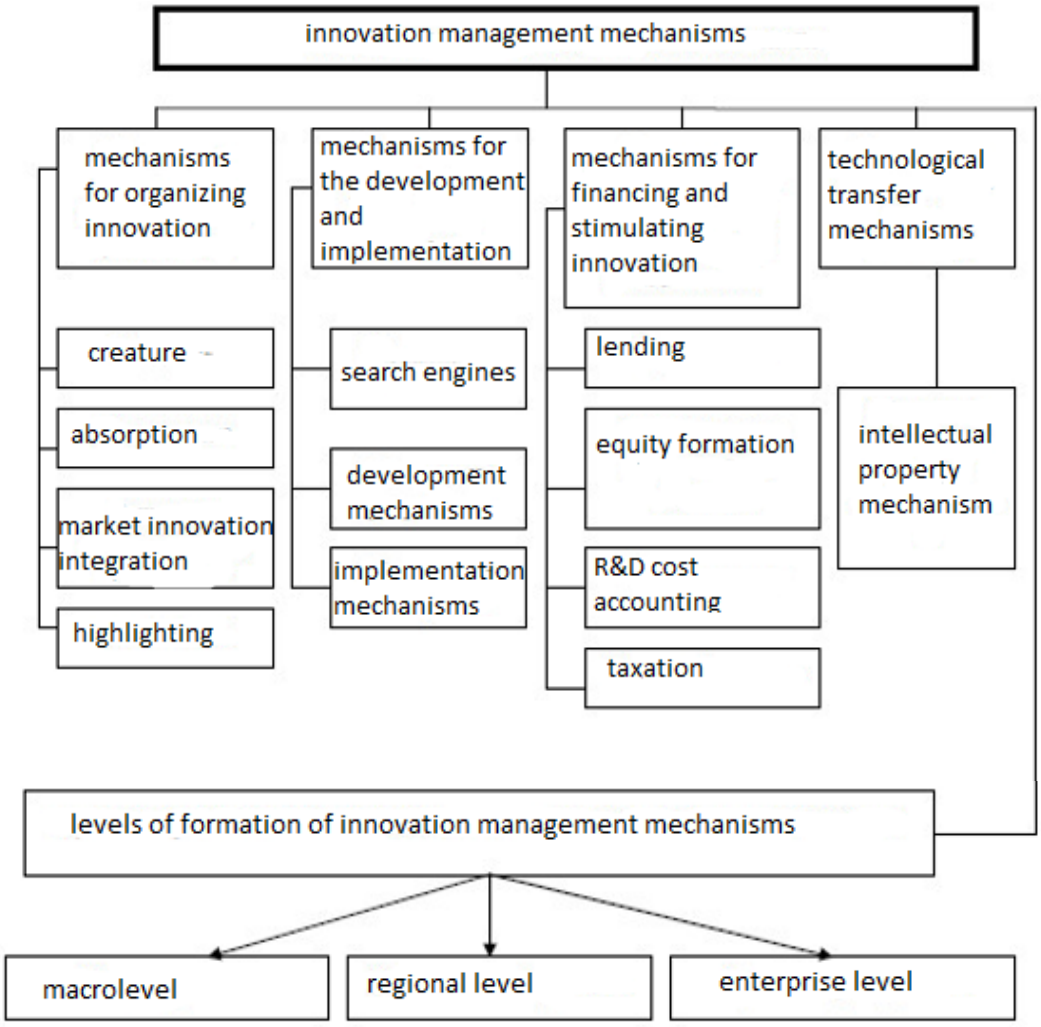


Figure 1 - The system of innovation management mechanisms

The mechanism of state financing and stimulation of innovative (scientific and technical) activities involves:

– the formation of a system of republican and regional programs in priority

areas of scientific and technological progress with the legislative establishment of the procedure for their selection and financing;

– selection of projects in priority areas of scientific and technological

progress, the list and mechanism of state financing of which are established by law;

– shared participation of the republican and local budgets, extra-budgetary

funds and commercial structures (innovative funds, commercial banks, insurance and pension funds, mutual and investment funds, etc.) in investments in scientific and technical programs and projects with the aim of sharing financial risk;

– creating a consortium of investors for each program (priority innovative

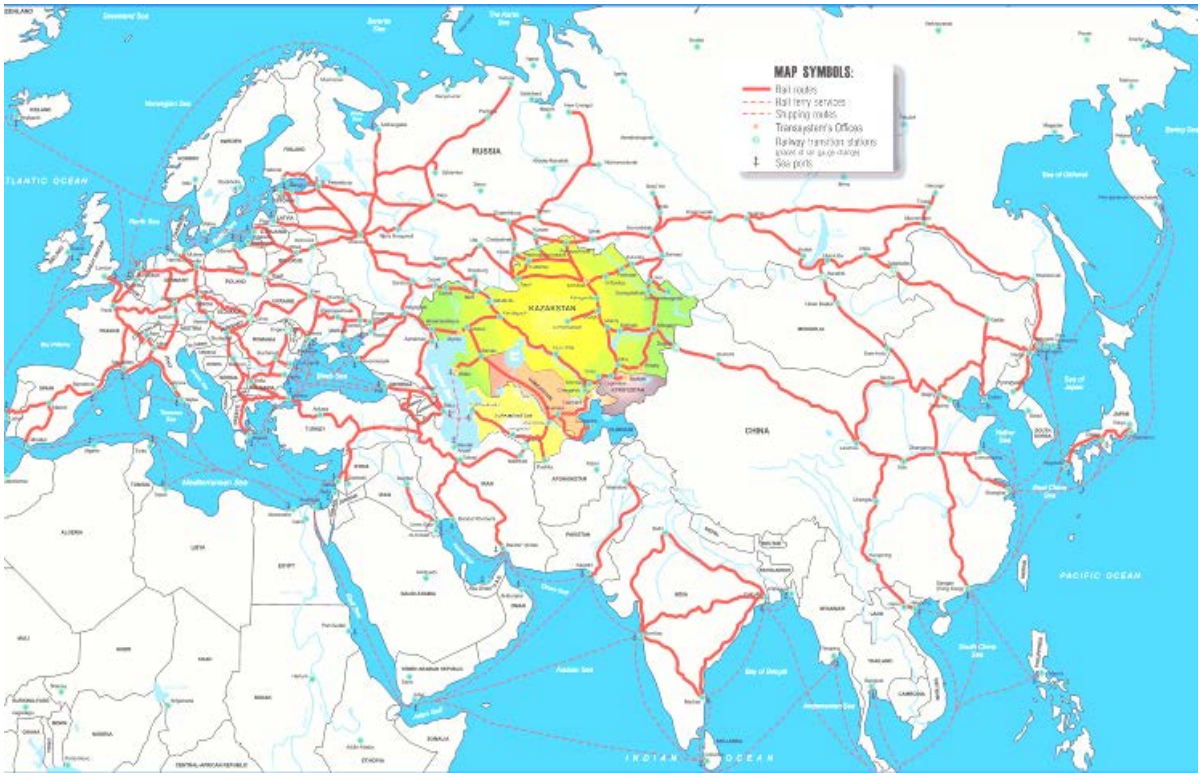
project), including expert, legal and marketing services, innovative commercial banks, insurance companies, information centers, a network of intermediary and consulting firms, technology parks and technology cities, business incubators, small innovative enterprises, venture capital and leasing firms, scientific and technical centers;

– Creation of a system of competitions, tenders, grants to attract foreign investment;

– development of consulting services for the preparation of justifications and business plans for important innovative projects and technologies;

– the creation of republican and regional innovative companies with the participation in the formation of their authorized capital of the state and developers capable of acting as general contractors for innovation and investment projects [11-13].

Foreign experience indicates that a developed entrepreneurial sector is an important factor determining the effectiveness of a national innovation system. However, in Kazakhstan, the entrepreneurial sector is characterized by a low level of innovation activity, which, in turn, leads to a low share of innovative products in Kazakhstan's GDP



After the crisis of 2010, characterized by a fall in business and investment activity of business entities, there has been a steady upward trend in the share of innovative products in GDP. However, it is insignificant - less than 1%.

The development of an innovative economy in the Republic of Kazakhstan is largely determined by its financial support and in the initial stage needs substantial state support. The need to develop new technologies and innovations, increasing the demand for innovative products are a requirement of the present.

Today, Kazakhstan has created a number of institutions that coordinate and support innovation. These institutions are involved in financing and managing innovation through various financial instruments.

In addition, a number of state concepts for regulating and stimulating innovation were adopted in the republic, the creation of a national innovation system was announced, a number of mechanisms for state financing of innovations were created, including the creation of an innovation infrastructure.

Meanwhile, the development of the innovation system, despite the efforts of the state, is constrained by a number of factors. So, in the field of development of innovative activity in the region the following problems were identified that affect the change in its structure:

– insufficient supply of manufacturing industries with components of domestic production;
– general technical and technological backwardness of enterprises;
– low innovation activity of enterprises;
– low investment attractiveness of non-primary manufacturing industries;

– shortage of cash resources, affecting the innovative activity of production in the real sector of the economy;

– the limited connection between science and production and the lack of effective mechanisms for bringing scientific and technological products to the level of goods;

– lack of a flexible system of training and retraining of specialists and workers;

– underdevelopment of the sphere of small innovative enterprises that have the necessary flexibility for rapidly changing market conditions;

– underdevelopment of innovation infrastructure.

A significant problem restraining innovative development in the region is the growing depreciation of fixed assets in economic sectors, especially in industries outside the mining and metallurgical complex.

For the successful implementation of innovative activities in the region, the innovative sphere is necessary as a set of organizations and enterprises that provide and carry out innovative activities and meet the requirements and characteristics of innovative development.

Given the current state of innovation in the regions of the Republic of Kazakhstan, four main areas of its improvement can be distinguished:

– Creation of the organizational structure of a regional innovation system.

– Integration of economic entities in the region in the process of innovation.

– Effective use of scientific potential and high-tech “reserve” available in

Pavlodar region.

– Building and efficient use of existing production potential.

In order to achieve the goals and objectives of the innovative development of the region’s economic entities declared by the innovation policy, a diversified flexible system of tools is needed to enable the required transformation of all elements of the innovation sphere. The implementation of the process of innovative development of the region is associated with the development of a mechanism capable of restructuring all spheres of public relations in order to promote the development of an innovative economy [14].

Thus, the solution to the problem of improving the mechanism of innovative development of the region determines the need to develop methodological and analytical tools to take into account the peculiarities of territorial and economic interests, the specifics and level of development of the region, the ratio of technological structures of the economy, in order to increase the competitiveness of the regional economy as a whole.

To implement the further development of the innovation sphere, taking into account the information received on the starting conditions of the state and structure of the innovative potential of the region, it is necessary to use a number of tools to regulate the transfer process of the results of scientific and technical activities. Through the technology transfer process underlying innovation, knowledge and technology are transformed into specific new products and services, which contributes to economic growth and social needs.

The key elements of the regional mechanism for financing innovative activities are forecasting the innovative development of the region, a multi-channel financing system based on the rational distribution of financial resources from various sources of financing between all stages of the innovation process, and a system for adjusting the financial mechanism taking into account the current situation in the regional innovation sphere [15].

Thus, the following set of tools should be included in the mechanism of innovative development of the region, which is the basis of the studied model:

– assessment of the innovative potential of the region;

– development of mechanisms for transferring the results of scientific and

technical activities;

– development of a mechanism for financing innovative activities.

The result of the functioning of this mechanism should be a comprehensive, targeted modernization of the regional innovation sphere, expressed in improving its institutional environment, infrastructure, financing system, in strengthening the socio-cultural foundation and the formation of effective management levers.

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ИННОВАЦИЯЛЫҚ ЭКОНОМИКАНЫҢ ДАМУ ЖӘНЕ ӨСУ ПОЛЮСТЕРІ: ҚАЗАҚСТАН ЖӘНЕ ШЕТЕЛДІК ТӘЖІРИБЕ

Аннотация. Мақалада полюстердің инновациялық дамуы талқыланады, сонымен қатар аймақтардың инновациялық қызметіне жан-жақты баға беріледі. Бұл зерттеу инновациялық белсенділіктің артуы экономикалық өсуді қамтамасыз ететінін көрсетеді. «Өсім нүктелері», оны компания деп те түсіну керек, «әуестік эффектісі» аймақтағы немесе елдегі «даму аймақтарын» құрайды.

Қазіргі уақытта аймақты экономикалық жүйе ретінде басқарудың көптеген теориялары мен тұжырымдамалары бар. Олардың негізінде үдерістік, жүйелік, ситуациялық, бағдарламалық-мақсатты, жобалық-жоспарлы, инновациялық көзқарастар жатыр. Олардың барлығы экономикалық проблемаларды шешуге бағытталған және елдің және оның өңірлерінің әлеуметтік-экономикалық дамуының ұзақ мерзімді болжамдарын әзірлеумен байланысты: дәл осы аумақта өндірістің неғұрлым қолайлы жағдайларын іздеу, ресурстардың барлық түрлерін біріктіру мүмкіндігі, экономикалық өсуді қарқындату мақсатында олардың сапалы кооперациясы.

Кең таралған және сол уақытта зерттелмеген теориялардың бірі – өсу полюстерінің теориясы. Ғалымдардың пікірінше, өңірлік экономикада өсу полюстерінің теориясы – бұл нарықтық кеңістікте шаруашылық қызметтің әртүрлі салаларын орналастырудың біркелкі еместігін теориялық тұрғыдан түсіндіретін тұжырымдама. Осы тұжырымдамаға сәйкес, аймақ салалары арасында пропульсивті (серпінді дамып келе жатқан , жетекші) салалар бөлінеді. Олар, ең алдымен, қосалқы, қосымша және қызмет көрсететін өндірістер есебінен, өсу полюстерін көрсете отырып, іргелес аумақтардың дамуын ынталандырады, ал олардың белгілі бір аудандарда шоғырлануы даму орталықтарын құруға алып келеді. Мұндай орталықтар тиісті кәсіпорындарды оңтайлы орналастыру және әртүрлі қаржыландыру көздерінің (мемлекеттік салымдар, жеке капитал, субсидиялар, салық жеңілдіктері және т.б.) көмегімен олардың шаруашылық қызметі үшін қолайлы жағдайлар жасау жолымен стихиялы түрде де, мақсатты түрде де дами алады. Өңірде пропульсивті сала дамығаннан кейін, оның одан ары кешенді түрде дамуы, әдетте, нарықтық экономика тетіктерінің әсерімен жүреді.

Түйін сөздер: инновациялық және технологиялық өсу полюсі, индустриялық өсу полюстері, агроөнеркәсіптік өсу полюстері, перспективалы өсу полюстері, өсу полюстері туралы түсінік, интеграция, инновация процестері.

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ПОЛЮС РАЗВИТИЯ И ТОЧКИ РОСТА ИННОВАЦИОННОЙ ЭКОНОМИКИ: КАЗАХСТАН И ИНОСТРАННЫЙ ОПЫТ

Аннотация. В статье рассматривается инновационное развитие полюсов, а также ведётся мониторинг комплексной оценки инновационной деятельности регионов. Данное исследование свидетельствует о том, что усиление инновационной активности дает экономический рост. «Точки роста», под которыми следует понимать и фирму, «эффектом увлечения», образуют "зоны развития" в регионе или стране.

В настоящее время существует множество теорий и концепций управления регионом как экономической системой. В их основе лежат такие фундаментальные подходы, как процессный, системный, ситуационный, программно-целевой, проектно-плановый, инновационный. Все они направлены на решение экономических проблем и связаны с разработкой долгосрочных прогнозов социально-экономического развития страны и ее регионов, поиск наиболее благоприятных условий производства именно на данной территории, возможности объединения всех видов ресурсов, качественной их кооперации с целью интенсификации экономического роста.

Одной из распространенных и в то же время до конца неизученных теорий является теория полюсов роста (ПРТ). По мнению большинства ученых, в региональной экономике теория полюсов роста – это концепция, теоретически объясняющая неравномерность размещения различных отраслей хозяйственной деятельности в рыночном пространстве. Согласно этой концепции, среди отраслей региона обязательно выделяются пропульсивные (динамично развивающиеся, ведущие) отрасли. Они стимулируют развитие прилегающих территорий, прежде всего, за счёт вспомогательных, дополнительных и обслуживающих производств, представляя собой полюсы роста, а их концентрация в определенных районах ведет к

образованию центров развития. Такие центры могут развиваться как стихийно, так и целенаправленно, путём оптимального размещения соответствующих предприятий и создания благоприятных условий для их хозяйственной деятельности с помощью различных источников финансирования (государственных вложений, частного капитала, субсидий, налоговых льгот и др.). После развития в регионе пропульсивной отрасли дальнейшее его комплексное развитие происходит, как правило, под действием механизмов рыночной экономики

Ключевые слова: инновационно-технологический полюс роста, индустриальные полюсы роста, агроиндустриальные полюсы роста, перспективные полюсы роста, концепция полюсов роста, интеграция, процессы инновационной деятельности.

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MECHANISM OF EFFECTIVE MANAGEMENT OF INDUSTRIAL ENTERPRISES

Abstract. An important condition for sustainable development of industrial enterprises is the attention to the issues of management efficiency, what implies a change of management methods and necessitates the revision and updating of management tools for the development of industrial enterprises that are appropriate to the market situation and allow taking into account the variety of challenges faced by industry enterprises. These methods and tools can be considered as elements of the industrial business system, which are essentially engines of development of enterprises in the industry.

Increasing the contribution of the qualitative component of economic growth through the introduction of effective management tools in the practice of industrial enterprises becomes an urgent task, since the use of modern management tools is currently an important factor in the development of any enterprise.

In the current economic conditions, in order to develop approaches to create methodological tools for innovative development, it is necessary to identify effective economic and administrative mechanisms that could accelerate the implementation of structural adjustment of the country's economy, increase the level of competitiveness and economic efficiency of production in high-tech industries, facilitate import substitution of the electronic component base and individual means of production purchased abroad in all sectors of the economy of the Republic of Kazakhstan.

The relevance of the study is determined by the need for a theoretical and conceptual justification for changing attitudes to the formation of effective tools for managing the development of industrial enterprises, focused on the continuous use of organizational transformation opportunities that ensure a balance of interests of business participants and contribute to the sustainable maximization of business value.

The article presents review of a conceptual approach to the formation of an integrated efficiency management mechanism, formulated on the basis of a systematic study of the essential properties and methodological principles that define the category "efficiency of the enterprise management system". The task of maximizing the economic result on the basis of balanced management in all interrelated areas of efficiency growth has been formulated. The features that are associated with the identification of effective management tools for industrial enterprises have been examined. The properties of general features of management tools have been highlighted, the main characteristics of enterprise management tools have been formed, and the mechanism of effective enterprise management has been presented.

Keywords: management efficiency, economic result, management system, industrial enterprise management mechanism, effective management tools, balanced management, management tools, structural and logical model.

Introduction. At the present time, in the conditions of development of the market economy, industrial enterprises are increasingly experiencing the outcomes of the tension and instability of the external environment, which increases the need of enterprises engaged in production activities to adapt to external changes as well as to increasingly fierce competition and change their orientation to fundamentally new market needs. As a result, industrial enterprises are forced to constantly improve the management system, and first of all, to introduce certain tools to manage enterprises.

Parameters of the external and internal environment of the enterprise, industry specifics and features of the technological process significantly affect the selection of tools and how effectively they will be applied. The features discussed in this directly or indirectly paper affect the process of selecting management tools and allow selecting effective management tools for industrial enterprises in a highly competitive environment.

Main body. In order to understand the management mechanism of an industrial enterprise, it is necessary to present the process of forming tools (figure 1) [1].

For an in-depth understanding of the essence of the formation of management tools for an industrial enterprise, there is a need to determine the classification of the features of this phenomenon.

Considering the features that are associated with the identification of effective management tools for industrial enterprises, it is necessary to note the distinctive points that are characteristic only for industrial tools. Studying the analysis of foreign and domestic experience in the development of management systems for industrial organizations, there are two main groups: general features and specific features.

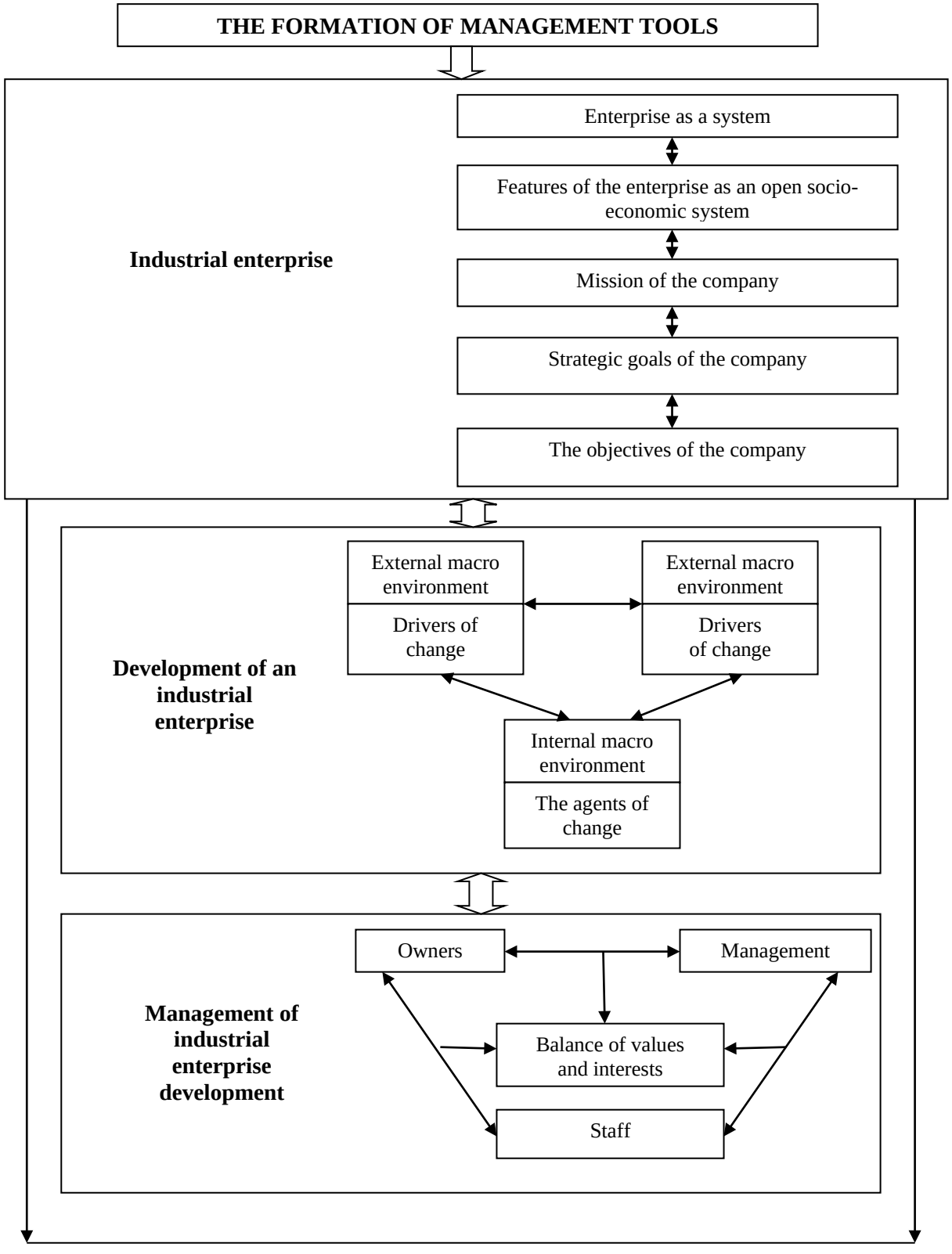
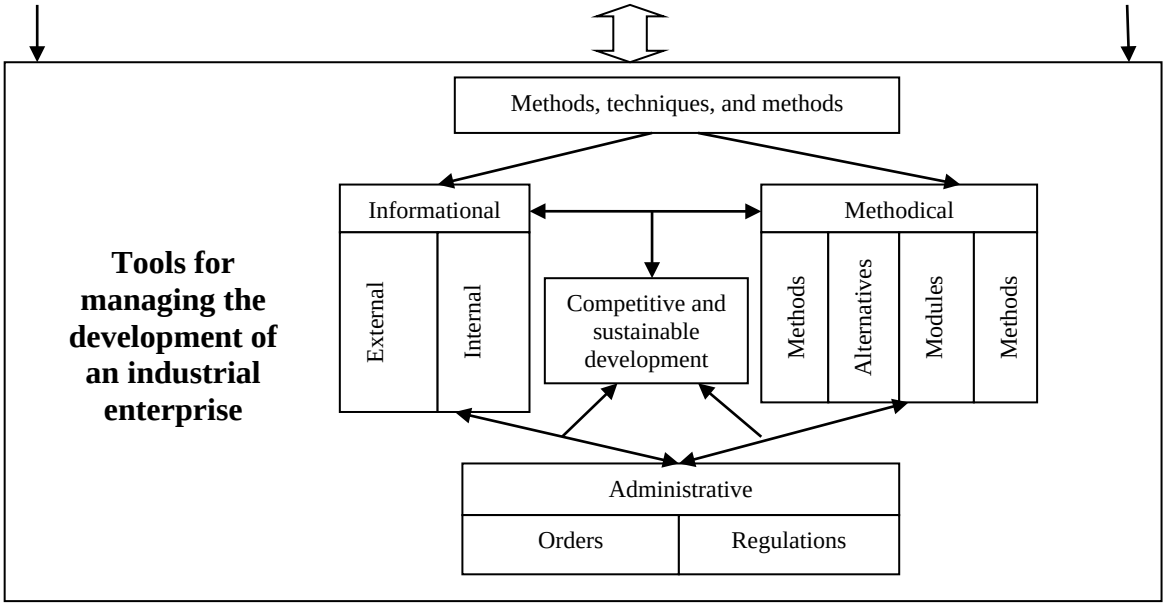


Figure 1 - Conceptual diagram of the process of forming industrial enterprise management tools [compiled by the author]



Continuation of figure 1. Conceptual diagram of the process of forming industrial enterprise management tools [compiled by the author]

Considering the general features, it should be noted that they combine the characteristic properties that are inherent in absolutely all enterprise management tools.

The following properties of common features of management tools are highlighted:

– Management tools that are implemented by the management entity, forming a certain management vector (impact) on the management object;

– Management tools must be in full compliance with the company's development strategy and mission;

– Management tools must be linked horizontally so that management can meet its goals and objectives;

– Enterprise management tools have a certain set of characteristics.

The author has formed the main characteristics of enterprise management tools:

– the management object is an enterprise itself, which is directed by the management vector based on the management tool;

– management subject is a manager who directly makes a managemen decision, thereby influencing the object, i.e. the organization, with the help of a management tool;

– time is an interval during which the subject of management is affected by the corresponding enterprise management tool. In this case, the beginning and end of this process must be determined;

– scale is what determines the quantitative characteristics of the size of the management object, which is directed by the management impact. For example, a shop, a division, the entire enterprise, etc.;

– management goal is a planned result of the organization's activities in a specific time period;

– resource intensity is an ability of an organization to apply and effectively use the organization's material, financial, human, and other resources using management tools;

– degree of innovation is a level of implementation of innovations using management tools aimed at solving fundamentally new production tasks [2].

When developing a management mechanism based on the formation of management tools, it is necessary to clearly describe these tools, and the effectiveness of their application may be different and depend on the factors that characterize the external environment of the organization.

When considering the main stages of forming a management mechanism, it should be remembered that an important element in the selection of effective tools will be indicators that allow a manager to determine the effectiveness of a particular tool within the relevant organization. How well the management tools are selected and used will depend on the level of their effectiveness. As a result, industry features and the specifics of the organization itself will be an integral part of the effectiveness of management tools.

All aspects mentioned above affect the key stages of the enterprise management mechanism based on the formation of industrial enterprise management tools (figure 2).

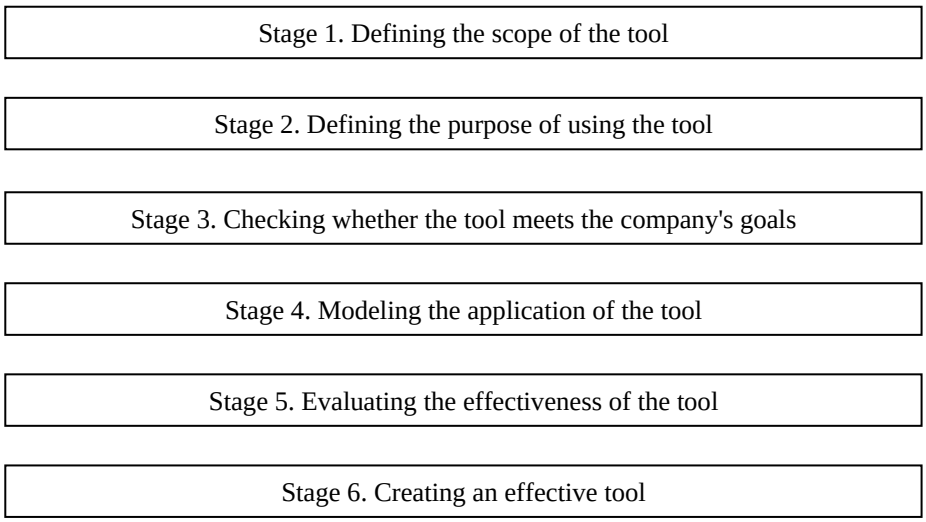


Figure 2 - Key stages of the enterprise management mechanism based on the formation of industrial enterprise management tools

Currently, the competitive environment is developing at a very rapid pace. In such conditions, the selection of the most effective management tools for the organization is of paramount importance.

Before proceeding to the formation of the enterprise management mechanism, it is necessary to determine the information base this tool will be formed on. Information base must include data about the company, such as: mission statement, strategic objectives, development tasks; the system of enterprise management, its organisational structure, business processes in it; the internal and external environment of the enterprise; the resources that the company has [3].

Figure 3 presents the mechanism for effective enterprise management. *At the first stage* of forming an effective management mechanism, the area where the tool is planned to be used is determined. To do this, the manager needs to analyze the area in which he or she wants to improve the efficiency of the enterprise. In the process of analyzing problem areas, an element that will later be subject to management influence through management tools is identified. The following areas are the main where management tools are most often used: finance, personnel, production, market, supply, and R&D. Table 10 presents areas of application and tools that are most common and effective for each of these areas. If it is difficult to take one area and it is necessary to implement management tools in several areas in order to solve the set of tasks, it is necessary to decompose the tasks that need to be solved again. At the same time, it is important to take into account the company's industry affiliation and its specific features. Having fixed the area for which the management tool is being formed, the manager proceeds to the next stage.

At the second stage, the effective management mechanism requires the company's managers to determine the purpose of using a particular tool. This stage is extremely important, as it will be used to evaluate the effectiveness of a particular tool or combination of tools.

To solve the tasks of improving the efficiency of the enterprise, it is possible to set a goal with the determination of different criteria for different periods in which it is expected to track simulated or real results.

At the third stage, the tools available in the management arsenal (taking into account the selected area) of industrial enterprises are checked on compliance with the set goals.

The tools selected in accordance with certain goals are recorded for the next stage of the mechanism for creating effective management tools.

An important *fourth stage* is modeling the use of each of the tools individually and their combinations [4].

Model "as-is" present impression of the real state the organization is currently in (analysis of levels of management, organizational structure, internal communication in the organization, the technology used and the level of automation of business processes, etc.). This model reveals all internal processes from within and allows the manager to evaluate the work of the organization from the point of view of system

analysis and using information systems identify obvious flaws and form methodological recommendations for changing the current situation towards its improvement.

To form an "as is" model, it is necessary to consider the management of an industrial enterprise in the previously specified areas (finance, personnel, market, production, supply, R&D) in the context of the following activities suh as investment, innovation, production, marketing, and financal activities.

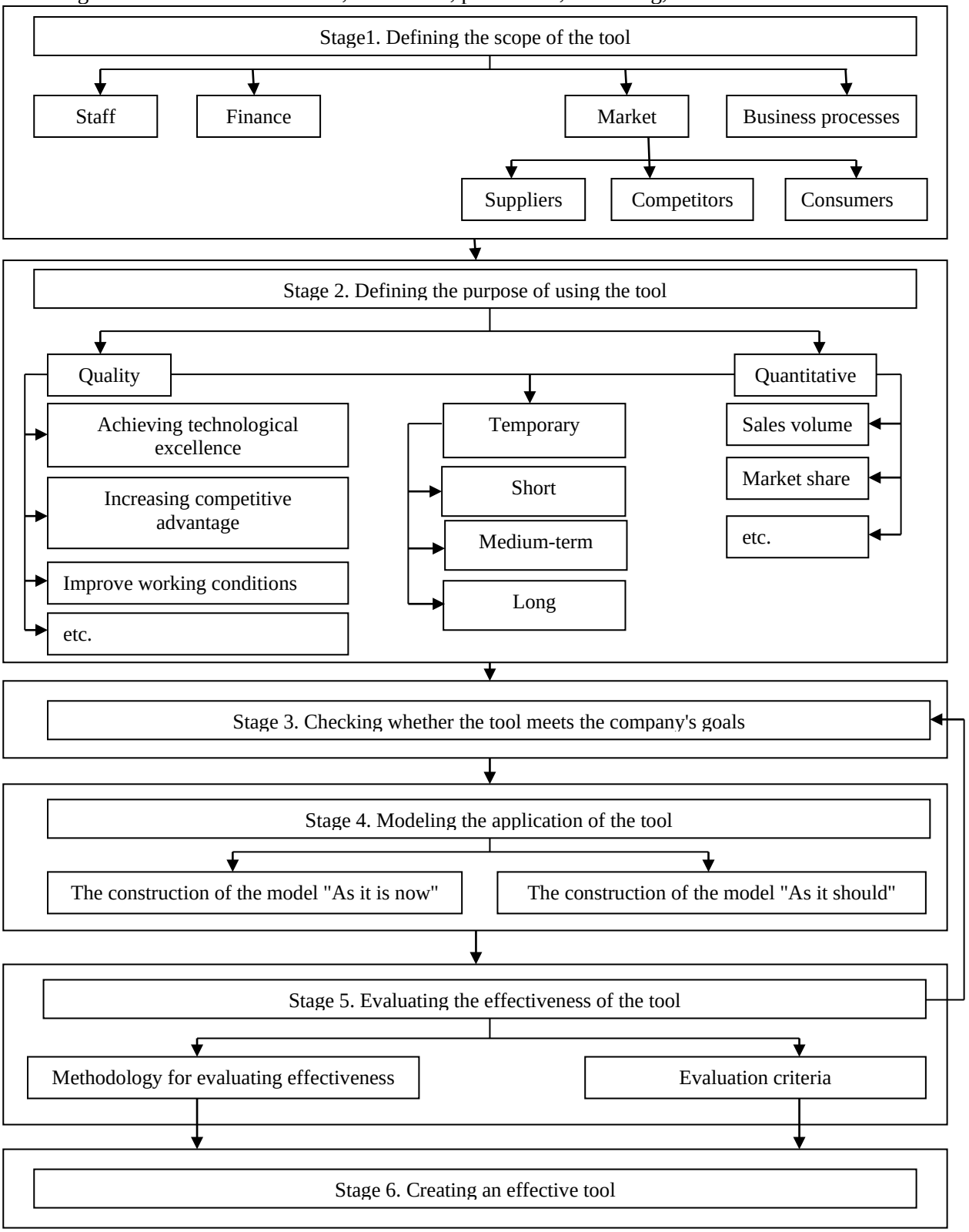


Figure 3 - Mechanism for effective management of an industrial enterprise (compiled by the author)

In the case of modeling the use of management tools, it is recommended to use structural and logical modeling. Correct construction of the model makes it possible for management to obtain the necessary information for further actions. The modeling process is an iterative process of abstracting, building a model, analyzing it, and interpreting it, supplemented by evolving management capabilities, designed to facilitate the decision-making process. The problem statement should include identification of possible solutions and a method for measuring their effectiveness [5].

Figure 4 shows a structural and logical model of the management system of an industrial enterprise.

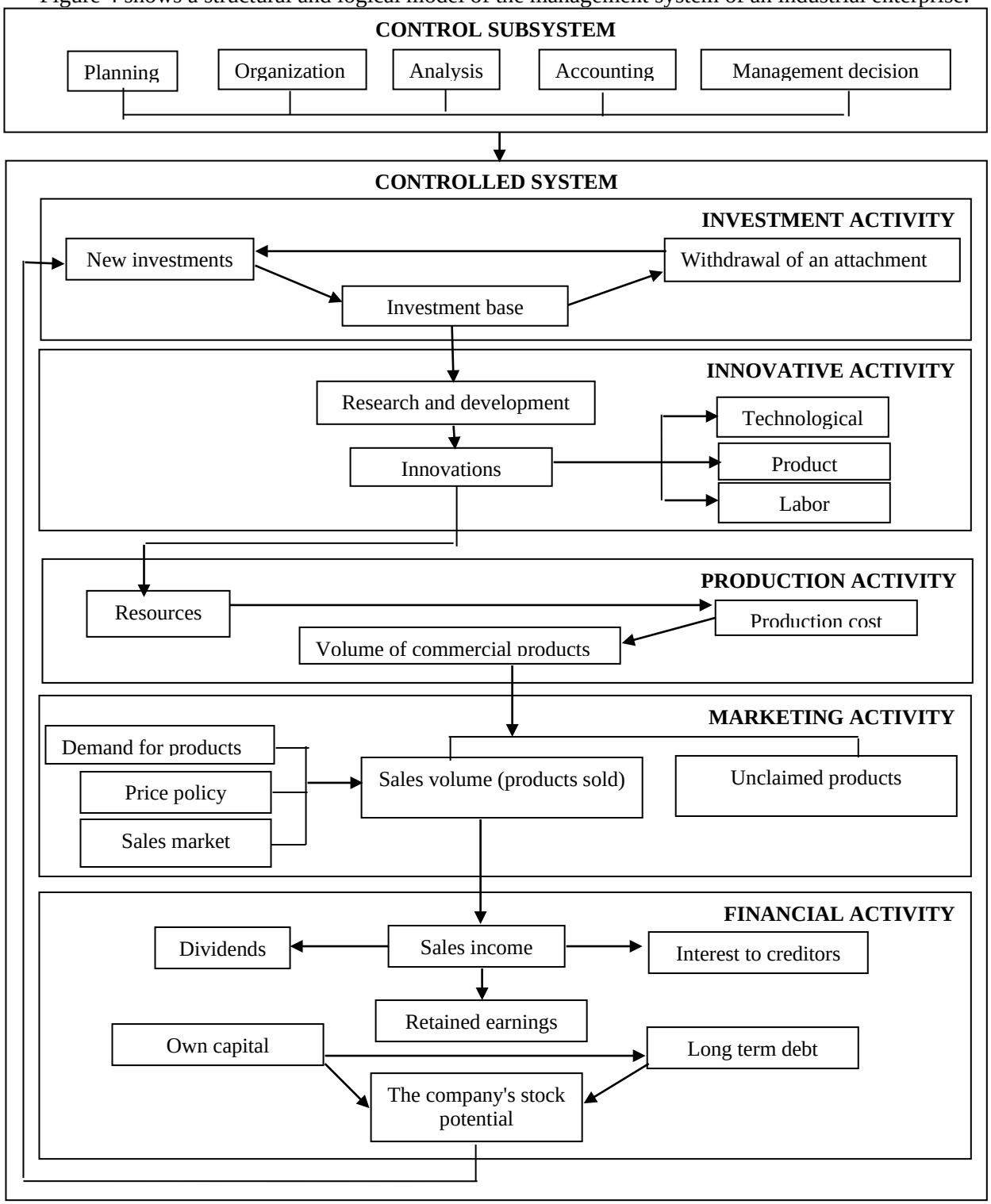


Figure 4 - Structural and logical model of the management system of an industrial enterprise (compiled by the author)

In order to assess the effectiveness of investment activities of industrial enterprises, it is necessary to analyze the following indicators: 1) based on accounting: the payback period of investments, "return on capital", accumulated cash flow; 2) based on discounting: net present value, internal rate of return, discounted payback period of investments, the return index [6].

In order to assess the effectiveness of innovation activities of an industrial enterprise, it is necessary to analyze such indicators as: the amount of enterprise expenses for R&D; the acquisition of objects of intellectual property and financing of inter-firm research projects; the composition and number of employees, temporary groups, divisions and inter-firm associations engaged in R&D; the volume of new technologies acquired by the enterprise within the framework of technological transfer systems; the scale and quality level of the material base of the enterprise's research activities, etc.; indicators of duration of individual stages of innovation development; the dynamics of updating of the product portfolio of the company; the amount of new technology transferred by the company under the systems of technology transfer; the volume of new products exported by the enterprise; number of new technologies and types of products implemented over the period, etc.

The effectiveness of marketing activities of enterprises is characterized by the following indicators: market indicators (market growth rate; market share; market demand potential, etc.); competitiveness indicators (relative product quality; relative price; brand awareness, etc.); customer indicators (customer satisfaction; customer retention; customer loyalty, etc.)

The enterprise management tools selected at the fifth stage are recommended for further real application in the company's work, and the transition to the sixth stage takes place.

Thus, the proposed mechanism for effective management based on the formation of management tools for an industrial enterprise involves identifying the most effective management tools for this enterprise, which will ensure the adaptation of the enterprise's activities to changes in the competitive environment and will allow the enterprise to take a convenient position in order to effectively influence competitors and, thereby, defend its own interests.

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ӨНДІРІСТІК КӘСІПОРЫНДАРДЫ ТИІМДІ БАСҚАРУ МЕХАНИЗМІ

Аннотация. Өнеркәсіп кәсіпорындарын тұрақты дамытудың маңызды шарты – басқару тиімділігінің мәселелеріне назар аудару, бұл басқару әдістерін өзгертуді болжайды және өнеркәсіп кәсіпорындарын дамытуды басқару құралдардын қайта қарау мен жаңарту, нарықтық жағдайға барабар және сала кәсіпорындарға тап болатын сын-қатерлердің сан алуандығын ескеруге мүмкіндік береді. Бұл әдістер мен құралдарды өнеркәсіптік кәсіпкерлік жүйенің элементтері ретінде қарастыруға болады, олар шын мәнінде сала кәсіпорындарын дамытудың қозғаушы күші болып саналады.

Өнеркәсіптік кәсіпорындардың жұмыс тәжірибесіне басқарудың тиімді құралдарын енгізу негізінде экономикалық өсудің сапалы құрамдас бөлігінің үлесін ұлғайту өзекті міндет болып отыр, өйткені қазіргі заманғы басқару құралдарын қолдану қазіргі уақытта кез келген кәсіпорынды дамытудың маңызды факторы болып саналады.

Қалыптасқан экономикалық жағдайларда инновациялық дамудың әдістемелік құралдарын құру бойынша тәсілдерді әзірлеу үшін ел экономикасын құрылымдық қайта құруды жүзеге асыруды жылдамдататын тиімді экономикалық және әкімшілік тетіктерді айқындау, өнеркәсіптің ғылымды қажетсінетін салаларындағы өндірістердің бәсекеге қабілеттілігі мен экономикалық тиімділігі деңгейін арттыру, ҚР экономикасының барлық секторларында шетелдерде сатып алынатын электрондық-құрамдас база мен өндірістің жекелеген құралдарын импортты алмастыруды жүзеге асыру қажет.

Зерттеудің өзектілігі бизнес-қызметке қатысушылардың мүдделерінің тепе-теңдігін қамтамасыз етуге мүмкіндік беретін және бизнес құнының тұрақты жоғарылауына ықпал ететін ұйымдық қайта құрулардың мүмкіндіктерін үздіксіз пайдалануға бағытталған өнеркәсіптік кәсіпорындардың дамуын басқарудың тиімді

құралдарын қалыптастыруға көзқарастарды өзгертудің теориялық-тұжырымдамалық негіздемесінің қажеттілігімен анықталады.

Мақалада "кәсіпорынды басқару жүйесінің тиімділігі" санатын анықтайтын мәндік қасиеттер мен әдіснамалық принциптердің жүйелік зерттеу негізінде қалыптасқан тиімділікті басқарудың кешенді механизмін құруға концептуалды көзқарастар қарастырылған. Тиімділіктің өсуінің барлық өзара байланысты бағыттары бойынша теңгерімді басқару негізінде экономикалық нәтижені барынша арттыру міндетін қою орындалды. Өнеркәсіптік кәсіпорындарды басқарудың тиімді құралдарын анықтаумен байланысты ерекшеліктер қарастырылды. Құралдардың, басқарудың жалпы ерекшеліктерінің қасиеттері анықталды, кәсіпорынды басқару құралдарының негізгі сипаттамалары қалыптастырылды, кәсіпорынды тиімді басқару механизмі берілген.

Түйін сөздер: басқарудың тиімділігі, экономикалық нәтиже, басқару жүйесі, өнеркәсіптік кәсіпорынды басқару механизмі, басқарудың тиімді құралдары, теңгерімді басқару, басқару құралдары, құрылымдық-логикалық модель.

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МЕХАНИЗМ ЭФФЕКТИВНОГО УПРАВЛЕНИЯ ПРОМЫШЛЕННЫМИ ПРЕДПРИЯТИЯМИ

Аннотация. Важным условием устойчивого развития промышленных предприятий является внимание к вопросам эффективности управления, что предполагает изменение методов управления и обуславливает потребность пересмотра и обновления инструментов управления развитием промышленных предприятий, адекватных рыночной ситуации и позволяющих учитывать многообразие вызовов, с которыми сталкиваются предприятия отрасли. Данные методы и инструменты можно рассматривать в качестве элементов промышленной предпринимательской системы, которые по сути своей являются двигателями развития предприятий отрасли.

Увеличение вклада качественной составляющей экономического роста на основе внедрения в практику работы промышленных предприятий эффективных инструментов управления становится актуальной задачей, поскольку применение современных управленческих инструментов является в настоящее, время важным фактором развития любого предприятия.

В сложившихся экономических условиях для разработки подходов по созданию методического инструментария инновационного развития необходимо выявить эффективные экономические и административные механизмы, которые могли бы ускорить осуществление структурной перестройки экономики страны, повышению уровня конкурентоспособности и экономической эффективности производств в наукоемких отраслях промышленности, осуществлению импортозамещения электронно-компонентной базы и отдельных средств производства, закупаемых за рубежом во всех секторах экономики РК.

Актуальность исследования определяется необходимостью теоретико-концептуального обоснования изменения взглядов на формирование эффективных инструментов управления развитием промышленных предприятий, ориентированных на непрерывное использование возможностей организационных преобразований, позволяющих обеспечить сбалансированность интересов участников бизнес-деятельности и способствующих устойчивой максимизации стоимости бизнеса.

В статье рассмотрен концептуальный подход к построению комплексного механизма управления эффективностью, сформулированный на основе системного исследования сущностные свойства и методологических принципов, определяющих категорию «эффективность системы управления предприятия». Выполнена постановка задачи максимизации экономического результата на основе сбалансированного управления по всем взаимосвязанным направлениям роста эффективности. Рассмотрены особенности, которые связаны с выявлением эффективных инструментов управления промышленными предприятиями. Выделены свойства общих особенностей инструментов, управления, сформированы основные характеристики инструментов управления предприятием, представлен механизм эффективного управления предприятием.

Ключевые слова: эффективность управления, экономический результат, система управления, механизм управления промышленным предприятием, эффективные инструменты управления, сбалансированное управление, инструменты управления, структурно-логическая модель.

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INNOVATION PROJECTS AS A BASE OF ECONOMIC DEVELOPMENT

Abstract. The relatively weak support of technological enterprises, especially new ones, limits the efficiency of support measures oriented on its further development. Therefore, the State should interfere at the early stage to ensure the research and development of new projects having opportunities for further growth under the simultaneous control for funds not to be allocated for projects having no commercial potential. The support of the innovative projects favors the development and distribution of innovations, stimulates the innovative activity of enterprises and enhances the competitiveness of economy. The paper presents the critical analysis of the innovative projects support system in Kazakhstan. The paper provides the brief characteristics of the results of innovative policy of the country, considers the main instruments of the innovative projects support. Special attention in the paper is paid to the detailed analysis of the innovative projects received grant financing from the State. With that the analysis was made for quantitative indicators of innovative projects in industrial and regional fields, and for social and economic effect from its implementation. Basing on the represented material the paper provides recommendations and suggestions on improving the instruments of innovative projects stimulation in Kazakhstan and development of innovative potential of all participants of innovative process.

Key words: innovative development, innovation project, innovation grant, technological business-incubation, governmental support of innovations.

Introduction. The world economy has formed a new paradigm of the society development basing on the application of knowledge and innovations as the most important economic resources. Innovations become the strategic factors of economic growth, determine the structure of public production, and stabilize the social situation in the country.

The countries leaders of the global scientific and technical development increase the private and governmental expenditures on fundamental science and other sectors favoring the generation and diffusion of innovations in economics and social sphere. By the OECD estimates, the annual volume of the corporate sector investments to “intellectual assets” by the present moment has reached 8-11% GDP in the developed countries, and about 12% in the USA, and is almost equal to the volume of companies’ investments to the fixed assets [1].

At the same time Kazakhstan falls behind the developed countries in the field of high technologies; its economy is characterized by obsolescence of productive facilities and infrastructure. The Program on decreasing the dependence of Kazakhstan economy on raw materials does not show the expected results, and until this problem remains unsolved it will effect negatively on the development of economy especially if external conditions worsen.

Methods. The justification and argumentation of the research conclusions are based on the systematic approach using the methods of scientific abstraction, economic, logical and comparative analysis: grouping, time series, tables, graphs, combination diagrams. The empirical base of the research is represented by data of the “National Management Holding Baiterek” JSC and “Kazakhstan Institute of Industry Development” JSC, by indicators of annual ratings of relevant international organizations and other materials published in periodicals and Internet.

Results and discussion. The experience of such foreign countries as the USA, European countries, and developed countries of Asia that have been moving toward the world leadership in the field of innovative and technological development for several decades and have quite consequent and long history shows that innovations cannot be developed in the short period of time. For example, Japan, throughout its history was the country of "catching-up development" including the technological development. Only starting from the mid of XIX century the Japanese government started to take measures on narrowing the gap with the western countries. And only half a century later, after several successful reforms in the field of technologies and education development, by 1915 Japan formed the national scientific and technical system which flourishing was only due the end of XX century [2]. The experience of Finland, to a large extent, is similar to Kazakhstan features on forming the innovative economy. Before the World War II, Finland, the same as Kazakhstan today, was only the exporter of raw materials. After the War the country was the agriculture society with mainly rural population. The industrialization process, comparing to other countries, started quite late and focused mainly on a raw material industry, forest sector, and heavy industry. And, only starting from 1960-s the work on fast structural economic restructuring began [3]. As known, today Finland is one of the main leaders on technological development among the European Union countries.

Thus, there is a long way ahead of Kazakhstan before it forms a new economy based on knowledge. The necessary groundwork for this was already laid. For example, the Strategy of industrial and innovative development of RK for 2003 – 2015 has laid the bases of the national innovative system including the creation and capitalization of the corresponding institutes of development, such as the National Innovation Fund, networks of technology parks and free economic innovation zones [4]. Despite that this document was terminated with adoption of the State Program of Accelerated Industrial and Innovative Development for 2010 – 2014 its principles and approaches have determined and still determine the innovation policy of the country.

To develop the innovation activity the special financial instruments of support were broadened, new tax benefits and preferences for the innovative entrepreneurships entities were introduced [5]. Despite the State revenue contraction due to the decreasing prices for raw materials, Kazakhstan continues ensuring the stable growth of economy owing to the industrial and innovative projects.

In addition to the described above, currently the main instruments of the innovation projects support include the technological business incubation and innovation grants for researches [6].

1. Technological business incubation implies the comprehensive support from 8 regional technology parks to entities engaged in industrial and innovative activity during the first stage. From 2018 the Program of business incubation of industrial and innovative projects under the "Business road map – 2020" has been implemented. The Program includes:

• rendering of financial and methodological support to private business-incubators (50% co-financing for operating expenses, but not more than 35 million tenge per year);

• issuance of the governmental grants to residents of business-incubators on industrial and innovation projects to create a new and significantly improved product, or business-process (up to 50 million tenge and not more than 80% of justified declared expenses).

It is expected that the Program implementation will allow providing the impetus for development of business incubation ecosystem so that in future the business-incubators become self-reliant financially and have high degree of competence, and consequently will influence on increase of qualitative start-ups growth able to become large technological companies.

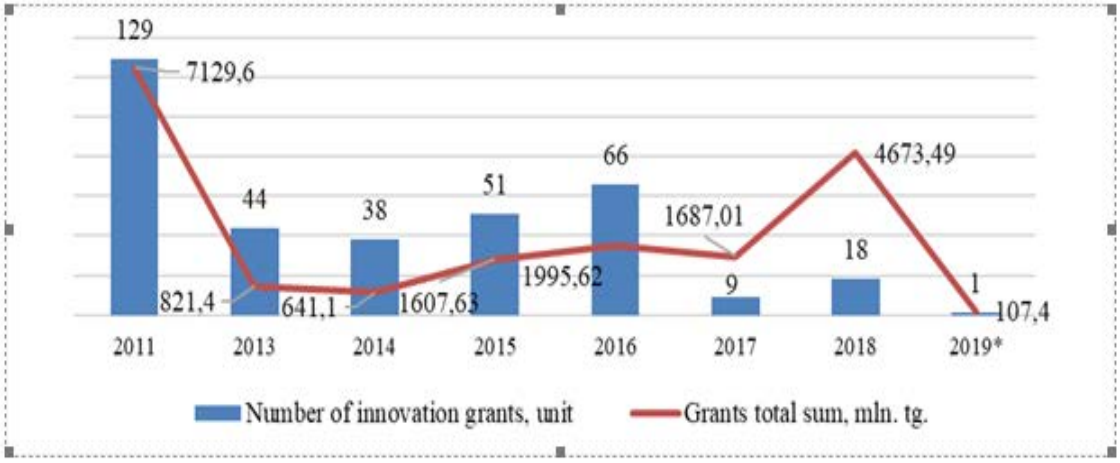
2. The allocation of innovation grants supposes the participation of the State in co-financing of innovation projects in 9 sectors (agro-industrial sector, engineering industry, mineral industry, consumer goods and wood industry, manufacture of construction materials and other non-metallic mineral products, transport and stock-keeping, information and communication, chemical and pharmaceutical industry, other sectors of industry). The grants allocated for implementation of innovation projects can be conditionally divided into three types [7]:

- Grant for commercialization of technologies that is allocated to introduce a new development that had no industrial application before and is focused on obtaining positive economic effect from own production. The sum of the grant is 200 million tenge at the most.

- Grant for technological development of operating enterprises is focused on transfer of contemporary advanced national and foreign technologies to increase the level of technological development of enterprises. The sum of the grant is no more than 400 million tenge.
- Grant for technological development of sectors is focused on technological development of operating enterprises owing to transfer of contemporary advanced national and foreign technologies to increase the level of technological development of enterprises. The sum of the grant is 500 million tenge at the most.

The innovation grants under the budget programs are allocated from 2011; the operator was "The National Agency on Technological Development". However, due to low efficiency of activity, the Agency was reconstructed to "QazTech Ventures" JSC, and the authority of innovation grants distribution, from December 13, 2018, was transferred to "Kazakhstan Institute of Industry Development" JSC (KIID) [8].

According to KIID data, from 2011 to the first half of 2019 under the budget program "Allocation of innovation grants" there were 356 Contracts concluded on allocating the innovation grants for a total amount of more than 18 663.3 million tenge (figure 1).



Note – compiled by reference [8]

Figure 1 – Number and sum of innovation projects
that received grant financing in 2014-2019 in Kazakhstan

The Figure shows negative dynamics on the number of innovation grants. In addition, 36% of the total innovation grants number was given in 2011, in further years its amount decreased significantly with minor deviations. However, the sum of grant financing of innovation projects shows another tendency. If in 2011, 7.1 billion tenge was allocated for 129 projects, in 2018 only 18 projects were financed with 4.7 billion tenge. This allows stating that in recent years the innovation projects are of broader scale.

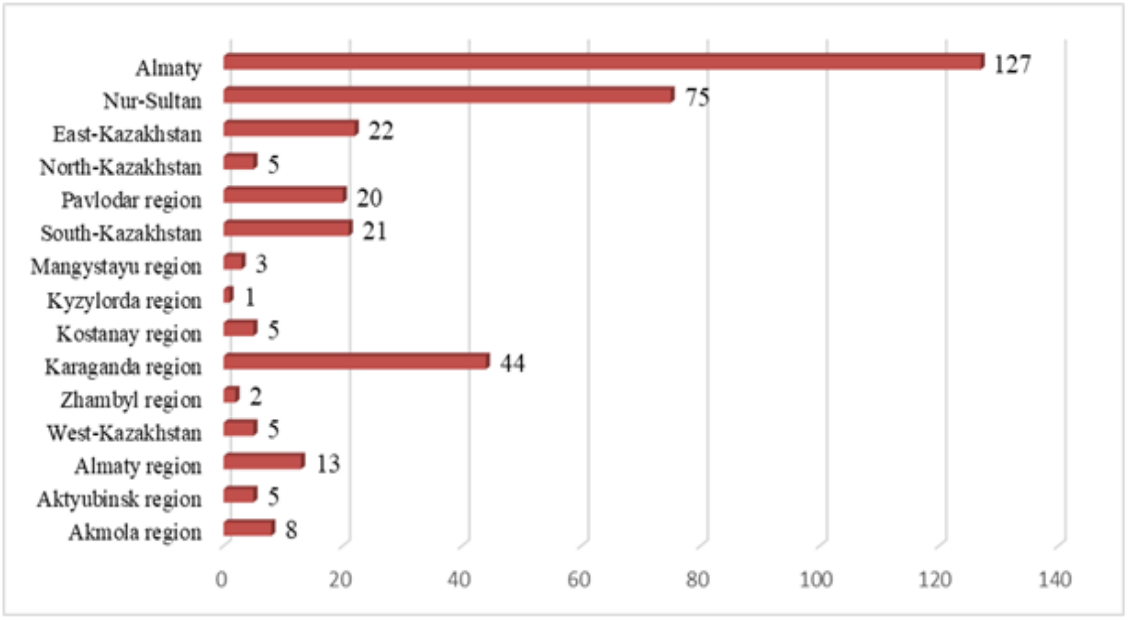
Indeed, since 2018 for more efficient selection and risks decrease there are new approaches to procedures of selection and expertise of applications. The projects are reviewed by three independent centers: technological, financial-economic, and legal expertise. The State finances actively the processes of patenting and commercialization of innovation projects, and start-up running. Among the new options is transfer of remained financial means to the next financial year, continuous call for applications, simplified procedure and shorter time of grant applications consideration. All these measures allow activating and simplifying the relations between the State and innovators as well as creating additional motivation reasons and stimulus for creation and development of new innovation proposals and projects.

As for the industrial sectors, most of applications fall on the information and communication technologies, chemistry and petro-chemistry, machine engineering industries. At that, the sum of innovation grants in the machine engineering sector is 3.1 billion tenge, that is 22.3% of the total sum of all innovation grants (table 1).

Table 1 – The indicators on the allocated innovation grants for the whole period

#	Types of priority fields	Number	Amount, million tenge
1	Alternative energy and technologies of energy efficiency	24	1 388,0
2	Advanced technologies in pharmaceutical, medical industry, biotechnologies, bioengineering, gene engineering	26	858,5
3	Information and communication technologies	69	2 038,9
4	Nano and space technologies	1	4,6
5	Advanced technologies in consumer goods industry	3	65,9
6	Advanced technologies in agro-industrial sector, food industry, and agricultural chemistry	31	869,6
7	Advanced technologies in mining and metals sector	29	1 374,9
8	Advanced technologies in construction including utilization of construction materials	8	1 181,2
9	Advanced technologies in machine engineering including utilization of new materials	56	3 114,5
10	Advanced technologies in survey, extraction, transportation and processing of mineral and hydrocarbon raw materials	6	1 214,2
11	Advanced technologies in chemistry and petro-chemistry	60	1 854,8
Total:		313*	13 965,6
* without notice of dissolved agreements. Note – compiled by reference [9]			

The distribution of innovation projects that received grant financing by regions is shown in figure 2.



Note – compiled by reference [9]

Figure 2 – Number of projects for 2011-2019* by regions

According to data from Figure 2, for the considered period the largest relative share of all projects falls on three regions – two cities of republican status, Almaty and Nur-Sultan, and Karaganda area, namely 127, 75, and 44, respectively. Interesting is that no one project was implemented at Atyrayu region.

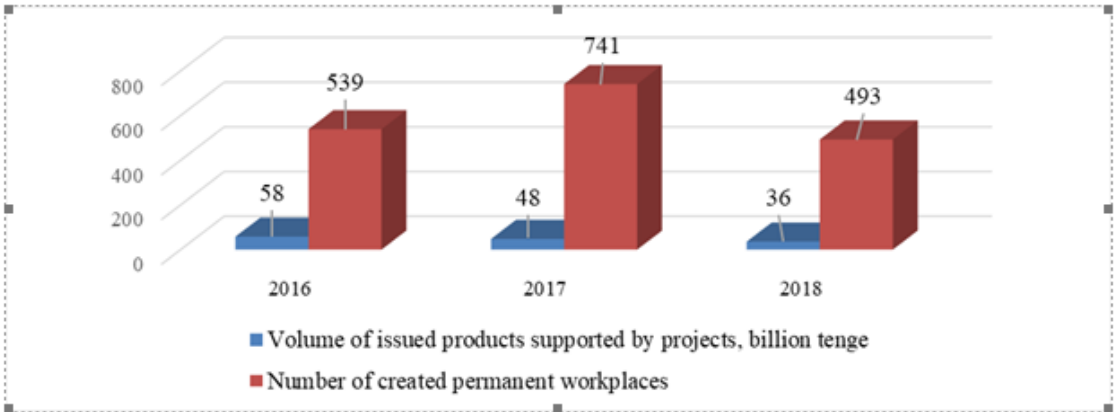
Table 2 shows the examples of projects that received innovation grants under the budget programs.

Table 2 – Characteristics of innovation projects under the budget program “Allocation of innovation grants”

Project name	PayBox.kz (wire transfer system, payment systems aggregator)	Development and creation of effective underground grow room	Purchase of technology on growing and processing of champignons
Region	Almaty	East-Kazakhstan region	North-Kazakhstan region
Sector	Information and communication technologies	Advanced technologies in agro-industrial industry	Advanced technologies in agro-industrial industry
Period	2015	2015	2016
Grant type	Commercialization of technologies	Commercialization of technologies	Transfer of technologies
Grant funds	1 982 880 tg	3 505 915 tg	399 956 720 tg
Own funds	447 120 tg	184 522 tg.	399 956 720 tg.
Project status	Under implementation	Finished	Under implementation
Result	Under implementation	In the grow room the test batch of 90 tomatoes roots and 50 early-maturing cucumber seeds were planted. The test batch gave 70 kg of tomatoes and 60 kg of cucumbers.	Under implementation
Brief description	The project represents a unique (for Kazakhstan market) information system providing the infrastructure for business and individuals on using and development of wire payments	Creation of the underground grow room using the energy-saving technologies. The grow room of this type will be an industrial facility with high added value, isolated from the environment effect, with closed operation system and microclimate regulation.	The project is based on the Netherlands technology of champignon production. The Netherlands approach is based on large investments, minimal manual labor, high agriculture and manufacture technologization allowing receiving bumper harvest – 30-33 kg per square meter.

The implementation of the grant financing program, in general, shows positive social and economic dynamics. Since 2018 more attention is paid to support of small and medium enterprises on purchasing the equipment and direct accompanying of completed deal. In addition, now to commercialize a technology an applicant should introduce technologies in his own manufacture, i.e. one of the criteria is that a project should be at the end of technological process, ready for utilization. The share of grants has decreased from 80% of co-financing to 50/50. Thus, the system of grant financing of innovation projects gained market nature.

The implementation of the innovation projects supported by grants in 2016-2018 resulted in issuing of product to the amount of 142 billion tenge, and creation of 1773 permanent workplaces (Figure 3). In whole, 4 484 workplaces were created from 2014 to the first half of 2019 under the implementation of innovation projects supported by grant financing. Among them 1 807 workplaces were created temporarily, i.e. for the period of project implementation.



Note – compiled by reference [10]

Figure 3 – Social and economic effect from innovation projects implemented in 2016-2018

However, until the present moment the innovation component in Kazakhstan economy is not large. The Global Competitiveness Index of WEF 2018 still shows the significant weakness of the country in "Innovation potential" category (95-th place) in which almost all its components are lower the general position of Kazakhstan in the rating [11]. The special global rating of innovations compiled by INSEAD also shows the same problems. In this rating, in 2019 Kazakhstan was ranked 79 with 31.03 scores of 100. Kazakhstan was also ranked 64 by the Index of resources and conditions for innovations, and 92 among results achieved in innovations [12].

Conclusion. The support instruments provided today for different types of innovation projects are limited by allocation of innovation grants and business incubation. We suppose reasonable to divide the innovation projects on its risk level during the selection process (more risky and potentially successful projects; less risky innovation projects) and differ them from the projects of only investment or modernization type. The latter should have limited access to the means of the State financing funds. The more risky and potentially successful projects can be supported by venture funds, not by innovation grants. Here the task of the State is to strengthen and develop the institute of venture financing. Utilization of the corporate venture capital as a financing source of innovation companies could be supported by such measures as establishment of business connections, tax and other benefits, including the risk share with the governmental sources of funds.

Thus, we suppose that the less risky innovation projects should be considered for grant financing. At the same time, the instruments of innovation projects support should be monitored on system base. And it is reasonable as without reliable information based on the analysis of the taken measures efficiency it is difficult to develop effective regulation instruments. And it is important that mechanisms of estimation and control reflected correctly the characteristics of innovation processes. The existing estimation procedures imply that successful should be every investment project, not the portfolio of supported projects, and disregard the indirect positive effects of innovation activity that results in refusal of excessively risky projects.

To improve the innovation activity conditions in general, it is necessary to develop a mechanism of systematic response of corresponding governmental controlling bodies to obstacles appearing on the way of entrepreneurship activity. This work should cover the creation of business environment of innovative entrepreneurship, support of continuous dialog with businessmen to reveal the difficulties and factors impeding the successful innovation activity.

It is necessary to note a specific significance of regular estimation of programs supporting the innovation projects. For that purpose it is suggested to create a complete database of financing innovation projects and its indicators. This will allow estimating the effectiveness of criteria of innovation projects grant financing. At the same time, the estimation of general effectiveness of a program should be based on the portfolio base, not on the base of individual projects results that is stipulated by specific features of innovation projects.

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ИННОВАЦИЯЛЫҚ ЖОБАЛАР ЭКОНОМИКАЛЫҚ ДАМУ НЕГІЗІ РЕТІНДЕ

Зерттеу тақырыбының өзектілігі жоғары технологиялар облысында Қазақстанның дамыған мемлекеттерден артта қалушылығымен, өндірістік аппарат пен инфрақұрылымының ескіруімен, инновацияларға сұраныс деңгейінің төмендігімен, инновациялық даму институттарының дамымағандығымен, олардың арасындағы инновациялық даму бойынша іс-әрекеттердің үйлесімсіздігімен түсінідіріледі. Оған қоса, ҚР экономикасының шикізаттық бағыныштылығын төмендету бойынша бағдарлдамалар күтілетін нәтижелерді ақтай алмады. Осы түйінді мәселе шешілмесе, әсіресе сыртқы шарттардың күрт нашарлауы жағдайында экономиканың дамуына теріс ықпалын тигізуі мүмкін. Технологиялық жаңа кәсіпорындарды қолдаудың әлсіздігі олардың ары қарайғы дамуына бағытталған қолдау шараларының тиімділігін шектейді. Сондықтан мемлекет алғашқы кезеңдерде бұл үдеріске араласуы қажет, бұл болашақта өсу әлеуеті жоғары жаңа жобаларды әзірлеу және зерттеулер жүргізу үшін қажет. Солай бола тұра, мемлекет коммерциялық әлеуеті жеткіліксіз жобаларға ресурстардың жұмсалуына жол бермеуі

тиіс. Инновациялық жобаларды қолдау инновациялардың дамуы мен таралуына ықпал етеді, кәсіпорындардың инновациялық белсенділігін жоғарылатып, экономиканың бәсекеге қабілеттілігін жоғарылатады.

Мақалада Қазақстандағы инновациялық жобаларды қолдау жүйесіне сындық талдау жүргізілген. Зерттеу нәтижелерін негіздеу және аргументтеу жүйелік тәсілді қолдану арқылы іске асырылған. Топтау, серпіндік қатарлар, кестелер, графиктер, комбинациялық диаграммалар сияқты ғылыми абстракциялау, экономикалық, логикалық және салыстырмалы талдау әдістері қолданылған. Зерттеудің эмпирикалық негізін «Бәйтерек» Ұлттық басқару холдингі» АҚ және «Қазақстандық индустрия дамыту институты» АҚ мәліметтері, беделді халықаралық ұйымдардың жыл сайынғы рейтингтерінің көрсеткіштері, сондай ақ кезеңдік басылымдар мен интернет желісінде жарияланған материалдар құрады.

Мақалада елдің инновациялық саясатының нәтижелеріне қысқаша сипаттама беріліп, инновациялық жобаларды қолдаудың негізгі құралдары, оның ішінде технологиялық бизнес-инкубациялау және инновациялық гранттар қарастырылған. Мақалада мемлекеттен гранттық қаржыландыру алған инновациялық жобаларды толық талдауға ерекше көңіл бөлінген. Бюджеттік бағдарламалар аясында инновациялық жобаларды гранттық қаржыландыру тетігі қарастырылып, реттеу институттарының ролі анықталған. Грантпен қаржыландырылған инновациялық жобалардың сандық көрсеткіштерін талдау олардың теріс өсу серпінін көрсетті. Солай бола тұра, талдау нәтижелері инновациялық жобалардың орташа құнының едәуір өскендігін көрсетті. Орын алған үрдістің себептерін анықтауға талпыныс жасалған.

Инновациялық жобалардың салалық құрылымын талдау жобалардың жетекші салаларын анықтауға мүмкіндік берді, олар – ақпараттық-байланыс технологиялары, химия және мұнай химиясы, машина жасау салалары. Аймақтар арасында инновациялық жобалардың ең көп үлестері Алматы және Нұр-Сұлтан қалаларында және Қарағанды облысында шоғырланған. Атырау облысында ешбір инновациялық жоба іске асырылмаған. Инновациялық жобаларды іске асырудың әлеуметтік-экономикалық әсері тұрақты және уақытша жұмыс орындарын құру, жобаларды іске асыру аясында шығарылған өнім көлемі сияқты көрсеткіштермен өлшенген. Сондай ақ бюджеттік бағдарламалар аясында инновациялық гранттарға ие болған кейбір жобалардың сипаттамалары көрсетілген.

Көрсетілген материалдардың негізінде мақалада Қазақстандағы инновациялық жобаларды ынталандыру құралдарын жетілдіру және инновациялық үдерістің барлық қатысушыларының инновациялық әлеуетін дамыту бойынша ұсыныстар әзірленген. Жекелей алғанда, гранттық қаржыландыру үшін инновациялық жобаларды іріктеу қағидаларын өзгерту, сонымен қатар инновациялық жобаларды қолдау бағдарламаларын бағалау тиімділігін жақсарту бойынша ұсыныстар жасалған. Қаржыландырылған инновациялық жобалар туралы мәліметтер базасын қалыптастыру ұсынылған, бұл инновациялық жобалардың гранттық қаржыландыру критерийлерінің нәтижелілігін дұрыс бағалауға мүмкіндік береді. Осы тұрғыда автор бағдарламаның нәтижелілігін жеке жобалардың нәтижелері негізінде емес, керісінше портфельдік негізде бағалауды ұсынады, бұл инновациялық жобалардың сипатымен түсіндіріледі.

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ИННОВАЦИОННЫЕ ПРОЕКТЫ КАК ОСНОВА ЭКОНОМИЧЕСКОГО РАЗВИТИЯ

Аннотация. Актуальность темы исследования обусловлена отставанием Казахстана от развитых стран в области высоких технологий, связанным с износом производственного аппарата и инфраструктуры, недостаточным уровнем спроса на инновации, неразвитостью институтов инновационного развития и отсутствием четко скоординированных их действий в области инновационного развития. Кроме того, программы по снижению сырьевой зависимости экономики РК не приносят ожидаемых результатов. Пока эта ключевая проблема остается нерешенной, она будет оказывать негативное влияние на развитие экономики, особенно в случае резкого ухудшения внешних условий. Относительно слабая поддержка технологических предприятий, особенно новых, ограничивает эффективность мер поддержки, нацеленных на их последующее развитие. Поэтому государство должно вмешиваться на ранних стадиях, чтобы обеспечить исследование и разработку новых проектов, имеющих возможности для дальнейшего роста, при этом контролируя, чтобы ресурсы не шли на проекты без достаточного коммерческого потенциала. Поддержка инновационных проектов способствует развитию и распространению инноваций, стимулирует инновационную активность предприятий и повышает конкурентоспособность экономики.

Данная статья содержит критический анализ системы поддержки инновационных проектов в Казахстане. Обоснование и аргументация выводов исследования осуществлялись автором на основе системного подхода с использованием методов научной абстракции, экономического, логического и сравнительного анализа: группировки, динамические ряды, таблицы, графики, комбинационные диаграммы. Эмпирическая база исследования представлена данными АО «Национальный управляющий холдиг Байтерек» и АО «Казахстанский институт развития индустрии», показателями ежегодных рейтингов авторитетных международных организаций, также другими материалами, опубликованными в периодической печати и сети интернет.

В статье дана краткая характеристика результатов инновационной политики страны, рассмотрены основные

инструменты поддержки инновационных проектов, охватывающих в том числе технологическое бизнес-инкубирование и предоставление инновационных грантов. Особое внимание в статье уделено подробному анализу инновационных проектов, получивших грантовое финансирование от государства. Рассмотрен механизм грантового финансирования инновационных проектов в рамках бюджетной программы, определена роль регулятивных институтов. Анализ количественных показателей инновационных проектов по грантовому финансированию за всё время существования бюджетной программы показал отрицательную динамику роста. Вместе с тем, результаты анализа продемонстрировали существенный рост средней стоимости инновационных проектов.

Проведенный анализ инновационных проектов в отраслевом разрезе позволил выделить лидирующие отрасли проектов – это сферы инфокоммуникационных технологий, химии и нефтехимии, машиностроения. Среди регионов наибольший удельный вес по инновационным проектам приходится на три региона – города Алматы и Нур-Султан, Карагандинская область. В Атырауской области не было реализовано ни одного проекта. Социально-экономический эффект от их реализации инновационных проектов был измерен такими показателями, как создание постоянных и временных рабочих мест, объем выпущенной продукции в рамках реализации проектов. Также приведены характеристики некоторых проектов, получивших инновационные гранты в рамках бюджетных программ.

На основании представленного материала в статье предлагаются рекомендации и предложения по совершенствованию инструментов стимулирования инновационных проектов в Казахстане и развитию инновационного потенциала всех участников инновационного процесса. В частности, разработаны предложения по изменению принципов отбора инновационных проектов для грантового финансирования, а также по улучшению эффективности оценки программ поддержки инновационных проектов. Предложено создать полную базу данных финансируемых инновационных проектов с их показателями, что позволит проводить адекватную оценку результативности критериев грантового финансирования инновационных проектов. При этом автор рекомендует проводить оценку общей результативности программы на портфельной основе, а не на основе результатов отдельных проектов, что обусловлено характерными особенностями инновационных проектов.

Ключевые слова: инновационное развитие, инновационный проект, инновационный грант, технологическая бизнес-инкубация, государственная поддержка инноваций.

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COMPLETION OF RATING ON THE SYSTEM OF SOCIAL PARTNERSHIP AT OIL ENTERPRISES IN THE REPUBLIC OF KAZAKHSTAN

Abstract. This article presents the results of the analysis of the state of labor relations at modern oil and gas enterprises in Kazakhstan, as well as the trends in their changes under the influence of modernization processes. It justifies the approach to social partnership as one of the modern conditions (forms) of labor relations, which continues to change its content under the influence of production modernization processes in the oil and gas sector. The possibility of assessing the state of labor relations and the compliance of labor process participants with the requirements that modernization of the technical foundations of production presents is considered. A description is given of a methodology that allows us to assess the involvement of workers in the activities of the enterprise, as well as the state of formation of social partnership.

The relevance of the study is that today, the role of social partnership is increasing because of the steady increase of conflict and competition levels in enterprises as a result of global inflation and crisis phenomena. The level of loyalty, peace of mind at the enterprise depends on the implementation of the principles of social partnership, the action of concluded industry and collective agreements. Oil-producing enterprises remain the flagship of the development of the entire national economy and represent an export-oriented industry. The scientific research method is the qualitative analysis, comparative analysis, application of the rating approach and ranking of results.

As a result of the conducted research, based on the analysis of a number of indicators of companies that affect the level of social partnership, the problems of its development were clearly identified. In the course of the analysis, indicators that reflect the level of development of social partnership were grouped, a rating of companies was compiled according to the level of development of social partnership. Based on the calculation of the total rating, a final rating was compiled. The relationship between the final rating of social partnership companies and indicators of social and labor relations is considered.

This article can be useful in case of the methodological and normative documents developments on social partnership, in particular, in case of concluding a General Agreement between employers, trade unions, and representatives of employers, when concluding industry tariff agreements, collective agreements, and also in event of a strategy development for oil companies to further avoid labor conflicts.

Keywords: Oil industry; growth factors; rating; social partnership; collective agreement; salary.

Introduction. Social partnership in today's conditions plays an increasingly important role for the further development of labor relations in modern enterprises. The financial performance of companies depends on the labor relations. The special role of social partnership is growing worldwide when competition between producers is becoming more acute. Enterprises involved in oil production in Kazakhstan and representing the relevant industry were no exception. In addition, social partnership is becoming increasingly important in conditions when the situation on the labor market becomes more acute, as well as social heterogeneity of the population. In this case, partnership provides an opportunity to resolve social issues and acute social contradictions. Only through peaceful negotiations and agreements between employers and employees can it be possible to find common interests, achieve parity in labor issues and disputes.

The authors pay a lot of attention to this issue. The influence of activity in the field of social partnership and the conclusion of labor contracts on performance indicators periodically attracts the

attention of foreign and domestic researchers. Some authors, such as Flanagan, 1999, Aidt zan Tzanatos, in their 2008 Trade Unions, Collective Bargaining and Macroeconomic Performance: a Review, 2008 suggested that negotiations concerning the increase of wages in some industries contribute to a general decrease in real wages in country [1]. The reason for this phenomenon is the negative effects of wage increases in one sector to another sectors.

Olson M., in his writings focuses on social capital, which is formed only in conditions of real social partnership [1, 2, 3, 4, 5]. He notes that even in large structures, where social partnerships operate formally, workers do not participate in creating low inflation and unemployment. He concludes that macroeconomic development indicators also influence the development of social partnerships. He also explains that social capital is considered as the possibility of extending the concept of capital to norms and social networks. The main condition for the development of social capital is confidence in the partner. These are associations that trusting relationship is very important. With a high level of trust between social partners, lower transaction costs are generated. It is believed that high intensity in social partnership and high social capital should positively correlate with the probability of high macroeconomic indicators. It should be noted that many Western authors consider social partnership, mainly through the prism of wage negotiations.

So, in the article, which is written by Markus Leibrecht, Silvia Rocha-Akis. Sozialpartnerschaft und makroökonomische Performance in the journal WIFO-Monatsbenichte, 2014, 87 (8) there is considered the degree of influence of activity in social partnership on macroeconomic indicators in Western Europe [6]. The authors sampled from 16 countries for the period 1990-2012. The article proves the opinion that with a strong level of social partnership, macroeconomic indicators in the country are higher. When analyzing the development of social partnership, two counterparties are considered:

- level of organization of employers;
- level of organization of trade unions.

It is noted that in the system of wage negotiations in countries with a high intensity of social partnership, both counterparties are well organized and pronounced. Conversely, countries with low characteristics of both counterparties are characterized by low intensity of social partnership. Countries such as Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and Great Britain were studied.

The first group includes countries with a high level of organization of employers and trade unions. Therefore, a high level of participation of the union of employers and trade unions in economic policy should be expected in these countries. These countries are Belgium, Denmark, Sweden, Norway, Austria, the Netherlands. The second group includes countries where the degree of concentration of trade unions is high, but the degree of organization of employers is low. These countries are Germany, Ireland. The third group includes countries where the degree of organization of employers is high, but the degree of concentration of trade unions is low. These countries include Finland, France, Spain, Portugal. The fourth group includes countries with low parameters in both dimensions. This group consists of Greece, Italy, Switzerland, Portugal. It should be noted that Austria has one of the greatest importance among countries in organizing employers and trade unions. This is explained by the mandatory participation of employers in the Austrian Economic Chamber, which is the association of employers. Among countries of the 1st group, the lowest unemployment rate is observed. The highest unemployment rate was in Spain –19.2 %, Greece – 14.4 % in the period of 2008-2012.

Despite the fact that groups of countries are formed according to the relevant criteria, it should be noted that they have different policies regarding wages. We can distinguish a policy in the field of wages:

- focused on moderators,
- distribution oriented.

The first area does not jeopardize competitiveness in open industries. Attention is paid to unit labor costs in related industries of foreign companies. That is, the benchmark is taken on similar companies, known in this segment at the world level. This allows the industry to be competitive in the field of labor relations. Workers receive wages corresponding to the level in foreign leading companies in the industry.

The second direction is focused on solidarity wages. This means that workers with the same functional tasks in the country should receive approximately the same salary [7]. Solidarity wages are described by Erickson L. in the model of Ren Meidner, which has prevailed in the Scandinavian countries

since the 1960 s. The authors conclude that it is necessary to achieve a combination of maximum employment, high economic growth, and fair wages. Companies that cannot provide workers with fair wages will be forced to leave the market. In order to prevent the growth of unemployment, there should be an active policy on the labor market, investment in human capital, developed social partnership.

Purpose of the study. lies in the fact that today there is a problem in the development of social partnership, the implementation of principles at mining enterprises. Confirmation of this are the ongoing conflicts at mining enterprises. The principles of social partnership in such companies are not respected, collective agreements do not work, and acute labor conflicts occur. In our study, we will try to catch the connection between the development of social partnership as well as indicators that reflect labor relations and their level in the enterprise.

Hypothesis in this study, is - the higher the activity of companies in matters of social partnership, the better the social situation in companies, the better the labor relations.

A huge role in the development of social partnership is played by social capital, which represents the ability or ability of systems to provide their members with access to various resources. Thus, social capital increases the efficiency of their joint activities. Contribution to the development of this concept was made by Pierre Bourdieu [8]. He emphasized the benefits that social capital brings in groups in order to create a specific resource. So, using the resources of partners, you can get direct access to resources, join social institutions and benefits.

In addition, Robert Putnam defined social capital as a tradition of social interaction, which involves trust, voluntary association, involvement in solving common problems [9]. Community members help each other and are tolerant of their opponents. These principles are embedded in the principles of social partnership. Robert Putnam identifies the following functions of social capital:

– improving the effectiveness of collective activities;
– reduction of transaction costs by avoiding unnecessary control and efforts and due to trust between members of the trade union;
– more efficient use of human capital, that is, increasing labor productivity;
– Improving the moral climate in the group, that is, in the team due to support and mutual understanding, as well as common goals in the team.

American A. Portes identified mechanisms for the implementation of social capital, such as [10]:

– value orientation stimulates the social behavior of a team member,
– social impact, means that within a public group certain rules are prescribed that cannot be violated,
– limited solidarity, means the behavior of each member of the group, based on external pressure,
– forced trust creates confidence in the disciplinary responsibility of group members, a system of fines and sanctions forces members to comply with certain standards.

Methods. In carrying out this study, we will make a rating of the development of social partnership. A rating assessment will allow you to compare the degree of development of social partnership at enterprises of the oil industry, the effectiveness of its functioning, in particular:

– compare the results of social partnership activities;
– assess the degree of achievement of certain indicators;
– get information for making management decisions.

The methodology was based on the following indicators:

– indicators characterizing the activities of tripartite commissions for the regulation of social and labor relations;
– indicators characterizing the degree of formation of the organizational structure of social partnership;
– performance indicators.

The indicators characterizing the activities of tripartite commissions include:

– the number of meetings held on partnership issues;
– number of issues considered at meetings of tripartite commissions;
– the number of projects of internal regulations on labor relations.

The indicators characterizing the degree of formation of the organizational structure of social partnership include:

– the share of organizations with 15 employees or more who have concluded collective bargaining agreements, in the total number of organizations with 15 employees or more, %;

– the share of registered collective agreements in the total number of collective agreements concluded, %;

– the proportion of collective agreements concluded with trade unions in the total number of collective agreements concluded, %.

Performance indicators included:

– the average monthly salary of employees of the enterprise;

– the average monthly wage of wage workers;

– the amount of arrears in the payment of wages;

– the share of arrears in the payroll;

– the level of coverage of employees with vocational training and advanced training, in % of the total number of employees,

– the rate of occupational injuries (the ratio of the total number of injured in production and the average number of employees per 1000 people), coefficient,

– the share of workers employed in certified workplaces in the total number of employees, %.

For each indicator, we calculate the rating. Indicators such as the amount of arrears in the payment of wages, the share of arrears in the wage fund have the reverse order of calculation. The remaining indicators have a direct calculation procedure, i.e. the maximum value of the indicator corresponds to the first place in the rank. The final rating is calculated based on the total rating of the enterprise.

To compile the rating, we selected oil production enterprises in the Aktobe region of the Republic of Kazakhstan. A total of 9 enterprises were examined. Based on the results of the study, based on the data, points were calculated for all indicators that are available in the methodology (table 1).

Table 1 – Rating assessment of the development of social partnership by indicator groups [11,12, 13]

	Performance indicators of territorial tripartite commissions		Organizational structure indicators		System Performance		Performance indicators							
							social and labor sphere in general		including directions:					
									salary	employment and unemployment		occupational safety		
	cumulative rating	total rating	cumulative rating	total rating	cumulative rating	total rating	cumulative rating	total rating	cumulative rating	total rating	cumulative rating	total rating	cumulative rating	total rating
enterprise 1	11	**3**	4	**2**	8	**5**	28	**3**	5	**3**	4	**1**	19	**8**
enterprise 2	9	**1**	10	**8**	11	**8**	13	**1**	3	**1**	4	**1**	6	**1**
enterprise 3	16	**7**	9	**7**	6	**3**	36	**5**	9	**6**	18	**9**	9	**3**
enterprise 4	13	**4**	8	**6**	9	**6**	34	**4**	4	**2**	14	**7**	16	**5**
enterprise 5	14	**5**	3	**1**	12	**9**	44	**8**	7	**5**	16	**8**	21	**9**
enterprise 6	17	**8**	7	**5**	5	**2**	41	**7**	24	**9**	9	**4**	8	**2**
enterprise 7	18	**9**	6	**4**	10	**7**	37	**6**	11	**7**	9	**4**	17	**6**
enterprise 8	9	**1**	5	**3**	4	**1**	47	**9**	23	**8**	7	**3**	17	**6**
enterprise 9	14	**5**	18	**9**	7	**4**	26	**2**	6	**4**	9	**4**	11	**4**

The calculation indicated (table 1) that the leader in the rating is the enterprise 2, while the second in the rating is enterprise 1, and the enterprise 4 on the third place in terms of social partnership (figure 1).

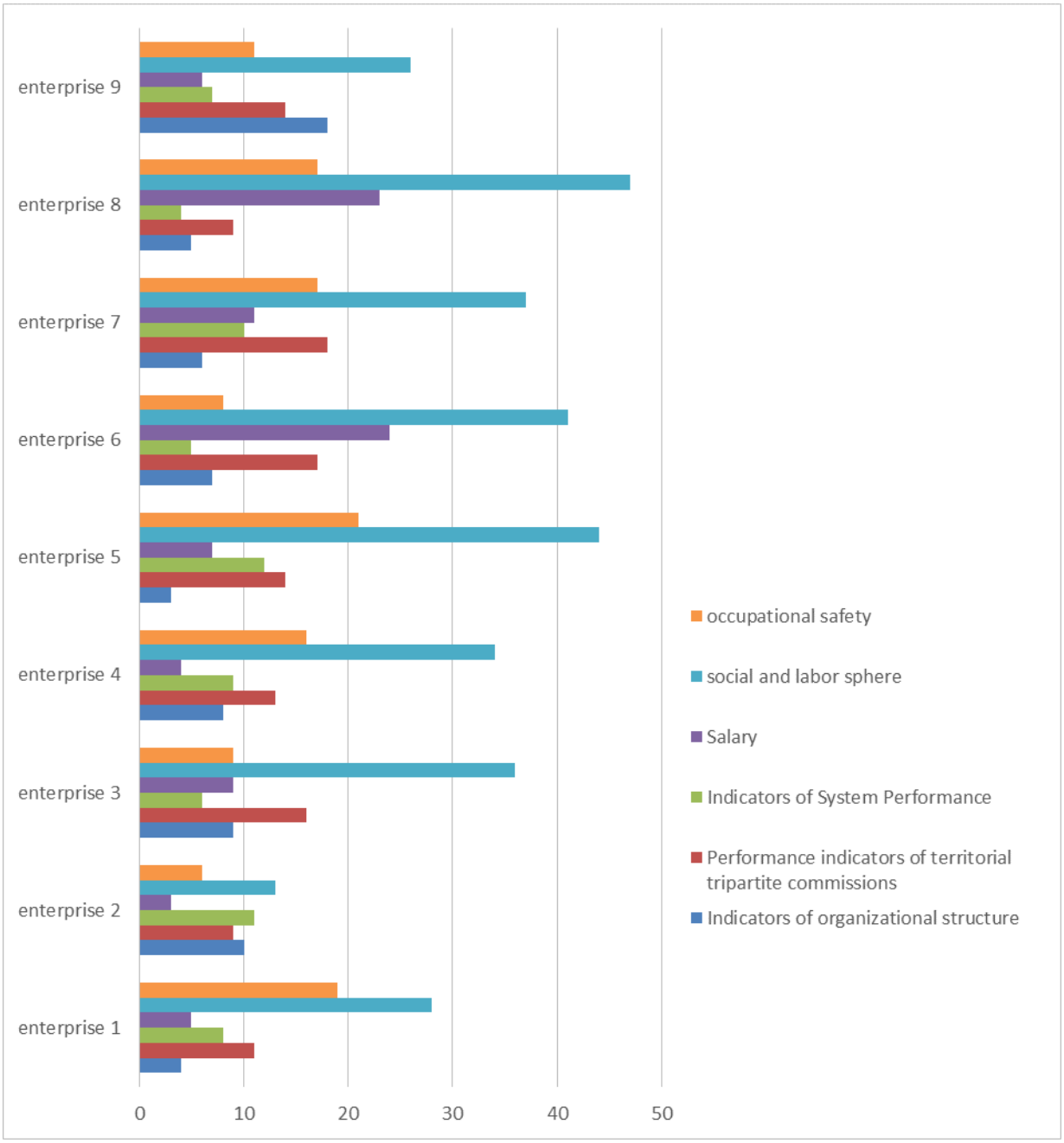

Figure 1 - Distribution of companies by rating

As you can see the diagram (figure 2), enterprise 9 takes the fourth position in the ranking, enterprise 8 – fifth, enterprise 3 – sixth, enterprise 6 – seventh, enterprise 7 – eighth and enterprise 5 – in ninth position.

If we consider the leading three enterprises, then the graph will look as follows (figure 2).

Discussion. If we consider the rating from the point of view of the performance indicators of the territorial tripartite commissions, here is the leading position takes the enterprise 2, in the second place the enterprise 8, while the third place takes the enterprise 1. This rating reflects the number of meetings held, the number of issues addressed, and the conclusion of projects. The enterprise 7 closes the rating, because that enterprise reflects the least number of these issues. The rating on the functioning of the system reflects the conclusion of collective and individual agreements. In this case, the enterprise 8 leads. The rating confirms that performance indicators and the functioning of the social partnership system affect performance indicators. Thus, the rating of companies with good performance in this area also has a high

rating in general in the social and labor sphere. This applies, in particular, to enterprise 2, which takes the first place in terms of these indicators, can also be called as a leader in the field of social and labor relations in general. In addition, this company takes the first place in the ranking of remuneration. The wage rating was calculated on the basis of the average monthly wage and the availability of wage arrears in the wage fund. The second place takes the enterprise 4, the third place takes the enterprise 1, and the last place takes the enterprise 6, which has the largest share of wage arrears in the wage fund. The employment rating consists of the unemployment rate and the level of vocational training coverage. The enterprise 2 is the leader here, while the enterprise 3 closes the rating. The rating on labor protection consists of the coefficient of the frequency of industrial injuries, the coefficient of provision of organizations with labor protection services, as well as the share of workers employed in certified workplaces, in% of the total number of employees. In this case, the enterprise 4 is on the second place and enterprise 2 is on the fourth.

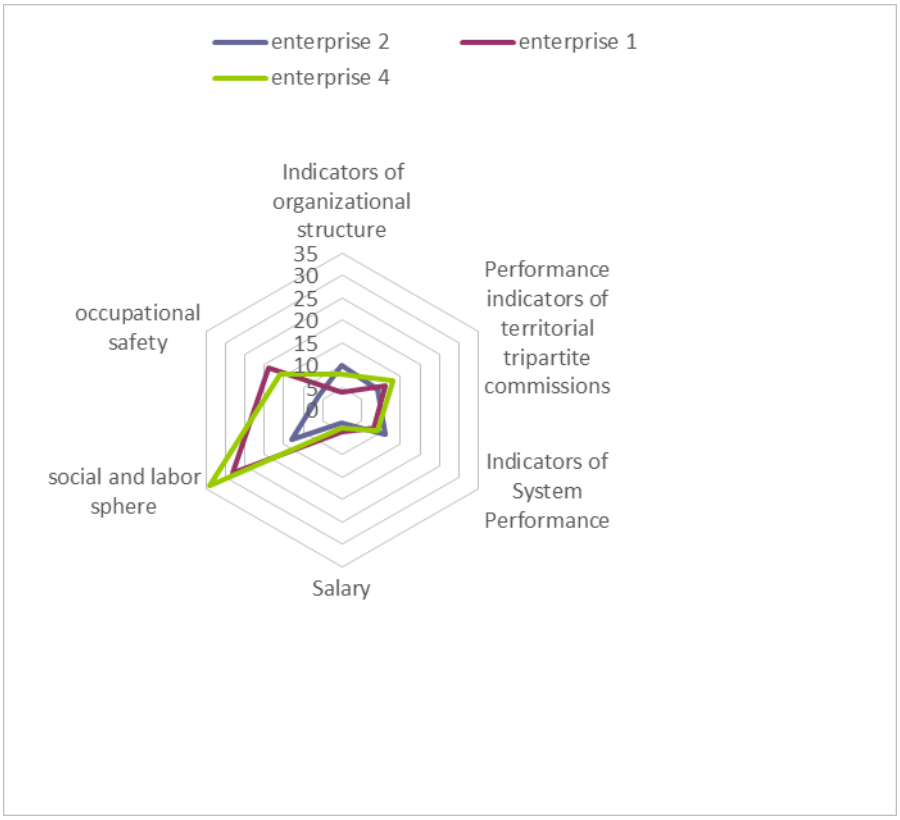

Figure 2 - Rating of leaders in the development of social partnership

Conclusion. We conducted an analysis of indicators that characterize the development of social partnership in companies engaged in oil production. We calculated the performance indicators of the territorial bodies of social partnership based on indicators such as the number of meetings held under an employment contract, the number of issues addressed, and the number of ongoing social projects. We examined the organizational structure indicators based on the presence of a trade union organization and the presence of an association of employers. We examined performance indicators based on the average wage in the company, the absence of wage arrears, and the share of these arrears in the wage fund. We also reviewed the rating on labor protection and employment. This study showed the relationship between performance indicators and social partnership activities. Therefore, the company, which was in first place in the ranking of social partnerships, has first places in the field of performance indicators for labor. Accordingly, the company that ranked last in our ranking in terms of the development of social partnership also has wage arrears, a high share of these arrears in the wage bill, and a rather low level of professional training for its employees.

The hypothesis of the research was confirmed, which stated that the higher the rating of an enterprise in the field of social partnership, the better the conditions of labor relations, less wage arrears in the studied enterprises.

In this study, we examined only a few indicators and the relationship between the level of development of social partnership at enterprises and labor indicators. It is now necessary to consider the relationship between the performance indicators of companies and the level of development of social partnership through consideration of factor analysis.

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ҚАЗАҚСТАН РЕСПУБЛИКАСЫНДА МҰНАЙ КӘСІПОРЫНДАРЫНДАҒЫ ӘЛЕУМЕТТІК ӘРІПТЕСТІК ЖҮЙЕСІ БОЙЫНША РЕЙТИНГ ЖАСАУ

Аннотация. Бұл мақалада Қазақстан Республикасындағы қазіргі мұнай-газ кәсіпорындарындағы еңбек қатынастарының жай-күйін талдау нәтижелері, сондай-ақ модернизация процестерінің әсерінен олардың өзгеру тенденциялары келтірілген. Мұнай-газ саласындағы өндірісті модернизациялау процестерінің әсерінен өзінің мазмұнын өзгертуді жалғастыратын еңбек қатынастарының қазіргі заманғы шарттарының (формаларының) бірі ретінде әлеуметтік серіктестікке деген көзқарасты негіздейді. Еңбек қатынастарының жай-күйін және еңбек процестеріне қатысушылардың өндірістің техникалық негіздерін модернизациялау талаптарына сәйкестігін бағалау мүмкіндігі қарастырылады. Жұмысшылардың кәсіпорын қызметіне тартылуын, сондай-ақ әлеуметтік серіктестіктің қалыптасу жағдайын бағалауға мүмкіндік беретін әдістеме сипаттамасы берілген.

Зерттеудің өзектілігі. Бүгінгі таңда әлеуметтік серіктестіктің рөлі жаһандық инфляция мен дағдарыс құбылыстарының нәтижесінде кәсіпорындардағы қақтығыстар мен бәсекелестік деңгейінің тұрақты өсуіне байланысты артып келеді. Кәсіпорындағы адалдық, тыныштық деңгейі әлеуметтік серіктестік қағидаттарын жүзеге асыруға, жасалған салалық және ұжымдық шарттардың әрекетіне байланысты. Мұнай өндіретін кәсіпорындар бүкіл ұлттық экономиканың дамуының флагманы болып қала береді және экспортқа бағытталған саланы ұсынады. Ғылыми зерттеу әдісі – бұл сапалы талдау, салыстырмалы талдау, рейтингтік тәсіл мен нәтижелерді саралау.

Жүргізілген зерттеулердің нәтижесінде әлеуметтік серіктестік деңгейіне әсер ететін компаниялардың бірқатар көрсеткіштерін талдау негізінде оның даму проблемалары нақты анықталды. Талдау барысында әлеуметтік серіктестіктің даму деңгейін көрсететін индикаторлар топтастырылды, әлеуметтік серіктестіктің даму деңгейіне сәйкес, компаниялардың рейтингі жасалды. Жалпы рейтингті есептеу негізінде қорытынды рейтинг жасалды. Әлеуметтік серіктестік компанияларының қорытынды рейтингі мен әлеуметтік-еңбек қатынастарының көрсеткіштері арасындағы байланыс қарастырылады.

Бұл мақала әлеуметтік серіктестік туралы әдістемелік және нормативтік құжаттарды әзірлеу кезінде, атап айтқанда, жұмыс берушілермен, кәсіподақтармен және жұмыс берушілердің өкілдерімен салалық тарифтік келісімдер, ұжымдық келісімдер жасасу кезінде, сондай-ақ Бас келісім жасалған кезде пайдалы болады. Мұнай компаниялары үшін еңбек қақтығыстарын одан ары болдырмау стратегиясын әзірлеу жағдайында да қажет болады.

Түйін сөздер: мұнай өнеркәсібі, өсу факторлары, рейтинг, әлеуметтік серіктестік, ұжымдық шарт, жалақы.

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СОСТАВЛЕНИЕ РЕЙТИНГА ПО СИСТЕМЕ СОЦИАЛЬНОГО ПАРТНЕРСТВА НА НЕФТЯНЫХ ПРЕДПРИЯТИЯХ В РЕСПУБЛИКЕ КАЗАХСТАН

Аннотация. В представленной статье изложены результаты анализа состояния трудовых отношений на современных нефтегазовых предприятиях как в РК, а также тенденции их изменения под влиянием процессов модернизации. Обосновывается подход к социальному партнерству как к одному из современных состояний (форм) трудовых отношений, которое продолжает изменять свое содержание под влиянием процессов модернизации производства в нефтегазовой сфере. Рассматривается возможность оценки

состояния трудовых отношений и соответствия участников трудового процесса требованиям, которые предъявляет модернизация технических основ производства. Приводится описание методики, позволяющей оценить включенность работающих в деятельность предприятия, а также состояние формирования социального партнерства.

Актуальность и значимость исследования заключается в том, что на сегодня, когда возрастает уровень конфликтности и конкуренции на предприятиях в результате глобальных инфляционных и кризисных явлений, повышается роль социального партнерства. От реализации принципов социального партнерства, действия заключенных отраслевых и коллективных соглашений зависит уровень лояльности, спокойствия на предприятии. Нефтедобывающие предприятия остаются флагманом развития всей национальной экономики, представляют экспортоориентированную отрасль. Научным методом исследования является метод качественного анализа, сравнительного анализа, применение рейтингового подхода и ранжирования результатов.

В результате проведенного исследования, основанного на анализе ряда показателей компаний, влияющих на уровень социального партнерства, были выделены проблемы его развития. В ходе проведенного анализа были сгруппированы показатели, которые отражают уровень развития социального партнерства, был составлен рейтинг компаний по уровню развития социального партнерства. На основе расчета суммарного рейтинга был составлен итоговый рейтинг. Рассмотрена зависимость между итоговым рейтингом компаний по социальному партнерству и показателями социально- трудовых отношений.

Данное исследование может представлять интерес при разработке методических и нормативных документов по социальному партнерству, в частности, при заключении Генерального соглашения между работодателями, профсоюзами, и представителями работодателей, при заключении отраслевых тарифных соглашений, коллективных договоров, а также при разработке стратегии нефтедобывающих компаний, чтобы в дальнейшем избежать конфликтов на трудовой почве.

Ключевые слова: Нефтедобывающая отрасль; факторы роста; рейтинг; социальное партнерство; коллективный договор; оплата труда.

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