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ҰЛТТЫҚ ҒЫЛЫМ АКАДЕМИЯСЫНЫҢ**

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ДОКЛАДЫ

**НАЦИОНАЛЬНОЙ АКАДЕМИИ НАУК
РЕСПУБЛИКИ КАЗАХСТАН**

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PROBLEM OF AUTOMATIC CONTROL AND NUMERICAL MODELING OF THE SPEED OF OPTICAL FIBER EXTRACT IN THE PROCESS OF ITS MANUFACTURE

Abstract. This paper describes the basic design of the drum for pulling optical fiber. This is a key element that affects the speed and tension of the optical fiber, and ultimately its main geometrical parameters, such as the diameter and shape of the cross section, whose stability determines the performance characteristics of the finished optical fiber. Also, the work is devoted to the development of a mathematical model of the drum (coil), taking into account the dynamic equation of motion, inertia and speed changes. An open loop transfer function is obtained for a belt pulley, a motor and a speed controller with feedback control in proportion to an integral controller. A transient process was obtained through the channel "drawing speed - diameter" for various types of exhaust drums.

Keywords: optical fiber hood, optical fiber exhaust drum, pulley, pulley diameter, optical fiber diameter, PI - regulator, drawing speed.

I. INTRODUCTION

A critical point in the production of optical fiber is the constancy of the diameter of the fiberglass and its light-guide core. The diameter of the optical fiber must remain constant in order to create a product capable of transmitting broadband optical data. The design for pulling the optical fiber has a significant impact on the quality of the fiber produced. As well as the manufacture and use of Bragg fiber-optic gratings is not possible without measuring their characteristics at each stage of manufacturing the gratings themselves [1], it is necessary to control the drawing process of the optical fiber, since it is at the production stage that its performance characteristics are laid.Since the exhaust speed is used to control the fiber diameter, the ability of the exhaust device to follow speed control commands directly affects the resulting fiber diameter [2 –5].

II. RESEARCH MODEL

The basic design of the fiber pulling drum is a flexible strap, partially wound on a flat pulley, which moves / pulls the continuous optical fiber all the way from the heated billet. The tests confirmed the connection between the fiber diameter and the line speed around the operating point. The basis of the relationship is a constant volumetric flow rate of glass.

Changes in fiber diameter often occur due to technological failures such as unevenness of the diameter of the workpiece, inconsistency between the volume flow rate of the feed of the workpiece relative to the hood and the temperature shift of the furnace / glass. Thus, a speed regulator must be included in the design of the spindle to prevent unacceptable changes in fiber diameter from technological disturbances [6].

The target dimensions of the fiberglass are the outer diameter of 125 microns and the inner diameter of the core is 9 microns. Product specifications provide tolerances for an outer diameter of ± 1 μm. To achieve this specification, the permissible diameter error must be aimed at a smaller size. As a rule, the allowable deviation of the calculated diameter is ± 0.1 μm. Mechanical, electrical and control structures of the exhaust drum synergistically affect the ability to achieve this tolerance on the fiber diameter.

With specified tolerances, the next step will be to understand how the selected design parameters of the drum affect the final product. Although many decisions must be made in any project, there are usually a limited number of critical parameters that have a significant impact on performance. These options include:

- Diameter and tolerances for connecting rod pulley;
- limits of inertia;
- Belts, contact length and bearings;
- Torques and speeds of engines;
- Gain control;
- Maximum limits of current and amplifier power.

In this system, the mechanical design and the control design affect the overall performance of the system. The main mechanical design solution is the pulley diameter. The required line speed and machining tolerances are the basis of the design. When there is no interference, they determine the maximum possible changes in diameter.

In a typical cable drive, belt tension, damping and bearing loads are present. The tension of the belt is much higher than the slight tension of the fiber, necessary for its tension (usually from 50 to 100 grams). The dynamic effects of the belt and bearings can be perceived as viscous damping and additional inertia.

The material of the belt, the contact length and the belt tension must be selected appropriately to ensure that the belt slides with respect to the belt pulley. Belt / drum friction and the prevention of damage to the fiber coating are other key factors.

Non-standard drives with smaller diameters are preferred. In addition to less mass inertia and faster dynamic response with less control effort, they have less material and lower processing costs. The diameter of the driving pulley is limited at the lower end by the mechanical strength of the fiber under tension and bending. Experiments have shown that the smallest permissible diameter is 75 mm. The diameter selection must also take into account machining tolerances and maximum engine speeds. Half of the design error (0.05%) is embedded in the mechanical tolerances, and the other half is assigned to the control circuit. Potential processing tolerances of ± 0.05 mm in diameter indicate that a diameter of 100 mm or more should be used to achieve the maximum design error.

The moment of inertia of the mass of the spindle roller is a parabolic function of the diameter. The lower the inertia of the pulley, the less effort and power control is required. As such, smaller diameter pulleys are more desirable, given the effects of control and inertia.

Another important factor in the design of the exhaust drum is the maximum engine speed. In order to control the diameter at a normal drawing line speed of 50 m / s, the maximum line speed must be higher. Based on the requirements for speed, there are two possible diameters. For an engine with a limit of 4000 rpm, a pulley diameter of approximately 300 mm (or more) is required. A pulley diameter of about 200 mm is the minimum required diameter for a limit of 6000 rpm. With previously established design preferences for pulleys of smaller diameter, a pulley with a diameter of 200 mm is a logical choice if there is an engine with a maximum speed of 6000 rpm or more that meets electrical requirements.

The motor can be selected for each of the two possible diameters (200 mm and 300 mm) of the drive pulley. The choice of motor depends on several factors, including maximum speed, torque, inertia, current and power limits. The motor must be able to withstand the power limits of the controller amplifier 800 watts per axis continuous and 1600 watts peak. The rated current of the motor must be greater than the maximum amplifier current of 10A to prevent overheating.

For a pulley with a diameter of 300 mm, an engine rated for 4000 rpm or more is required. The preferred design is a retainer with a smaller pulley (diameter 200 mm).

III. CONSTRUCTION OF THE MATHEMATICAL MODEL

Dynamic equations of motion for the belt pulley system are developed using the listed parameters:

$$J\dot{\omega} = -B\,\omega + T_{engine} \tag{1}$$

where J - is the moment of inertia; B - rotational damping; ω - engine rotation speed; T_{engine} - engine torque.

The motor torque T_{engine} is a function of the applied current $i(t)$ and the integral gain Ki:

$$T_{engine} = K_i i(t) \tag{2}$$

Substituting equation (2) into equation (1) gives the equation:

$$J_{common}\,\dot{\omega} = -B\,\omega + K_i\,i(t) \tag{3}$$

The moment of inertia relative to the center of rotation of the drum is the sum of the inertia of the rotor, pulley, belt and motor rollers:

$$J_{common} = J_{engine} + J_{pulley} + J_{belt} + J_{motorrol} \tag{4}$$

The spindle pulley can be modeled as a rim and flange (μ the thickness of the drive pulley rim):

$$J_{pulley} = M_{rim}r^2 + \frac{1}{2}M_{flange}(r-2\mu)^2 \tag{5}$$

The moment of mass inertia for the belt and three rollers is expressed in the formula:

$$J_{belt} + J_{roller} = M_{belt}r^2 + 3\left(\frac{1}{2}M_{roller}r_{roller}^2\right) \tag{6}$$

The effective damping of the system is the sum of the damping from the bearings and the belt:

$$B_{common} = B_{belt} + B_{bearing} \tag{7}$$

To estimate the damping, we transform equation (3):

$$\dot{\omega} + \frac{B_{com}}{J_{com}}\omega = \frac{K_i}{J_{com}}\,i(t) \tag{8}$$

Applying the Laplace transform, we get:

$$s\Omega(s) + \frac{B_{com}}{J_{com}}\Omega(s) = \frac{K_i}{J_{com}}I(s) \tag{9}$$

From equation (9), the transfer function between speed and current can be obtained:

$$G_M(s) = \frac{\Omega(s)}{I(s)} = \frac{\frac{K_i}{J_{com}}}{s + \frac{B_{com}}{J_{com}}} \tag{10}$$

Using formula (10), the total damping (7) can be estimated from the current input step and velocity data. The root of the first-order system of equation (10) is real and negative. Since the damping values are usually small, the response of the engine can be relatively slow, so control is needed to effectively reduce noise [7].

IV. OPTICAL FIBER EXTRACT VOLTAGE CONTROL

The diameter error is used to change the setpoint of the speed of the tensioning mechanism, based on a constant volume flow. The volumetric flow rate is the square of the fiber diameter multiplied by the spindle pull rate and $\pi / 4$. Positive diameter error requires a positive increase in speed to reduce the diameter. The change in motor speed from the change in diameter is relatively small.

The speed change is added to the original speed setpoint. Thus, the control of the fiber diameter is the exact setting of the speed setpoint [8].

The transfer function of the drum speed without feedback, $G_M(s)$ is a first-order system and gives an exponential function of time for an abrupt change in current.

$$(t) = \Delta I \left(\frac{K_i}{J_{com}}\right)\left[1 - \exp\left(-\left(\frac{B_{com}}{J_{com}}\right)t\right]\right. \omega \tag{11}$$

Although high-gain proportional control can reduce error, a steady-state error can be eliminated with a compensator with proportional and integral (PI) control:

$$C(s) = K_p \left(s + \frac{K_i}{K_p}\right) \tag{12}$$

When creating a fiber, the main prerequisite for drum operation and speed control is a constant volume flow of glass Q. The control logic is to increase the specified nominal speed of the drum if the fiber diameter is too thick, or reduce it if it is too small. Thisisexpressedinformula (12) andtheequation:

$$Q = \frac{\pi}{4} r \omega_d d_{act}^2 = \frac{\pi}{4} r \omega_{nom} d_{nom}^2 \tag{13}$$

$$\omega_d = \omega_{\text{ном}} \left(\frac{d_{\text{пот}}}{d_{\text{акт}}}\right)^2 \tag{14}$$

Typical changes in the diameter of the glass preform can be approximated as a 2% change per 10 mm of the preform length. The ratio of the preform diameter to the fiber diameter is approximately 700: 1. Squaring gives a volume ratio of 490,000: 1. Thus, a drawing time of 10 mm of the workpiece (or 4900 m of fiber) will be approximately 100 s (the speed of the fiber line is 50 m / s). Squaring the diameter error gives a 4% change in volume per 10 mm length of the workpiece. This volume error will be taken into account in the control project by changing the setpoint for the drawing rate. Assuming a linear function of linear variation for the working diameter (input), the linear velocity of the fiber will require a speed change of 0.04% per second to keep the fiber diameter constant. In addition, this corresponds to 1.25 s for uncontrolled fiber diameter in order to deviate to half the tolerance (deviation 0.05%). Thus, it is desirable to maintain a settling time of less than one second for the internal speed loop in order to reduce the dynamic effects on the external control loop.

The open loop transfer function for the belt pulley, engine, and speed controller is shown in equation 15. The speed controller $C(s)$ was designed with PI feedback control.

$$C(s)G_M(s) = \frac{\Omega}{\Omega_d} = \frac{K_p \left(\frac{K_m}{J_{com}}\right)\left(s + \frac{K_i}{K_p}\right)}{s^2 + \left(\frac{B_{com}}{J_{com}}\right)s} \tag{15}$$

Integral and proportional gains, Ki and Kp, were determined using root loci and modeling methods. Responding to speed fluctuations with insufficient damping, which can cause a significant speed error, should be avoided, so all the roots were intended for a negative real axis. From the point of view of the frequency domain, it was desirable to have a high ratio of integral to proportional gain (Figure 1).

V. THE NUMERICAL EXPERIMENTS RESULTS

Experimental studies were carried out, which allowed to obtain a transient process on the channel "drawing speed - diameter" for various types of exhaust drums. Thus, Figure 2 shows the frequency response of the mechanism with adjustable speed, which has two pinched disks, one of which is connected to the engine or a drum, onto which the tire is automatically wound. The engine was connected by a 1:60 gearbox, and the diameter of the disk was 19 cm. Due to the high degree of reduction, we can assume that the engine runs almost without load. This process corresponds to a monotonic function of the second order separated by real poles:

$$G_1(s) = \frac{3}{(s + 6,3)(s + 19,58)} \tag{16}$$

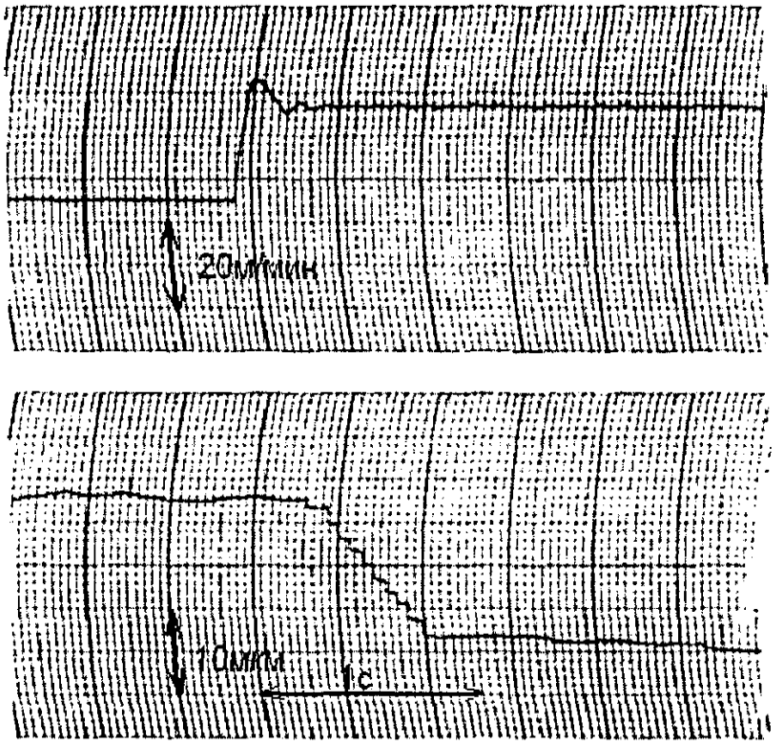

Figure 1 - Transition on the channel "drawing speed - diameter"

If it is necessary to use a pulling mechanism with a drum (which usually occurs when several fibers are simultaneously pulled and rotated), the dynamics are somewhat different.

Figure 3 shows the recorded frequency response of the exhaust mechanism using a plastic drum 15 cm in diameter. Weobtainthetransferfunction:

$$G_2(s) = \frac{s + 208}{(s + 1463)(s + 417)} \tag{17}$$

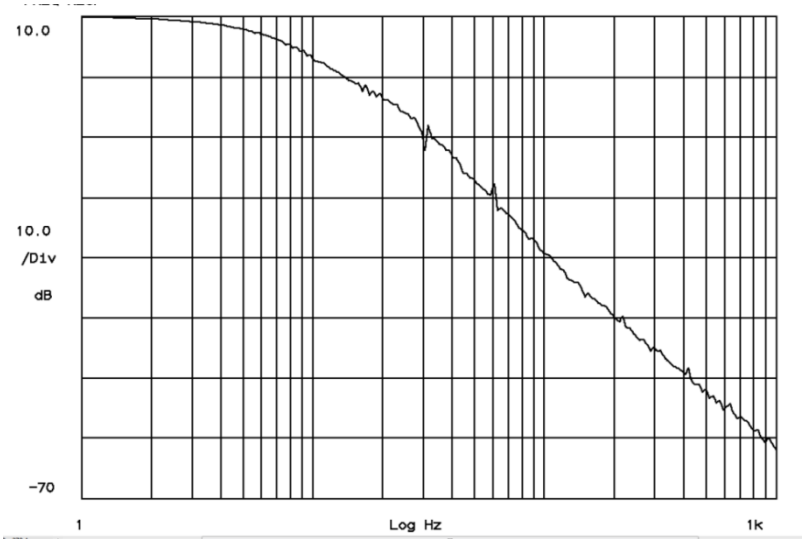

Figure 3 - Transient for a variable speed exhaust mechanism (disc diameter 19 cm)

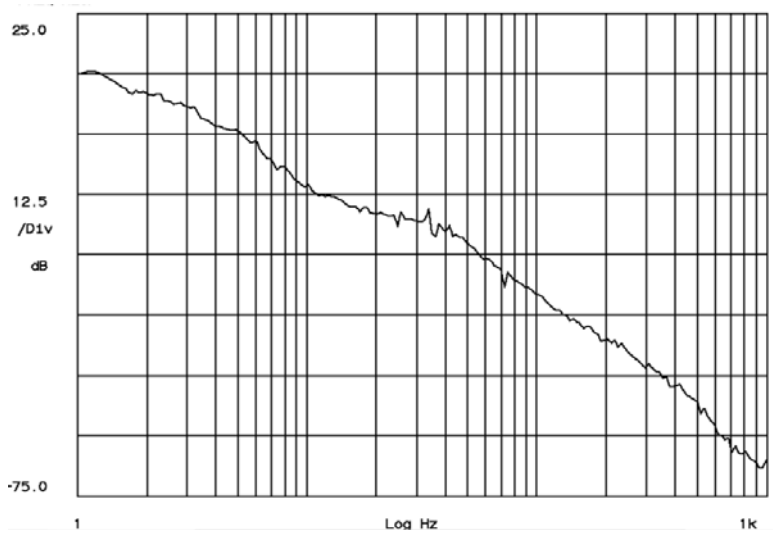

Figure 4 - Transient for exhaust mechanism with a plastic drum with a diameter of 15 cm for the extraction of several threads

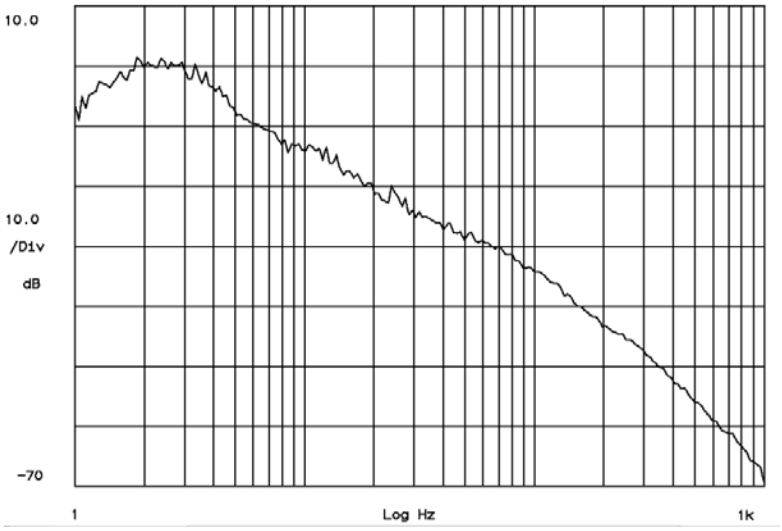

Figure 5 - Transient for exhaust mechanism with a metal drum

If a metal drum with a diameter of 31.8 cm and a weight of 5.3 kg is used, an increase in the frequency response is observed in the region of 2 Hz (Figure 5). This is due to the lower efficiency of the electronic brake in the regulator due to the relatively heavy drum. In this case, the transfer function:

$$G_3(s) = \frac{(s + 0.7)(s + 17)}{(s + 8.3)(s + 128)(s + 729)} \quad (18)$$

The transport delay of the diameter measurement system was determined to be 0.4 s.

Based on the data obtained, a synthesis was performed of the transfer function associated with the drawing process and the transport delay of the diameter measurement system:

$$G_p(s) = \frac{0{,}01e^{-0.4s}}{s^2 + 0{,}816s + 0{,}118)} \quad (19)$$

The transfer function can be written in a more general form as:

$$G(s) = \frac{K\, e^{-\tau s}}{(T_1 s + 1)(T_2 s + 1)} \quad (20)$$

where $T_1 \sim L / vf$, that is, it is proportional to the hydrodynamic properties of the system (*vf* - is the extraction rate, *L* - is the length of the furnace), that is, it is proportional to the hydrodynamic properties of the system. The second time constant T_2 is proportional to the thermal properties of the system, i.e. $T2 \sim mCp / k$, where *m* - is the mass of molten glass, *Cp* - is the specific heat capacity, and *k* - is the heat transfer coefficient.

VI. CONCLUSION

There has been presented the basic design of the drum for pulling fiber. Critical parameters, drum operation, which have a significant impact on the performance of optical fiber, have been determined. The maximum engine speed in relation to the pulley diameter has been determined. A mathematical model has been developed for the operation of a drum (coil), taking into account the dynamic equation of motion, inertia, change of speed, and using proportionally an integral controller. An open loop transfer function is obtained for a belt pulley, a motor and a speed controller with feedback control in proportion to an integral controller. A transient process was obtained through the channel “drawing speed - diameter” for various types of exhaust drums.

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ОПТИКАЛЫҚ ТАЛШЫҚТЫ СОЗУ ПРОЦЕСІН ДАЙЫНДАУ КЕЗІНДЕГІ ОНЫҢ ЖЫЛДАМДЫҒЫН САНДЫҚ МОДЕЛДЕУІ МЕН АВТОМАТТЫ БАСҚАРУЫНЫҢ МАҚСАТЫ

Аннотация. Оптикалық талшықты созу үшін барабанның базалық құрамы сипатталған. Бұл оптикалық талшықты созу мен жылдамдығына әсер ететін басты элемент, нәтиженің соңында оның көлденең қимасының пішіні мен диаметріне, яғни негізгі геометриялық парамерлеріне әсер етеді. Оның орнықтылығы дайын оптикалық талшықтардың пайдалану сипаттамаларын анықтайды. Сонымен қатар қозғалыстың динамикалық теңдеуін, жылдамдықтың өзгерісі мен инерциясын ескере отырып, бұл жұмыс барабан (ораушы) жұмысының математикалық моделін өңдеуге арналған. Ременді шкивтің, қозғалтқыштың және кері байланысы пропорционалды-интегралдық жылдамдық реттегішімен бақыланатын ажыратылған контурдың беріліс функциясы алынған. «Созу жылдамдығы - диаметр» каналы бойынша әртүрлі типті созу барабандары үшін өтпелі процесі алынған.

Түйін сөздер: оптикалық талшықты созу, оптикалық талшықтың созу барабаны, шкив, шкив диаметрі, оптикалық талшықтың диаметрі, реттеуш, соу жылдамдығы.

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ЗАДАЧА АВТОМАТИЧЕСКОГО УПРАВЛЕНИЯ И ЧИСЛЕННОГО МОДЕЛИРОВАНИЯ СКОРОСТИ ВЫТЯЖКИ ОПТИЧЕСКОГО ВОЛОКНА В ПРОЦЕССЕ ЕГО ИЗГОТОВЛЕНИЯ

Аннотация. В работе дано описание базовой конструкция барабана для вытягивания оптического волокна. Это ключевой элемент, который влияет на скорость и натяжение оптического волокна, а в конечном итоге на его основные геометрические параметры, такие как диаметр и форма поперечного сечения, стабильность которых определяют эксплуатационные характеристики готового оптического волокна. Также работа посвящена разработке математической модели работы барабана (катушки) с учетом динамического уравнения движения, инерции и изменения скорости. Получена передаточная функция разомкнутого контура для ременного шкива, двигателя и регулятора скорости с контролем обратной связи пропорционально – интегральным регулятором. Получен переходной процесс по каналу «скорость вытяжки - диаметр» для различных типов вытяжных барабанов.

Ключевые слова: вытяжка оптического волокна, вытяжной барабан оптического волокна, шкив, диаметр шкива, диаметр оптического волокна, ПИ - регулятор, скорость вытяжки.

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ACCOUNTING THETIME DELAY INTHEBINARY COAGULATION MODEL

Abstract. The paper deals with the time-delayed model for cluster aggregation processes based on the Smolukhovsky equation with the help of the heat and mass transfer kernels approach. The new non-local modification of the general kinetic equation of Smoluchowski binary aggregation equation hasbeen submitted. Forthecaseof an isotropic and homogeneous medium, the model has been reduced to the ordinary differential equation. The further possible development of the proposed model with allowance for taking into account the differences in the characteristic coagulation times during the aggregation of globules of different order has been discussed.

Keywords:aggregation equation, disperse phase, polydisperse, model, coagulation process, aggregation.

Introduction. The coagulation processes of the dispersed phase in heterogeneous physicochemical systems are widespread in various chemical technologies, metallurgy, and also in natural phenomena [1].

Currently, to describe the evolution of the concentration of i-mers in polydisperse systems in the irreversible aggregation processes, the Smolukhovsky equation is commonly used for the binary coagulation process [2, 3]:

$$\frac{\partial C_i}{\partial t} = \frac{1}{2}\sum_{j=1}^{i-1}\Phi_{i-j,j}C_{i-j}C_j - C_i\sum_{j=1}^{\infty}\Phi_{i,j}C_j \quad , \qquad (1)$$

where C_i - is the concentration of i-mers; $\Phi\ i, j$ - is the rate kernels.

Todaythevariousmodel representations are used to solve the problem of the aggregation kernels forms [1, 3].

In the work [4], a model approach to this problem was also proposed, based on the use of a peculiar parameter of the order of the aggregate formed during coagulation i – and j – mers:

$$\lambda = \frac{i-j}{i+j}, \qquad (2)$$

Under a small order ofi-mers, the main role may be played by an increase in the effective capture cross section with an increase in the characteristic radius of the particles, as well as a decrease in the mobility of the particles with an increase in their size and mass. A number of numerical experiments suggested that the coagulation rate kernel may have the following phenomenological form [3].

$$\Phi_{i,j} \approx \frac{k}{(i+j)^{\beta}} + a_2\left(\frac{i-j}{i+j}\right)^2, \tag{3}$$

Using the proposed approach to the description of the coagulation process using this model of the aggregation kernels is quite promising, because opens up the possibility for the model control with a set of parameters.

A numerical experiment showed that the proposed model gives a correct qualitative description of the coagulation processes, which is consistent with the known experimental data and model analysis using the methods of asymptotic expansions [1, 2].

However, the other side of the problem of modeling coagulation processes is currently practically undeveloped. It is about taking into account the time delaying in aggregation processes. This lacune in the theory of coagulation is also noted in the science literature [1]. Indeed, without taking into account the the time delay of aggregation, the Smoluhovsky equation is internally contradictory, since it does not describe the influence of the characteristic time of aggregate formation on the kinetics of the process.

The problems of taking into account relaxation times and long-range interactions of structural elements of the medium in the mathematical modeling of transport phenomena are of great practical and theoretical interest [5, 6]. These issues are particularly relevant in cases when it comes to fast processes, which cannot be considered as a local aggregation processes. The working cycle of such processes is short, and the whole process is carried out in transition mode. Therefore, the possibilities of managing intensive processes are limited, and the correct calculation and the choice of optimal values of the control parameters are of great importance.

This article deals with the time-delayed model based on the Smolukhovsky equation with the help of the approach proposed in [5, 6]. In accordance with this approach, the temporal nonlocality of mass transfer processes can be described on the basis of the model of the transport relaxation kernels [10-12]. Relaxation transfer kernels are called the cores of integral transformations that link the flows and thermodynamic forces in the statistical theory of dissipative processes [5, 6].

Mathematical model. The general structure of the mass fluxes of the components in the n-component system in accordance with the method of relaxation nuclei of transfer [6] has the following form:

$$J(R,t) = J(R,t_0) + \sum_{k=1}^{n+1} \iint dt_1 dR' N_{ik}(R,R',t,t_1) F_k(R',t), \tag{4}$$

For analyzing the general structure of the transport basic equations, the following type of relaxation transfer kernels can be used:

$$N_{ik}(R,t-t_1) = \eta_{ik}(R,t)\exp\left(-(t-t_1)/\tau_{ik}\right), \tag{5}$$

where $\eta_{ik}(R,t)$ is a local function [6, 7].

Thejustificationofthis type of relaxation kernels is based on the characteristic form of the differential equation of relaxation processes [6, 7, 8]:

$$\frac{\partial}{\partial t} N(R,s) + \frac{N(R,s)}{\tau} f(R,t) = 0, \tag{6}$$

In the paper [5, 6], a similar approach was used to modeling the relaxation kernels of heat and mass transfer in a two-component system with allowance for cross-effects in the form:

$$\frac{\partial N_m}{\partial t} = -N_m \tau_m^{-1} + N_h \tau_\times^{-1}, \tag{7}$$

$$\frac{\partial N_h}{\partial t} = N_m \tau_\times^{-1} - N_h \tau_h^{-1}, \tag{8}$$

The choice of signs in equations (7), (8) is determined by the conditions of conjugation of perturbations of the temperature and concentration fields [9, 10].

In the case of aggregation processes, the role of the relaxation times is played by the characteristic times of the aggregation of i- and j-mers. The following non-local modification of the Smoluchowski equation is proposed for the aggregation process in a polydisperse system [11, 12]:

$$\frac{\partial C_i}{\partial t} = \frac{1}{2}\sum_{j=1}^{i-1}\int dt_1 \Phi_{i-j,j}(t,t_1) C_{i-j}(t_1) C_j(t_1) - \sum_{j=1}^{\infty}\int dt_1 \Phi_{i,j}(t,t_1) C_i(t_1) C_j(t_1), \tag{9}$$

The model equations for the aggregation kernels, by analogy with (6), look as follows

$$\frac{\partial}{\partial t}\Phi_{i,j} + \frac{\Phi_{i,j}}{\tau_{i,j}} f_{i,j}^0 = 0, \tag{10}$$

With accounting the system (10), the integro-differential equations (9) take the form:

$$\begin{aligned}\frac{\partial C_i}{\partial t} = \frac{1}{2}\sum_{j=1}^{i-1}\int dt_1 \Phi_{i-j,j}^0 \exp\left(-\frac{f_{i-j,j}^0}{\tau_{i-j,j}}(t-t_1)\right) C_{i-j}(t_1) C_j(t_1) - \\ \sum_{j=1}^{\infty}\int dt_1 \Phi_{i,j}^0 \exp\left(-\frac{f_{i,j}^0}{\tau_{i,j}}(t-t_1)\right) C_i(t_1) C_j(t_1)\end{aligned} \tag{11}$$

For the case of an isotropic and homogeneous medium, relations (11) can be considered as ordinary differential equations

The temporal derivatives of the integral terms read

$$\Phi_{i,j}^0 C_i(t) C_j(t) + \int_0^t dt_1 C_i(t_1) C_j(t_1) \frac{d}{dt}\exp\left(-\frac{f_{i,j}^0}{\tau_{i,j}}(t-t_1)\right), \tag{12}$$

Then equations (9) can be converted to

$$\begin{aligned}\frac{d^2 C_i}{dt^2} = \frac{1}{2}\sum_{j=1}^{i-1}\Phi_{i-j,j}^0 C_{i-j}(t) C_j(t) - \sum_{j=1}^{\infty}\Phi_{i,j}^0 C_i(t) C_j(t) - \\ - \frac{1}{2}\sum_{j=1}^{i-1}\frac{f_{i-j,j}^0}{\tau_{i-j,j}}\int dt_1 \Phi_{i-j,j}^0 \exp\left(-\frac{f_{i-j,j}^0}{\tau_{i-j,j}}(t-t_1)\right) C_{i-j}(t_1) C_j(t_1) + \\ + \sum_{j=1}^{\infty}\frac{f_{i,j}^0}{\tau_{i,j}}\int dt_1 \Phi_{i,j}^0 \exp\left(-\frac{f_{i,j}^0}{\tau_{i,j}}(t-t_1)\right) C_i(t_1) C_j(t_1)\end{aligned} \tag{13}$$

In the zero approximation [13] the characteristic relaxation times are assumed to be independent of the order of the i-mers.

Then it can be denoted for all i , j :

$$\frac{f_{i,j}^0}{\tau_{i,j}} = \frac{f^0}{\tau}, \tag{14}$$

Equations (11) in this case take the form

$$\begin{aligned}\frac{d^2C_i}{dt^2} &= \frac{1}{2}\sum_{j=1}^{i-1}\Phi_{i-j,j}^0 C_{i-j}(t)C_j(t) - \sum_{j=1}^{\infty}\Phi_{i,j}^0 C_i(t)C_j(t) - \\ &- \frac{f^0}{\tau}\left(\frac{1}{2}\sum_{j=1}^{i-1}\int dt_1\Phi_{i-j,j}^0 \exp\left(-\frac{f^0}{\tau}(t-t_1)\right)C_{i-j}(t_1)C_j(t_1) + \right. \\ &\left. + \sum_{j=1}^{\infty}\int dt_1\Phi_{i,j}^0 \exp\left(-\frac{f^0}{\tau}(t-t_1)\right)C_i(t_1)C_j(t_1)\right)\end{aligned} \tag{15}$$

From equations (11) and (15) the following time-delaying modification of the Smoluchowski equation can be obtained:

$$\frac{d^2C_i}{dt^2} + \frac{f^0}{\tau}\frac{dC_i}{dt} = \frac{1}{2}\sum_{j=1}^{i-1}\Phi_{i-j,j}^0 C_{i-j}(t)C_j(t) - \sum_{j=1}^{\infty}\Phi_{i,j}^0 C_i(t)C_j(t), \tag{16}$$

A feature of equation (16) is the presence of solutions that describe the propagation of disturbances with a finite velocity [9, 10].

Further development of the proposed model may consist in taking into account the differences in the characteristic coagulation times during the aggregation of globules of different order.The estimate for the fractal dimension of the active unscreened surface can be obtained by counting the active centers arising after the capture and penetration of a new cluster into another cluster.

The number of arising reactive centers N_a can be evaluated as follows [14-16]:

$$N_a \sim R^{d_f - 1} \cdot \lambda, \tag{17}$$

where R is the characteristic radius of the cluster-recipient, λ is the characteristic penetration depth for the captured cluster (Figure 1).

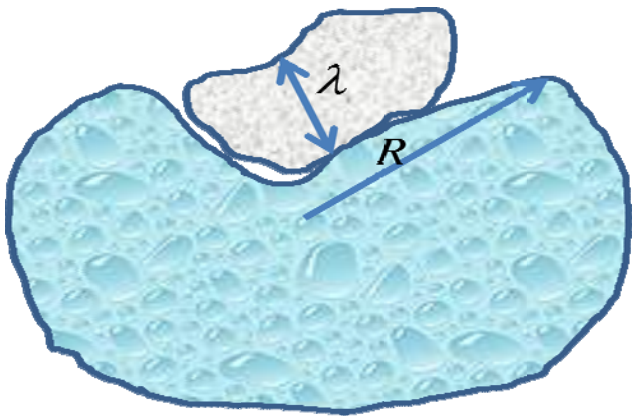

Figure 1 - Capture and penetration of clusters under the aggregation

Conclusions.It is shown that heat and mass transfer kernel approach allows for obtaining a time-delaying kinetic model of binary cluster aggregation, and to modify the Smoluchowski equation to the non-local type with reducing to an ordinary differential equation. Estimation for accounting differences between the characteristic coagulation times for clusters of different orders leads to calculations of fractal dimensions and counting the active centers arising after the capture and penetration of a new cluster into another cluster.Thisproblemneedsfurther analysis.

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БИНАРЛЫҚ КОАГУЛЯЦИЛАУ МОДЕЛІНІҢ УАҚЫТТЫҚ ТОҚТАУЫН ЕСЕПТЕУ

Аннотация. Мақала жылу масса алмасу ядроларының әдісі көмегімен Смолуховский теңдеуіне негізделген кластерлерді агрегациялау процестеріне уақыт бойы тоқтаумен модельдерді жасауға арналған. Смолуховскийдің агрегациялаудың бинарлы теңдеуінің жалпы кинематикалық теңдеуінің жаңа оқшаулап шектелмеген түрлендірілуі келтірілген. Изототропты және біртектік орта жағдайы үшін модель қарапайым дифференциалды теңдеуге келтірілген. Әр түрлі ретті глобулаларды агрегациялау кезінде коагуляцияның сипаттық уақыттарының айырмасын ескере отырып, ұсынылған модельдің ары қарай даму мүмкіндігі талқыланады.

Түйін сөздер: агрегациялау теңдеуі, дисперстің фаза, полидисперсия, модель, коагуляция, агрегация.

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УЧЕТ ВРЕМЕННОЙ ЗАДЕРЖКИ В МОДЕЛИ БИНАРНОЙ КОАГУЛЯЦИИ

Аннотация. Статья посвящена разработке модели с задержкой по времени для процессов агрегации кластеров, основанной на уравнении Смолуховского с помощью метода ядер тепломассопереноса. Представлена новая нелокальная модификация общего кинетического уравнения бинарного уравнения агрегации Смолуховского. Для случая изотропной и однородной среды модель приведена к обыкновенному дифференциальному уравнению. Обсуждается возможность дальнейшего развития предложенной модели с учетом различий в характерных временах коагуляции при агрегации глобул различного порядка.

Ключевые слова:уравнения агрегации, дисперсная фаза, полидисперсия, модель, процесс коагуляции, агрегация.

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INVESTIGATION OF ENDOTHERMIC PROPERTIES OF INDUSTRIAL WASTES

Abstract. At the present time the applied fire-extinguishing standard compositions are very expensive and therefore are perspective investigation of fire-extinguishing properties of the pulverized industrial waste. This is connected with their cheapness, low expenses for initial reworking and possibility of their utilization.

At the analysis carrying out of patent and scientific-technical literatures on the question of presence the fire-extinguishing powders it was identified that basic powder components are in non-combustible metallurgic waste.

The searching of effective flash suppressors with waste using is rational in the direction of complex compositions development having low temperatures of endothermic processes of melting, decomposition or evaporation with inert gases formation, but for easy-flammable powders are many-component eutectic mixtures. There are investigated more than 250 minerals and mountain rocks in order to identify endothermic effects. The following ones have endothermic effects in the field of low temperatures: $CaCO_3$ • MgCO.3- dolomite; $CaCO_3$ - calcite, aragonite; $MgC0_3$- magnesite; Ca (Mg, Fe) $(C0_3)_2$ - ankerite; $Na_2 S0_4$• $10H_2O$ - mirabolite; A1 $(OH)_3$ + $A1_4[Si_40|o]$ • $(OH)_8$ –boxite.

Keywords: investigation of endothermal processes, industrial wastes, fire-extinguishing compositions, fire-extinguishing powders, endothermic effects, powder compositions, explosion suppressing compounds, ammophos, derivatograph, thermograms.

Introduction. Analyzing scientific and technical literature of the authors [1-10], it can be concluded that scientists came to a common opinion only in the following: the most effective are substances that are capable of heating to endothermic transformations, that is, volatile, or light-boiling, or easily decomposable. However, nothing is reported about the indices of this process, although it follows logically that the lower the temperature of the beginning of the process and the greater the thermal effect of the endothermic reactions, the better the powder is.

Therefore, for the first time, we propose a technique for the experimental study of the endothermic properties of powders, which determines the temperature range and the thermal effect of the powder, according to which the relative phlegmatizing ability of the compositions can be estimated and predicted.

The essence of the method is to study the processes by the thermal effect accompanying them and change in relative temperature difference at a linear heating rate of the sample under study and the model sample that does not undergo any internal transformations during heating.

When heated, a sample has a lower temperature in comparison with the temperature of the model sample, as a result of endothermic transformations in the region of critical temperatures. During this

period of heating, the heat input to the system is less than the heat removal to the environment, so the temperature of the sample is significantly reduced, and the occurrence of combustion becomes impossible.

The moment of a significant decrease in the heating rate and the jump in the differential temperature curve is taken as the start of the endothermic process. The temperature taken at this point on the thermogram is considered as the cooling start temperature.

The method allows us to follow other changes in the sample during heating, accompanied by negative or positive thermal effects (melting, thermal decomposition, etc.), which is very important in the study of multicomponent mixtures.

Based on the results of the analytical review in forecasting, searching for and developing new effective explosion suppressing compounds, the following factors should be taken into account:

1. Powder compositions intended for effective suppression of ignition and explosion must be made from non-deficient domestic raw materials by simple technology.

2. The search for effective flame arresters using wastes is expedient in the development of complex compositions having low temperatures of endothermic processes of melting, decomposition or evaporation with the formation of inert gases; as for the production of low-melting powders, the search should be conducted among multicomponent eutectic mixtures.

Therefore, in the first place, a qualitative analysis of the endothermic capacity of natural rocks, minerals and wastes of production processes should be carried out as the cheapest, non-deficit and not requiring sophisticated production technology (mainly grinding). Analytical studies [11,12] of more than 250 minerals and rocks were carried out by standard albums of thermograms of their diagnostics. As a result, it was found that more than half of them have endothermic effects, but many also have exothermic effects, or they are rare or toxic. Therefore, thanks to endothermic effects in the low temperature region, the following minerals and rocks can be promising:

1. Dolomite $CaCO_3 \cdot MgCO_3$
2. Calcite, aragonite $CaCO_3$
3. Magnesite $MgC0_3$
4. Ankerite $Ca\,(Mg, Fe)\,(C0_3)_2$
5. Mirabilite $Na_2\,S0_4 \cdot 10\,H_2O$
6. Bauxite $A1\,(OH)_3 + A1_4[Si_4\,O_{10}] \cdot (OH)_8$

Analytical forecasting of fire-extinguishing ability of minerals and rocks. Taking into account the above conditions, a preference can be given to carbonates (due to the range and magnitude of the endothermic effect), crystalline hydrates, soda and gypsum (due to low start temperature). Hydroxides have less effect. From the pulverized waste, the following can be suitable:

- powder of iron oxide and sludge of waste streams of rolling shops, containing calcium and iron chlorides;
- dust of dolomite, limestone and lime from limestone burning shops;
- blast-furnace slag, consisting of calcium, magnesium and aluminum silicates.

During heating, chemical reactions and physical transformations occur, accompanied by thermal effects with the release or absorption of heat. Heats of formation (decomposition) of a wide range of compounds are obtained as average values calculated from experimental thermodynamic data for a large number of compounds of this series.

For the purpose of predicting the fire-extinguishing properties of the powder, a technique is proposed for calculating the energy of cooling the flame [13] (dissociation energy) $\Delta H\square 298$ on the basis of the Hess thermodynamic law:

$$\Delta H\square_{298(\text{reaction})} = \Sigma\Delta H\square_{298(prod)} - \Sigma\Delta H\square_{298(initial)} \quad (1)$$

where $\Sigma\Delta H^{\circ}_{298(prod)}$ is the sum of the heats of formation of final products, kJ/mol; $\Sigma\Delta H^{\circ}_{298(initial)}$ is the sum of the heats of formation of initial substances, kJ / mol; $\Delta H^{\circ}_{298(reaction)}$ is the thermal effect of chemical reaction under standard conditions, kJ/mol.

The heats of the formation of substances are taken from the reference literature [14]. From the calculated decomposition reactions (Table 1) of standard fire extinguishing powders and wastes, it follows that the efficiency of soda is much less than that of lime, but it is impossible to make an unambiguous conclusion, since the temperature of the beginning of the process is not taken into account. Therefore, there is a need in experimental studies, for which a standard differential-thermogravimetric method was used on the derivatograph of the Paulik system.

Synchronous automatic recording of changes when the substance is heated on a thermogram allows us to judge the nature and intensity of thermal effects, and the temperatures at which effects occur.

The endothermic effect is the deviation of the DTA curve down to the abscissa axis, the exothermic effect is upward. The change in the weight of the sample during heating is recorded, which makes it possible to record the gasification of the sample.

Table 1- Energies of powders dissociation

Substance	Reaction of powder decomposition	ΔH°_{298}, kJ/mol	Temperature ranges of the cooling effect, °C
Soda	$NaHC0_3 = NaOH+CO_2$	96	190-450, 780-850
Dolomite	$CaCO_3 = CaO+CO_2$	177,4	430-640, 750-920
	$MgCO_3 = MgO+ CO_2$	101,5	
Lime	$Ca(OH)_2=CaO+H_2O$	108,2	430-580, 720-830
Ammophos	$NH_4H_2PO_4=NH_3+1.5H_2O+0.5P_2O_5$	61,2	190-430
	$(NH_4)_2HPO_4\|=4NH_3+3H_20+P_2O_5$	168,8	
Carbamide	$CH_3N_2OH=CO+N_2+2H_2$	870	120-130

The main component of highly effective extinguishing powders, such as PF, P-2AP, P-4AP, R-P-24 is ammophos, consisting of phosphate-ammonium salts.

Based on the reference thermodynamic data on the heats of formation of , H_3PO_4, HPO_3, H_2O, P_2O_5, the binding energies between the NH, O-H, P-O, P = O atoms and the enthalpy of ammophos containing compounds of mono- and diammonium- phosphates such as $NH_4H_2PO_4$ and $(NH_4)_2HPO_4$ are calculated.

As follows from the calculations, the decomposition reaction of ammophos including ammonium dihydrogenphosphate and ammonium hydrogen phosphate proceeds with heat absorption (endothermic); and 584.85 kJ is expended per 1 kg of ammophos.

Thermodynamic calculation of decomposition reactions of dolomite and lime dust also comes with an endothermic process of decomposition and destructuring, which indicates the possibility of their use in fire extinguishing compositions. The calculation procedure is given in Appendix A.

The calculated data obtained are in good agreement with the thermographic studies of pulverized materials conducted with DTA method. When the dolomite dust is heated (Fig. 1 a), two endothermic effects are observed on the thermogram: the first - in the temperature range from 430°C to 640°C and the second - from 750°C to 920°C. It can be explained by the thermochemical transformations taking place. Judging by the presence in the sample of up to 45% loss on ignition, i.e. gaseous substances released when the sample is heated, the dust contains carbonates and hydroxides of calcium and magnesium. The temperatures of their decomposition according to the reference data are (°C): for $CaCO_3$ - 825; $MgCO_3 \cdot 3H_2O$-165; $Mg(OH)_2$ - 200; $MgCO_3$ - more than 350; $Ca(OH)_2$- 580.

When lime is heated, the first endothermic effect is determined by the dissociation of calcium hydroxide in the reaction (3.2) with the participation of decomposition of impurities of magnesium compounds:

$$Ca(OH)_2 = CaO+ H_2O \quad (2)$$

The beginning of the first endothermic peak occurs at a temperature of 430°C and corresponds to the onset of dissociation of magnesium carbonates, and the second peak occurs at 720°C dissociation of

calcium carbonates. Decomposition temperatures are close to the reference data. Loss on ignition of lime is 16%.

The second peak in reaction (3.3) is explained by the dissociation of the incompletely burned calcined lime:

$$CaCO_3 = CaO + CO_2 \quad (3)$$

and decomposition of calcium hydroxide. When the dolomite samples are heated, the first endoeffect is due to the decomposition of magnesium carbonate, the second endoeffect is explained by the onset of the decomposition of calcium carbonate.

Oxides act upon heating as inerts and their antipyrogenic properties are weak.

However, the effect of phlegmatization by inert substances increases with the use of substances with endothermic melting processes [15]. They include the commonly used magnesium, potassium, and sodium chlorides with temperatures of 700°C to 800°C. Hydrochloric acid effluent of the plant with a volume of about 1.3 million cubic meters per year, neutralized with a 5% solution of lime, is discharged into the reservoir. The resulting calcium chloride is widely known as an effective antipyrogen.

The effect of carbonates and hydroxides, in addition to physical absorption of heat by analogy with oxides, is due to the chemical cooling of the reaction zone, i.e. endothermic effect. Moreover, under these reactions, water vapor and carbon dioxide are released into the atmosphere, which serve as effective flame retardants. This indicates the possibility of using dolomite dust and lime dust in fire extinguishing compositions.

To compare and evaluate the reliability of the indications obtained at the installation of South Kazakhstan State University (SKSU), the similar samples were studied on the derivatograph of the Paulik system. The heating rate was 10 deg / min, pure aluminum oxide was used as a reference substance. Parallel studies on the derivatograph gave similar results, thermal effects are observed in the same sequence, but they have smoother peaks shifted to the lower temperatures zone. Comparative results of thermogravimetric analysis of pulverized industrial waste and fire extinguishing powder are given in Table 2.

Table 2- Results of thermogravimetric analysis of industrial pulverized wastes

Sample	Ratio %	Installation of SKSU			Derivatograph		
		Temperature, ^{0} C			Temperature, ^{0} C		
		T_b	T_e	max ДТА	T_b	T_e	max ДТА
Powder P-2AP	100	200	480	430	190	430	350
Dolomite	100	510, 800	680,960	520,900	430,750	640,920	490,880
Lime	100	500,780	590,880	590,830	430,720	580,830	500,780
Powder P-2AP	100	180	450	400	150	440	390
Dolomite	100	480,800	680,960	500,890	420,780	640,900	500,890
Lime	100	490,780	580,870	580,820	420,730	570,820	490,780
Powder P-2AP	100	190	450	420	180	430	420
Dolomite	100	500,780	690,950	520,890	430,720	630,920	490,890
Lime		500,770	590,890	580,830	420,720	580,820	500,760

The study of standard extinguishing powders (see Figures 1) showed that the endothermic effects of soda and ammophos are much greater than that of gypsum and sodium chloride.

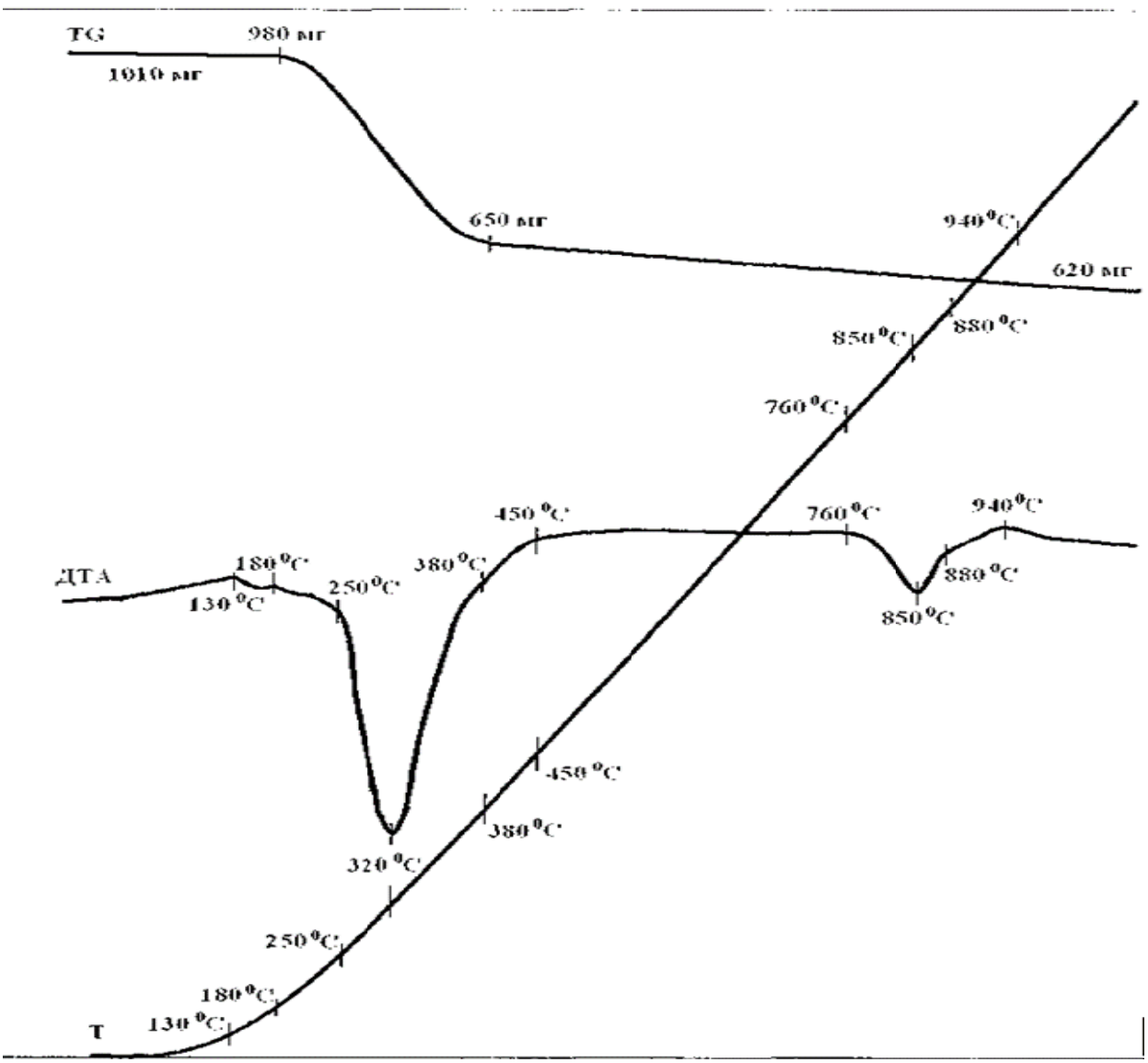

Figure 1 - The thermogram of soda decomposition

In thermograms of pulverized wastes (see Figures 2), endothermic effects of lime and dolomite are significant, which indicates their decomposition with the formation of oxides and the release of carbon dioxide. This is confirmed by the loss of their weight. The endothermic effects of blast furnace slag and iron oxide are minimal. By the way, all thermograms are similar to standard curves.

Weight loss curves TG:

1'- lime; 2'- dolomite; 3'- blast furnace slag; 4'- iron oxide

DTA curves:

1 - lime; 2 - dolomite; 3 - blast furnace slag; 4 - iron oxide

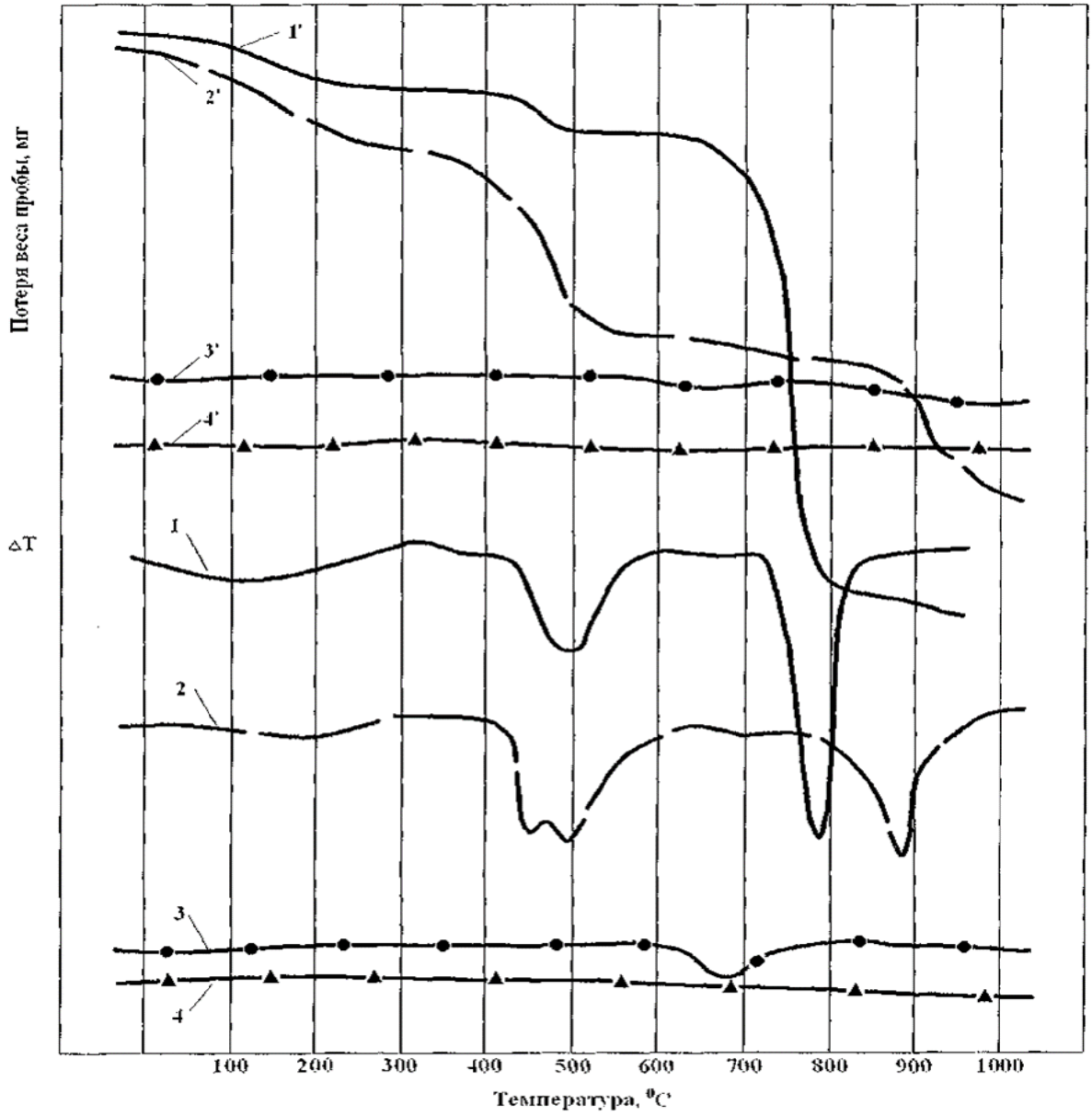

Figure 2 - Thermograms of dispersed metallurgical wastes

It can be seen that the first losses of water and ammonia are observed at the values of temperature up to 180°C. The endothermic effect at 190°C refers to the process of transition of diammonium phosphate to monoammonium phosphate and the formation of ammonium pyrophosphate from monoammonium phosphate. After 200°C, the polymerization of monomeric phosphates begins in the melt with the endo-effect at 240 ° C at which further loss of ammonia and water occurs. The changes at temperatures of 440, 550 and 715 ° C indicate further polymerization and the preparation of compounds that form viscous films on the smoldering surface that hinder the access of oxygen to the burning surface. The total loss of ammophos mass is more than 70% [16-18].

Based on the experiments results and taking into account the cheapness, dispersity and environmental safety of raw materials, we can conclude that dolomite, hydrated lime and expired fire extinguishing powder are promising for further research.

Conclusions. It is shown that the basis for mass-produced fire extinguishing powders, i.e. the most effective flame arresters currently used are salts: phosphates, carbonates and chlorides of ammonium and alkaline earth metals.

The effectiveness of these powders is due to the endothermic processes of decomposition and destruction that occur during heating, which are cooling the combustion zone, which is confirmed by differential-thermographic analysis of minerals and rocks. A similar forecast is also promising for hydrates and hydroxides.

It is established that among metallurgical wastes the basis for the production of effective fire extinguishing powders can be: dust and dispersed waste of dolomite and hydrated lime of limestone burning shops containing calcium and magnesium carbonates, and calcium hydroxide.

It has been established that the efficiency of powders can be quantitatively determined by complex consideration of the endothermic effect (the area of the endoeffect on the thermogram), the initial temperature and the decomposition rate of the substance.

It is shown that from the point of view of low cost of raw materials, ecological safety and simplicity of technology, disperse waste (dust) of dolomite and slaked lime of limestone burning shops is promising for the development of complex powder compositions.

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ӨНДІРІСТІК ҚАЛДЫҚТАРДЫҢ ЭДОТЕРМИЯЛЫҚ ҚАСИЕТТЕРІН ЗЕРТТЕУ

Аннотация. Қазіргі уақытта өрт сөндіруде қолданылатын стандартты қоспалар өте қымбат келеді. Сондықтан ұсақталған өнеркәсіптік қалдықтардың өрт сөндіру қасиеттерін зерттеудің болашағы зор. Бұл олардың құнының төмен боуымен, сондай-ақ бастапқы өңдеуге жұмсалатын шығындардың аздығы мен оларды кәдеге жаратып пайдалану мүмкіндіктерімен байланысты.

Өрт сөндіру ұнтақтарының құрамы туралы патенттік және ғылыми әдебиеттерді талдау кезінде негізгі ұнтақ компоненттері жанбайтын металлургиялық қалдықтардан тұратындығы анықталды.

Қалдықтарды пайдалану арқылы жарылыстарды болдырмаудың тиімді құралдарын іздестіру инертті газдардың қалыптасуымен эндотермиялық процестердің балқу, ыдырау немесе булану үрдістерінің төмен температуралы, алайда тез тұтанатын ұнтақтар үшін көп компонентті эвтектикалық қоспалар болып табылатын кешенді қоспаларды дамыту бағытында ұтымды.

Эндотермиялық әсерлерді анықтау үшін 250-ден астам минералдар мен тау жыныстары зерттелген. Төмен температурадағы эндотермиялық әсерлер мыналардан тұрады: CaCOз • MgCO.3- доломит; CaCOз - кальцит, арагонит; MgCO3-магнезит; Ca (Mg, Fe) (C03) 2 - анкерит; Na2S04 • 10H2O - мираболит; A1 (OH) 3 + A14 [Si40 | o] • (OH) 8 – боксит.

Түйін сөздер: эндотермиялық процестерді зерттеу, өнеркәсіптік қалдықтар, өрт сөндіру құрамы, өрт сөндіргіш ұнтақтары, эндотермиялық әсерлер, ұнтақ құрамы, жарылғыштықты басатын құрамдар, амофос, дериватограф, термограммалар.

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ИССЛЕДОВАНИЕ ЭНДОТЕРМИЧЕСКИХ СВОЙСТВ ПРОМЫШЛЕННЫХ ОТХОДОВ

Аннотация. В настоящее время применяемые стандартные композиции для пожаротушения очень дороги и поэтому являются перспективным исследованием свойств пожаротушения измельченных промышленных отходов. Это связано с их дешевизной, низкими затратами на первичную переработку и возможностью их утилизации.

При проведении анализа патентной и научно-технической литературы по вопросу о наличии огнетушащих порошков было выявлено, что основные порошковые компоненты находятся в негорючих металлургических отходах.

Поиск эффективных средств подавления взрывов с использованием отходов является рациональным в направлении разработки сложных композиций, имеющих низкие температуры эндотермических процессов плавления, разложения или испарения с образованием инертных газов, но для легковоспламеняющихся порошков представляют собой многокомпонентные эвтектические смеси.

Для выявления эндотермических эффектов исследовано более 250 минералов и горных пород. Эндотермические эффекты в области низких температур имеют следующие: CaCOз • MgCO.3- доломит; CaCOз - кальцит, арагонит; MgCO3-магнезит; Ca (Mg, Fe) (C03) 2 - анкерит; Na2S04 • 10H2O - мираболит; A1 (OH) 3 + A14 [Si40 | o] • (OH) 8 – боксит.

Ключевые слова: исследование эндотермических процессов, промышленные отходы, огнетушащие составы, огнетушащие порошки, эндотермические эффекты, порошковые составы, взрывоподавляющие составы, аммофос, дериватограф, термограммы.

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NOVEL APPROACHES TO MODELING AND CALCULATING FLOWS PARAMETERS OF DENSE POLYDISPERSED SUSPENSIONS

Abstract. Modeling the sediments of dense polydisperse suspensions and the calculation of the corresponding equipment have some features that are often not taken into account in engineering calculations. This article provides an overview and analysis of these features, and also outlines ways to solve the problems arising in the calculation of the deposition of polydisperse suspensions in relation to specific structures of industrial apparatuses. New approaches to the mathematical description of the flow of dense suspensions and sediments taking into account the experimentally observed characteristics of the flow of such systems have been offered. The modern model that allows describing this phenomenon and eliminating the corresponding limitations of known models has been submitted. The submitted model describes the fluidity of the medium in a wide range of the content of dispersed solid phase even at its high concentrations. Such result has been achieved thanks to a new heuristic expression for calculating the relative viscosity of the suspension as a function of the concentration of the solid phase.

The formula for calculating the outflow rate from buffer tanks with accounting to the energy dissipation has been submitted. Such an approach allows to propose a calculation scheme that can be adapted to different rheological models.

Keywords: polydisperse, suspensions, buffer tanks, sedimentation, mathematical description.

Introduction. Modeling the sedimentation of polydisperse suspensions and the calculation of the corresponding equipment parameters have some features that are often not taken into account in engineering calculation methods. This paper provides a brief overview and analysis of these features, and also outlines ways to solve the problems arising in the calculation of the deposition of polydisperse suspensions in relation to specific structures of industrial apparatuses.

An important role in the deposition of polydisperse suspensions is played by the phenomena of an increase in the viscosity of concentrated suspensions of solid particles in a liquid when shear stresses are applied to them. This effect is associated with the transition from a flat layered structure of the arrangement of particles in suspension to a chaotic, three-dimensional distribution during deformations [1, 2]. During the transition, the viscosity grows continuously and quickly reaches a maximum; with a further increase in shear rate, it may fall.

The following parameters have an impact on this process: particle size distributions, their volume fraction, shape, interaction with other particles which can accompanied with aggregation processes, the viscosity of the continuous phase, as well as type, velocity and time of deformation. The best means of avoiding an increase in viscosity in practical situations is to reduce particle sizes or increase their volume fraction. Due to the narrowness of the range of shear rates in which the viscosity increases, to characterize such suspensions, one can use the power dependences of viscosity on shear rate [3].

In theoretical analysis of convective flows, which are set up in undiluted suspensions, during sedimentation of particles near the wall of an inclined sump, one can use the equations of momentum averaged over the ensemble neglecting Reynolds stresses at small Reynolds numbers.

When considering the inhomogeneous system of particles of the dispersed phase, which have a non-spherical shape, a procedure was developed within the framework of the hydrodynamic approach, which allows expressing the force and moment of forces acting on each particle of the dispersed phase in the form of linear combinations of perturbations (temperature gradient, tensor external voltages, etc.), the coefficients at which are the tensors of the corresponding ranks [5].

For the case when the particles of the dispersed phase have the form of weakly deformed spheres, a method has been developed that makes it possible to calculate the specific form of these tensors taking into account the interaction of any number of particles [6]. In the case when the mixture consists of Newtonian liquid and from the solid spherical particles of the same sizes suspended in it, the sources of stress arising in the dispersed phase are:

1) particle collisions between themselves,

2) chaotic particle motion,

3) hydrodynamic interaction of particles and liquids.

Usually the focus is on the consideration of hydrodynamic interaction. The resulting expression for the stress tensor due to the presence of solid particles coincides with the expression obtained in [6] for the case of a slow flow of a dilute suspension of solid particles using the concept of averaging over volume.

The diluted suspension of identical non-deformable solid particles in incompressible fluid is quite often considered, where using the averaging procedure by volume and time based on the equation of motion of a single particle in a turbulent flow, the equations of conservation of momentum and moment of momentum for the solid phase are derived . The main attention is paid, as a rule, to the derivation of the relations necessary for the closure of these equations for the fluxes of the quantity of motion and angular momentum, which are caused by turbulent flow pulsations.

It is assumed that the inertia of particles is sufficiently large, as a result of which the flow turbulence has only a weak effect on their movement, determined by the balance of gravity, aerodynamic force and momentum transfer during collisions of particles with solid walls bounding the current suspension. In this case, it is possible to obtain a closing relation of the second order [7, 8].

In many theoretical and experimental studies of the sedimentation process under the action of gravity of a narrow fraction of polydisperse suspensions, the time variation of the thickness of the zone in the upper part of the precipitation column separating the pure liquid from the slurry layer containing particles of all sizes is traced. It is assumed that the deposited particles, the dimensions of which obey the normal law of distribution, move in the Stokes mode. Inertial forces and Brownian motion are not taken into account. The distribution of the concentration and size of particles over the time and frequency of the precipitation column is calculated by numerically solving the mass conservation equation, supplemented by a relation determining the relationship between the deposition rates and the local particle concentrations [9].

In the case when the sedimentation of a suspension occurs in an arbitrary container, in the approximation of a creeping flow, the problem of precipitating a diluted monodisperse suspension of solid spherical particles inside the container is considered. Particles have a statistically uniform distribution in space. In the expression for the dimensionless average particle velocity on the axis of an arbitrary container (as characteristic, the Stokes velocity of a single sphere in an unbounded fluid is taken) in the limiting case, when its walls are removed to infinity, it can be shown that the coefficient of volume concentration depends only on the asymptotics the tendency to infinity of the linear dimensions of the container in the averaging procedure. This allows obtaining the value of the sedimentation rate of the suspension inside a container with infinitely remote walls of almost arbitrary shape [10].

In this paper, new approaches to the mathematical description of the flow of dense suspensions and sediments are proposed taking into account the real physical flow regularities of such systems.

General mathematical model the flow of dense suspensions and sediments.

The flow of thick suspensions, as a rule, occurs at low Reynolds numbers. Thus, in particular, the outflow of viscous sediments from tanks and bunkers is carried out in a creeping regime. In the case of fine solid particles contained in the non-stratified suspension as a dispersed phase, the suspension can be regarded as a homogeneous liquid with some effective viscosity [11, 12].

Therefore, it is correct to use Nusselt approximation for describing the flows of thin layers of dense suspensions [13, 14].

The impulse equations of a thin layer of a viscous fluid in the Nusselt approximation can be written in the following form.

$$\frac{\partial}{\partial y}\left(\mu_s \frac{\partial U}{\partial y}\right) + \rho_s g \cos\gamma = 0. \tag{1}$$

Here U is the longitudinal component of liquid flow velocity; g is the gravity acceleration and γ is an angle of the support surface inclination.

The effective viscosity of the suspension, taking into account the effect of solid particles suspended in the liquid, is determined from the relationship [12, 15]:

$$\mu_s = \mu_l \mu_r, \tag{2}$$

where μ_l is a viscosity of the pure liquid and μ_r is a relative viscosity depending on the solid phase content.

The relative viscosity of the suspension is proposed to be calculated by the formula [12, 14]:

$$\mu_r = \left(1 - \frac{\phi}{\phi_m}\right)^{-\alpha}, \tag{3}$$

where ϕ_m is certain maximum content of dispersed solid phase; and α is empirical indicator.

It is known [14] that for a wide class of liquids with hydrophilic inclusions of a finely dispersed solid phase over a wide range of variation of the regime parameters, the following estimates are valid:

$$\phi_m = 1.68; \quad \alpha \approx 1.82 \tag{4}$$

At the same time, as can be seen from formula (3), for, the effective viscosity calculated by formula (3) tends to infinity when $\phi \to \phi_m$.

This circumstance contradicts the data of experimental studies [15, 16]. In fact, even very thick suspensions with the maximum solids content can be yet attributed to dense sediments that have fluidity. For example, industrial slimes, as well as natural mudflows, save the fluidity up to very high concentrations of the solid phase [17, 18]. Therefore, we propose a somewhat different model that eliminates the mentioned contradiction.

First, for small parameter ϕ values, the model must be consistent with formula (3).

Second, for $\phi \to \phi_m$ the asymptotic behavior $\mu_r \to \mu_m$, where μ_m is a certain limiting value of the relative viscosity, must be realized.

Let us introduce the special parameter:

$$\beta = \frac{\phi}{\phi_m - \phi} \tag{5}$$

In accordance with our assumptions, the function must satisfy the following conditions:

$$\frac{d\mu_r}{d\beta}(0) = \alpha, \tag{6}$$

$$\lim_{\beta\to\infty}\mu_r = \mu_m, \tag{7}$$

$$\mu_r(0) = 1. \tag{8}$$

The simplest approximation for the desired function reads

$$\mu_r = \frac{\frac{\alpha\mu_m}{\mu_m - 1}\beta + 1}{\frac{\alpha}{\mu_m - 1}\beta + 1}. \tag{9}$$

Figure 1 shows some results of calculations using formulas (3) and (9) for different values of the limiting relative viscosity.

It can be seen from the graphs that in the range of solids concentration in the suspension less than 0.12, the difference in the calculated values of the relative viscosity by formulas (3) and (9) does not exceed 18% at $\mu_m \geq 20$.

However, in the concentration range from 0.2 to 0.5, the calculated values already differ by more than 50%, even for $\mu_m = 1000$.

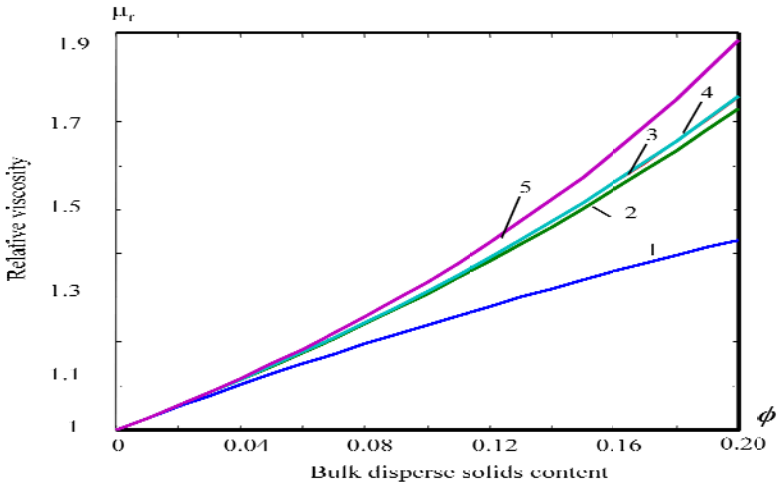


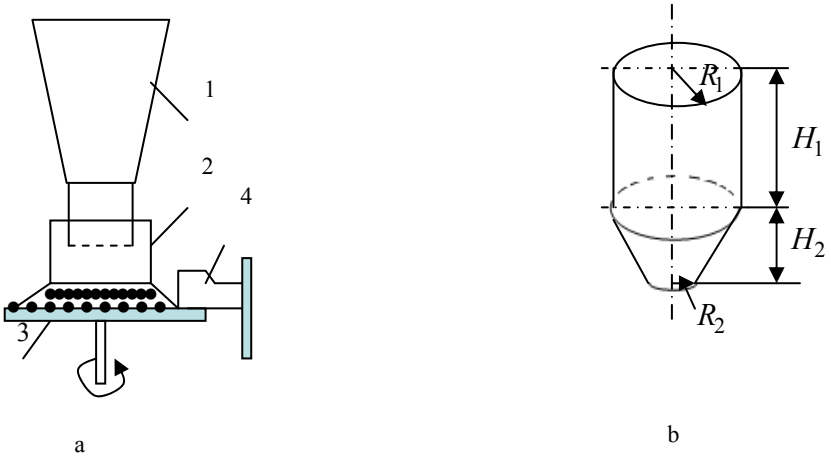
Figure 1 - Calculation using formula (9): 1- $\mu_m = 2$,
2- $\mu_m = 20$, 3- $\mu_m = 100$, 4- $\mu_m = 1000$; 5- calculation using (3)

Modeling the outflow of dense suspensions from reservoirs

The discharge of sediment (or sludge) is usually carried out in a batch mode. In this case, the outlet sizes of the bunker should be sufficient to provide the required throughput [12, 19]. At the same time, they must exclude the accumulation (hanging) of the loose cargo in the bunker. In order to avoid the sudden collapse of large masses of the loose cargo through the holes, as well as to avoid need in high weight of the gates, the discharge outlet must not be excessively large [19, 20].

The main geometrical parameters of the buffer tanks are shown in Figure 2. The volume of the bunker of cylindrical shape, consisting of a cylinder in the upper part and a truncated cone in the bottom, is found by the following formula:

$$\Omega = \left(\frac{1}{3}\pi H_1\left(R_1^2 + R_1R_2 + R_2^2\right)\right) + \pi R_1^2 H_1. \tag{10}$$



a b

1- the bunker housing; 2) a receiving vessel; 3- feeder; 4- cutting knife

Figure 2 - Scheme of bunkers for discharging sediments from reactors

The most important work parameters of tanks are their throughput Q and the velocity of the sediment outflow V_f [16, 20]. The rate of the sediment outflow can be calculated from the following considerations. Because the flow of a viscous precipitate occurs in a creeping regime [21, 22], then the total pressure drop along the height of the sediment layer can be determined on the base of the average energy dissipation according to the formula:

$$\Delta P = \frac{\lambda}{\mathrm{Re}} \frac{(H_0 - H)}{d_e} \frac{V_f^2 \rho}{2}. \tag{11}$$

After obvious rearrangements the formula for pressure drop at the low Reynolds number reads

$$\Delta P = \frac{\lambda}{2} \mu \frac{(H_0 - H) V_f}{d_e^2}. \tag{12}$$

Let us write the Bernoulli equation with respect to the sediment layer surface in the conical hopper and at the outlet:

$$\rho g H + \rho \frac{1}{2} \left(\frac{R_2^2}{R_1^2} \right)^2 V_f^2 = \rho \frac{1}{2} V_f^2 + \Delta P. \tag{13}$$

After substituting formula (12) into relation (13) the equation looks as following

$$\rho g H + \rho \frac{1}{2} \left(\frac{R_2^2}{R_1^2} \right)^2 V_f^2 = \rho \frac{1}{2} V_f^2 + \frac{\lambda}{2} \mu \frac{(H_0 - H) V_f}{d_e^2}. \tag{14}$$

As a result the formula for outflow rate reads

$$V_f = -\gamma (H_0 - H) + \sqrt{\gamma^2 (H_0 - H)^2 + 2gH}, \tag{15}$$

where the control parameters are

$$G = \frac{\lambda}{\rho d_e^2},\ \beta = \frac{R_2^4}{R_1^4},\ \gamma = \frac{G\mu}{2(1-\beta)}. \tag{16}$$

The formula for calculating the outflow rate can be rewritten in the dimensionless form by using the characteristic time of the tank full emptying T^*:

$$\widetilde{V}_f = -S_1(1-h) + \sqrt{S_1^2(1-h)^2 + S_2 h}\ . \tag{17}$$

Here

$$\widetilde{V}_f = V_f \frac{T^*}{H_0};\quad h = \frac{H}{H_0}\ ;\ S_1 = \gamma T^*;\quad S_2 = 2g\frac{T^{*2}}{H_0}\ . \tag{18}$$

Figure 3 depicts some results of numerical study of the outflow rate as a function of the height of thick sediment in the buffer tank under the various values of the control parameter $\gamma = \frac{G\mu}{2(1-\beta)}$ for H0 = 2 meters.

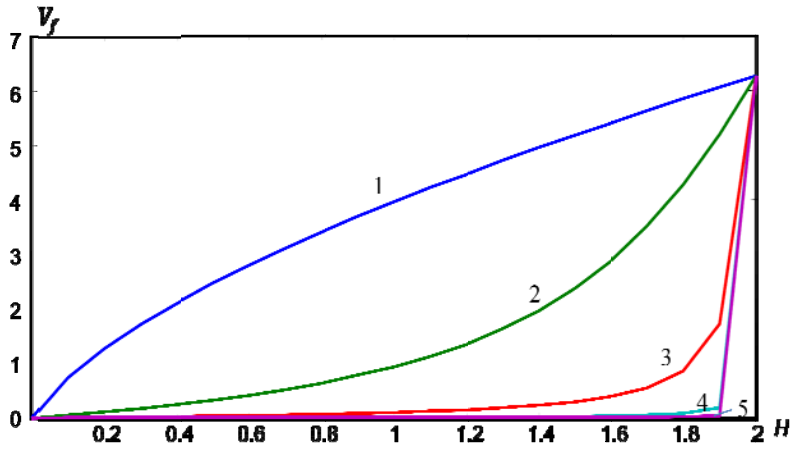


Figure 3 - Outflow rate as a function of the parameter γ. 1- $\gamma = 10$, 2- $\gamma = 10^2$, 3- $\gamma = 10^3$, 4- $\gamma = 10^5$

It can be seen from the graphs that while increasing the control parameter γ, the behavior of the dependence of outflow rate on the height of a sediment layer is radically changed. Namely, under the certain viscosity of the thick sediment, the emptying of the reservoir after a while occurs at such a low rate that it practically ceases. This phenomenon predicted by our simple model was indeed observed in experiments and in engineering practice [18, 21]. The analysis of known models and calculation methods does not lead us nevertheless to other models that describe this phenomenon convincingly [22, 23].

Creation of reliable high-performance machines specifies the use of new materials for manufacture of their parts. At the same time, manufacturers do not have time to introduce new processing technologies using durable cutting tools that require a lot of time and financial resources [24].

Conclusions. As a result of the work, an approach to the problem of describing the flow of dense suspensions and deposits has been developed. The submitted model allows taking into account the fluidity of the medium up to high concentrations of the dispersed solid phase in the suspension, and also describing the features of the flow of thick suspensions near a solid wall.

The novel model demonstrates good qualitative agreement with experimental observations, but it requires a more detailed analysis of the array of experimental data in order to clarify a number of control parameters applied to specific physicochemical systems. After such an analysis, the proposed approach and the corresponding model can be useful as a basis for the engineering calculation technique.

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ҚОЮ ПОЛИДИСПЕРСТІ СУСПЕНЗИЯЛАР АҒЫНДАРЫНЫҢ ПАРАМЕТРЛЕРІН МОДЕЛЬДЕУГЕ ЖӘНЕ ЕСЕПТЕУГЕ ЖАҢА АМАЛДАР

Аннотация. Полидисперсті суспензиялардың шөгуін модельдеу мен тиісті аппаратураны есептеудің кейбір ерекшеліктері бар, олар инженерлік есептеулер кезінде бөліктей ескерілмейді. Осы мақалада осы ерекшеліктерге шолу және талдау жасалынған, сондай-ақ полидисперсті суспензиялардың шөгуін есептеу барысында туындаған мәселелерді, өнеркәсіптік аппараттардың нақты құрылымына қолданымды шешу жолдары атап өтілген.

Осындай жүйелердің ағынының тәжірибелік бақылау сипаттамаларын ескере отырып, тығыз суспензиялардың ағыны мен шөгінділерді математикалық сипаттауға жаңа амалдар ұсынылған. Осы құбылысты сипаттауға және белгілі модельдердің тиісті шектеулерін жоюға мүмкіндік беретін заманауи модель ұсынылған. Ұсынылған модель жоғары концентрацияларда да дисперсті қатты фаза құрамынының кең аралығында ортаның аққыштығын сипаттайды. Осындай нәтижеге қатты фазаның концентрациясына тәуелді суспензияның салыстырмалы тұтқырлығын есептеуге арналған жаңа эвристикалық өрнектің арқасында қол жетті.

Энергияның таралуын ескере отырып, резервуарлардан ағу жылдамдығын есептеуге арналған формула ұсынылды. Мұндай амал әр түрлі реологиялық модельдерге бейімделген есептеу сұлбасын ұсынуға мүмкіндік береді.

Түйін сөздер: полидисперсия, суспензиялар, резервуарлар, седиментация, математикалық дискрипторлар.

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НОВЫЕ ПОДХОДЫ К МОДЕЛИРОВАНИЮ И РАСЧЕТУ ПАРАМЕТРОВ ПОТОКОВ ГУСТЫХ ПОЛИДИСПЕРСНЫХ СУСПЕНЗИЙ

Аннотация. Моделирование осаждения полидисперсных суспензий и расчет соответствующей аппаратуры имеют некоторые особенности, которые зачастую не учитываются при инженерных расчетах. В настоящей статье приведен обзор и анализ этих особенностей, а также намечены пути решения возникающих при расчете осаждения полидисперсных суспензий проблем применительно к конкретным конструкциям промышленных аппаратов.

Предложены новые подходы к математическому описанию потока плотных суспензий и осадков с учетом экспериментально наблюдаемых характеристик потока таких систем. Представлена современная модель, позволяющая описать это явление и устранить соответствующие ограничения известных моделей. Представленная модель описывает текучесть среды в широком диапазоне содержания дисперсной твердой фазы даже при ее высоких концентрациях. Такой результат был достигнут благодаря новому эвристическому выражению для расчета относительной вязкости суспензии в зависимости от концентрации твердой фазы.

Предложена формула для расчета скорости истечения из резервуаров с учетом рассеяния энергии. Такой подход позволяет предложить схему расчета, которая может быть адаптирована к различным реологическим моделям.

Ключевые слова: полидисперсия, суспензии, резервуары, седиментация, математические дискрипторы.

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ENVIRONMENTAL DISPOSAL OF LARGE-TONNAGE INDUSTRIAL WASTE FOR THE PRODUCTION OF FIRE EXTINGUISHING POWDERS

Abstract. The given research presents the classification of fire extinguishing and explosion suppression compositions. Phosphogypsum is a large-scale waste from the production of orthophosphoric acid, obtained by extraction from phosphorite with sulfuric acid. The presence in phosphogypsum of pollutants in the form of phosphorus and fluorine compounds, during the preparation of which sludge wastes are emitted into the air, adversely affecting not only the human body, but also the environment. As a result of studies conducted on the study of multi-purpose industrial wastes, including phosphogypsum and its use as flame retardants, the study of reactive, physicochemical, thermal and fire-resistant properties, it is shown for the first time that it is useful as a localization and extinguishing of combustible solid combustible materials and the use of phosphogypsum in fire extinguishing powder formulations.

Keywords: Fire extinguishing powders, explosion-suppressing composition, large-scale industrial waste, powder efficacy, gypsum, phosphogypsum.

Introduction. Currently, in the Republic of Kazakhstan, over 19 billion tons of solid household and industrial wastes have been accumulated. Municipal solid waste is only partially recycled, which leads to the deterioration of the sanitary conditions and epidemiological situation in large cities. Thus, disposal of household industrial waste demands substantive action.

In Zhambyl region, located in the south of Kazakhstan, Kazphosphate LLP is recognized as the largest environmental polluter. More than 90% of industrial pollution are phosphate production wastes, such as cast and granulated electrothermophosphoric slag, phosphogypsum.

At present, the rational and integrated use of industrial waste from various sectors of the economy in the construction industry comprises less than 20% of its annual production. For example, in the manufacture of building materials for various purposes from phosphate and metallurgy production wastes, an insignificant part of molten slag and phosphogypsum is used. Mining and chemical industries produce hundreds of tons of mineral raw materials annually, from which by-products and industrial wastes that are suitable for obtaining building materials make up about 10% of the rock mass. Significant amounts of these materials can be used as additives in the manufacture of concrete, reinforced concrete, bricks and porous aggregates. The use of multi-ton waste phosphoric acid remains insufficiently explored.

Industrial waste can substantially reduce the consumption of materials for the production of building materials and products, as well as improve quality and reduce production costs in road construction, taking into account areas of man-made waste or deposits of local natural materials

Foreign and domestic experience confirms that the most promising is the use of ash, fuel slags and slags of metallurgical industries as aggregates in the preparation of concrete, cements, and porous aggregates.

It should be noted that when using ash and slag in concrete instead of cement, heat conductivity and shrinkage deformations of concrete decrease, whereas its water permeability, sulfate resistance and other indicators, such as frost- and water resistance, increase.

Chemical and processing industries waste is used for production of composite additives for concrete, by which various properties of the mixture are regulated. These additives reduce cement costs and increase the strength of the concrete; regulate the process of setting, hardening and heat generation; reduce the duration of heat and moisture treatment; increase frost- and water resistance, density, resistance in different corrosive environments.

The use of additives in the preparation of concrete mixtures significantly improves the quality and efficiency of concrete and reinforced concrete structures, reduces the energy intensity and complexity of technological processes. The use of concrete and reinforced concrete in the construction industry accelerates the pace of reconstruction and leads to the accumulation of substandard products and waste [1].

In the construction industry, one of the main ways to meet the needs for improving the range and quality of manufactured building materials is the processing of waste from the mining, metallurgical, energy and chemical industries, associated products from the extraction and enrichment of mineral raw materials, waste from processing of natural materials, secondary resources.

According to the Environmental Code of the Republic of Kazakhstan [2, Chapters 6 and 32], environmental protection is defined as a system of state and public measures aimed at preserving and restoring the environment, preventing the negative impact of economic and other activities on the environment and eliminating its consequences. However, to solve environmental problems in our country, it is not enough to have a system of authorized state bodies of environmental safety. This requires the overall fostering ecological culture among our citizens, the formation of responsibility toward future generations.

A significant part of industrial waste in South Kazakhstan has been produced by the former Shymkent phosphorus plant, where, until 1995, above 3 million tons had accumulated; by the former Shymkent lead plant (more than 4 million tons of sludge); from the coal mining industry at the Lenger field (about 6 million tons of waste).

The emerging problems of dumping and storage of wastes from various industries in the Republic of Kazakhstan require the adoption of a government program for their disposal and the creation of a regulatory framework, the strengthening of measures to protect the environment and the subsoil of the earth. In manufacturing plants that produce and dump industrial waste, incentives should be generated for waste management and recycling. Therefore, to improve the ecological situation in the region, it is necessary to neutralize, recycle or dispose of industrial waste without harming the environment.

Compositions based on gypsum, as well as products made from them, are widely used as flame retardant materials. The heat-shielding, sound-insulating properties and fire resistance of gypsum materials surpass cement-based materials, and they are unparalleled in construction in terms of decorative, comfortable, and environmental performance.

At the same time, the depletion of the reserves of natural gypsum stone and their uneven distribution in the territory of Kazakhstan forced us to look at industrial waste in the form of phosphogypsum and fluorogips. The largest tonnage waste currently is phosphogypsum - a by-product obtained in the production of orthophosphoric acid and mineral fertilizers. Phosphogypsum is obtained in the form of sludge waste with humidity up to 50%.

However, the presence in phosphogypsum of pollutants in the form of phosphorus and fluorine compounds, during the preparation of which sludge wastes are emitted into the air, adversely affecting not only the human body, but also the environment.

At the same time, in view of the content in the phosphogypsum composition of undesirable impurities, the processing of phosphogypsum into flame retardant binders requires significant costs associated with its preparation for the production of flame-retardant gypsum compounds. Analysis of the existing methods of preparing phosphogypsum for the production of flame-retardant gypsum compositions showed that, to date, four methods are used to remove impurities:

1. Washing of phosphogypsum with water;
2. Washing in combination with neutralization and sedimentation of impurities in aqueous suspension;
3. The method of thermal decomposition of impurities;
4. Introduction of neutralizing, mineralizing and crystallization regulating additives before and after calcination.

The first and second methods are associated with the formation of significant m³ of contaminated water (2-5 m³ per 1 ton of phosphogypsum), and the high costs of their removal and purification.

The third method, due to its energy consumption, was also not widely used, since it is based on the burning of phosphogypsum before the formation of soluble anhydrite, with its further hydration and re-burning to hemihydrate.

The fourth method of removing impurities has not yet been widely used, since for the implementation of this method requires scarce additives and, most importantly, they do not provide the constant properties of flame-retardant gypsum compounds.

In this regard, in order to prepare phosphogypsum for the production of flame retardant gypsum compounds, it is proposed to carry out the mechanochemical activation of phosphogypsum together with dolomitic lime using the universal disintegrator-activator technology (UDA-technology) [3].

Disintegrator is a high-speed impact grinder, which, with conventional grinding, initiates mechanochemical processes that increase the reactivity of materials, including mineral ones.

The rationale for this proposal can serve as the results of the following works. Y. Hint [3], Boldyrev V.V. [4] and a number of other researchers, analyzing the processes taking place in mineral materials during their machining with the UDA-technology, concluded that during such processing shear stresses and crystal destruction occur, usually accompanied by an increase in temperature and pressure, breaking of chemical bonds on newly formed surfaces and the formation, as a result, of centers with increased activity.

The authors of [5] found that the processes of drying and grinding can proceed directly in the grinder of a shock-reflective action without the supply of a high-temperature drying agent from the outside. Their studies showed that by grinding a polymer material with an initial moisture content of 15 ... 20%, a product with a final moisture content of 0.02% or less is obtained at the outlet of the shredder. This is because in such grinders the drying process is intensified by increasing the mass transfer surface, the turbulence of the air flow, the presence of internal heat sources arising in the gas and solid phases during the grinding process [4].

The authors of [6] on various systems showed the passage of the following mechanochemical reactions in substances that are jointly processed in a disintegrator:

1. Recovery of metals from oxides (removal from ZnO to 20% O2);
2. Decomposition of carbonates;
3. Reactions in the solid phase.

Based on the above, it is assumed that when disintegrating the phosphogypsum together with dolomitic CaMg (CO3) 2 limestone (Satka, chemical composition: CaO - 30.41%; MgO - 21.86%; CO2 - 47.73%), in addition to the removal of chemically bound water and the decomposition of carbonates, it is possible for a chemical reaction of fluorine to be bound by the reaction:

$$Mg + F2 = MgF2 \quad (1)$$

either by reaction:

$$Ca + F2 = CaF2 \quad (2)$$

At different stages of the technological process, during the preparation of mixtures, harmful substances affecting the environment are formed. Their types are listed in Table 1 [7].

Table 1-Types of environmental impact in the process of mixtures preparation

Impact types	Technological processes and operations
Dust release	*Preparatory operations* Unloading of raw materials, its storage, crushing, drying, and mixing
Weathering inert materials from storage depots	Excessive reserves of sand, crushed stone, technical salt
Soil and water pollution	*Fire (oxidative) processes* Leakage of fuel, oil, bitumen and untimely elimination
Air pollution by toxic substances	Work of the drying drum, oil burners Non-observance of the regulations for the maintenance of cyclones, scrubbers, dust precipitation chambers, other cleaning devices
Dust release	The presence of open bitumen storage, open ground
Soil pollution by solid waste	Solid waste generation and irregular export for recycling and disposal

According to the Moscow Automobile and Road Construction State Technical University (MADI-TU), the amount of harmful substances emitted into the atmosphere per 1 ton of asphalt-concrete mixture is as follows (kg/t): 15.04 of inorganic dust, 0.14 of hydrocarbons, 0.01 of sulfur dioxide, 0.0005 of carbon monoxide, 0.0004 of phenol, and 0.000045 of nitrogen oxides.

Table 2 provides information on the use of phosphate production wastes, where molten and granulated electrothermophosphoric slag is used in the production of ready-mixed concrete instead of building sand and natural crushed stone, with the production of ready-mixed concrete.

Table 2- The volume of formation and accumulation of waste products of yellow phosphorus, mineral fertilizers and coal mining

Name of industrial waste	The accumulated waste and the annual release, thousand tons	Occupied area of industrial waste accumulation, ha	Volume of accumulated waste utilization, thousand tons
Phosphogypsum produced by the plant of mineral fertilizers "Kazphosphate" LLP	4.3 annually	34.8	1.1
Granulated electrothermophosphoric slag produced by "Kazphosphate" LLP	2.45 annually	1.2	-
Cast granulated slag of Taraz Metallurgical Plant	accumulated 8,000	44.3	3.4
Internal overburden of coal from the Lenger field	accumulated 6,000	53.6	-

The main measures to reduce the environmental impact at enterprises of processing raw materials and obtaining energy resources are:

(i) Rational and comprehensive use of material and energy resources in the application of not only the targeted raw materials, but also secondary materials.

(ii) Prevention of production waste generation and minimum refund of off-test products for processing.

(iii) Recycling of waste products in the form of ferrous and non-ferrous slag, plastics and recycled operating materials, as well as in the production of yellow phosphorus and mineral fertilizers, much of which is emitted in the form of solid and liquid waste.

Phosphogypsum and its physic-chemical properties. Phosphogypsum is a large-scale waste from the production of orthophosphoric acid, obtained by extraction from phosphorite with sulfuric acid. About 430 thousand tons of phosphogypsum are produced annually. In the Republic of Kazakhstan, extraction orthophosphoric acid is used as a raw material for the production of phosphate, concentrated simple and complex fertilizers, such as amorphous, double superphosphate, notophs, nitrophos, etc. [8, p. 32-38], [9, p. 27-30].

Today, the main way to dispose phosphogypsum in the Republic of Kazakhstan is storage in dumps, which has a negative impact on the environment. The appearance of phosphogypsum formed during the production of extraction phosphoric acid is shown in Figure 1.

Figure 1 - The appearance of phosphogypsum

As a result of leaching of harmful substances by atmospheric precipitation and their dusting in dry weather, the air, groundwater and surface water, the soil and vegetation layer are polluted [10].

The average granulometric composition of phosphogypsum is shown in Table 3.

Table 3-The average granulometric composition of phosphogypsum.

Size of fractions, mm	2-5	1-2	1-0.5	0.1-0.5	less than 0.1
Content, in %	0.3	21.8	63.6	10.1	4.2

The angle of repose of phosphogypsum obtained in the Taraz branch of Kazphosphate LLP, is determined using a plexiglass box and is within 330.

The bulk density of phosphogypsum varies between 1300 kg / m^3 depending on the size of the product.

In the production of phosphoric acid, about 6 tons of washed phosphogypsum with a specific surface area of 0.18 to 0.25 m^2/t per 1 ton of finished product is formed, the humidity of which is about 40%. In terms of dry matter, phosphogypsum contains on average (in %): 36.2 of SO3, 39.8 of CaO, about 1 of P2O5, 0.1 of Fe2O3, 0.03 of MgO3, 0.03 of K, and 0.1 of Na.

The average chemical composition of phosphogypsum obtained in the Taraz branch of Kazphosphate LLP contains (%): P2O5 total - 0.74, P2O5 water - 0.21, MgO – traces, N2O - 0.3789, Al2O3 - 0.087, F - 0.081, insoluble residue – 19.67, Fe2O3 - 0.093, CaO - 31.80, SO42 - 54.5. Table 12 shows the chemical composition of phosphogypsum.

The phosphogypsum general view enlarged 100 times and its chemical composition was established using a JSM-5610 LVc scanning electron microscope with the EDXJED-2201 chemical analysis system (JEOL, Japan) and is shown in Figure 2 [8, p. 32-38, 5, p. 27-30].

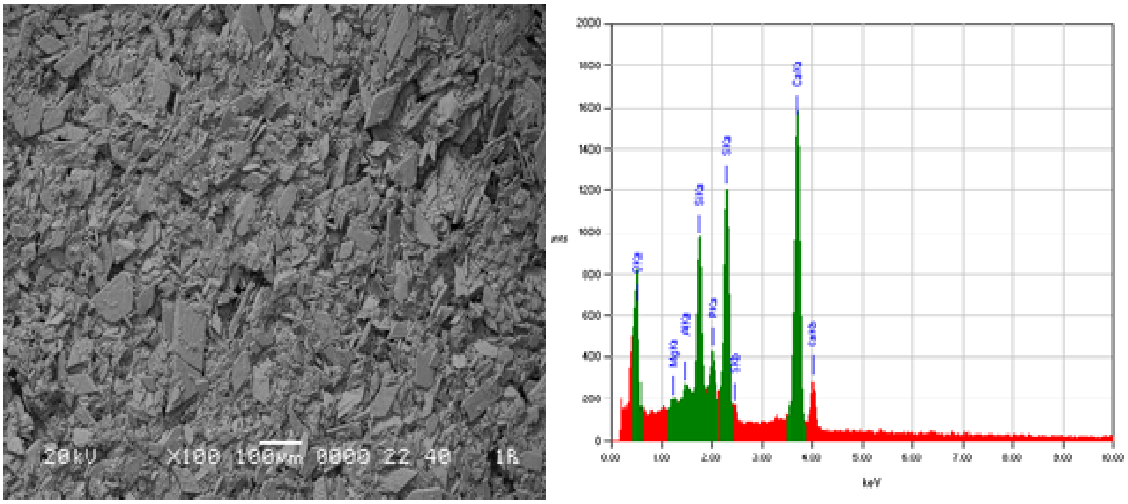

Figure 2 - General view of phosphogypsum enlarged 100 times

Hydrodynamic-active polymer compositions for increasing the efficiency of fire extinguishing using three types of gypsum: phosphogypsum, slag gypsum and class A gypsum have been applied in the author's work [11], showed that the normal density of the test is achieved with a "gypsum-water" ratio of 7:3.

The time intervals characterizing the beginning and end of the setting of gypsum from the moment it was mixed in water and in aqueous solutions of polyethylene oxide were determined on the Vicat device, the mass of the movable part of which together with the needle is (120 ± 1) g. At the same time, the beginning of the setting of gypsum was taken of its solution, when the needle does not begin to reach the bottom of the container into which it is poured, and the gypsum stone is considered formed (end of setting) if the needle enters the test specimen by no more than 0.5 mm.

Table 4- The chemical composition of phosphogypsum

Element	(keV)mass%	Error%	At%	Compound mass%	K
OK *	0,525	46,53	0,59	65,20	28,8456
Mg K *	1,253	0,72	0,13	0,66	0,5028
Al K *	1,486	0,59	0,11	0,49	0,5135
Si K	1,739	8,08	0,10	6,45	8,6563
PK	2,013	3,49	0,12	2,53	4,7441
SK	2,307	14,09	0,09	9,85	19,0820
Ca K	3,690	26,49	0,15	14,82	37,6557
Total		100,00		100,00	
O*0,000	46,45	0,00	0,00	0,00	0,0000
Mg K*1,253	0,72	0,21	1,99MgO	1,19	0,7066
Al K *1,486	0,59	0,21	$0,74Al_2O_3$	1,12	0,7217
Si K 1,739	8,09	0,21	$19,38SiO_2$	17,31	12,1655
PK 2,013	3,50	0,28	$3,80P_2O_5$	8,02	6,6674
SK 2,307	14,11	0,23	$29,59SO_3$	35,24	26,8177
Ca K 3,690	26,53	0,20	44,51CaO	37,12	52,9212
Total	100,00	100,00	100,00		

The determination of the tensile strength of the formed gypsum stone was carried out according to the following scheme. Initially, three specimens in the form of cubes with dimensions of 7.07x7.07x7.07 cm were made from the studied gypsum with various closing liquids.

For the manufacture of samples took a sample of gypsum, equal to 1.2 kg. Gypsum for 30 sec. poured into a cup of water or polymer solution, taken in an amount that corresponds to the normal density of the dough, and stirred for 1 minute. until a homogeneous mass, which is then poured into metal molds, lightly lubricated with engine oil. All forms are filled at the same time. Samples were removed from the forms after 1 hour and tested after 1.5 hours from the start of mixing. The edges of the specimen adjacent to the press plates should be parallel and not deviate from the plane by more than 0.5 mm. Samples with defects were not tested [14-16].

The load when tested on the press should increase evenly at a speed of 2-3 kg / cm² per second until the sample is destroyed. The compressive strength of an individual sample was calculated in kg/cm², as the quotient of dividing the breaking load in kg by the size of the working edge of the sample in cm². The compressive strength of the tested gypsum stone was calculated as the arithmetic average of the test results of three samples.

Conclusion

As a result the classification of fire extinguishing and explosion suppression compositions was investigated. The presence in phosphogypsum of pollutants in the form of phosphorus and fluorine compounds, during the preparation of wastes are emitted into the air, adversely affecting not only the human body, but also the environment. The study of reactive, physicochemical, thermal and fire-resistant properties, it is shown that it is useful as localization and extinguishing of combustible solid combustible materials and the use of phosphogypsum in fire extinguishing powder formulations.

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ӨРТ СӨНДІРЕТІН ҰНТАҚТАРДЫ ӨНДІРУГЕ АРНАЛҒАН ІРІ ӨНЕРКӘСІПТІК ҚАЛДЫҚТАРДЫ ЭКОЛОГИЯЛЫҚ ЖАҒЫНАН ҚАЙТА ӨҢДЕУ

Аннотация. Бұл зерттеуде өрт сөндіру және жарылысты басатын қоспалардың классификациясы берілген. Фосфогипс – фосфориттен күкірт қышқылы арқылы экстракциялау жолымен алынатын ортофосфор қышқылының кеңауқымды қалдықтары болып табылады. Фосфор мен фтор түріндегі ластаушы заттардың фосфогипсіде болуы, оларды дайындау кезінде пайда болатын лай қалдықтары ауаға еніп адам

ағзасына ғана емес, қоршаған ортаға да кері әсерін тигізеді. Көпмақсатты өндіріс қалдықтарын, оның ішінде фосфогипсті және оның антипирен ретінде пайдалануын зерттеу, олардың реактивтік, физика-химиялық, термиялық және отқа төзімді қасиеттерін зерттеу бойынша жүргізілген зерттеулер нәтижесінде алғаш рет оның қатты жанғыш материалдарды оқшаулау және сөндіру барысында пайдалы екендігі және фосфогипстің өрт сөндіру ұнтақтарының құрамында пайдалану мүмкіндігі көрсетілген.

Түйін сөздер: өрт сөндіру ұнтақтары, жарылғыштықты басатын құрам, ірі тоннажды өнеркәсіптік қалдықтар, ұнтақтың тиімділігі, гипс, фосфогипс.

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ЭКОЛОГИЧНАЯ УТИЛИЗАЦИЯ МНОГОТОННАЖНЫХ ОТХОДОВ ПРОМЫШЛЕННОСТИ ДЛЯ ПРОИЗВОДСТВА ОГНЕТУШАЩИХ ПОРОШКОВ

Аннотация. В данном исследовании представлена классификация огнетушащих и взрывоподавляющих составов. Фосфогипс представляет собой крупномасштабные отходы производства ортофосфорной кислоты, полученные экстракцией из фосфорита серной кислотой. Наличие в фосфогипсе загрязняющих веществ в виде соединений фосфора и фтора, при приготовлении которых иловые отходы выбрасываются в воздух, отрицательно влияет не только на организм человека, но и на окружающую среду. В результате исследований, проведенных по изучению многоцелевых промышленных отходов, включая фосфогипс и его использование в качестве антипиренов, по изучению реактивных, физико-химических, термических и огнестойких свойств, впервые показано, что он полезен как локализация и тушение горючих твердых горючих материалов и использование фосфогипса в огнетушащих порошковых составах.

Ключевые слова: огнетушащие порошки, взрывоподавляющая композиция, многотонажные промышленные отходы, эффективность порошка, гипс, фосфогипс.

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THE DEFINITION OF THE FIRE-EXTINGUISHING EFFICIENCY OF PULVERIZED INDUSTRIAL WASTE

Abstract. Currently, the production of chemical foam fire extinguishers has been canceled, and the main emphasis is on the development of effective powder flame retardant compositions. The standard formulations used are very expensive, so it is promising to study dust-like waste industry due to their low cost, low cost of finalization and the possibility of their utilization.

Explosion suppression efficiency of dust waste was determined as follows: the weight of dust fraction < 0.05 mm was weighed on an electronic balance accurate to the fourth digit, and placed in a spray bottle. Further, in the mixer, in a different ratio, a mixture of propane-butane with air is prepared. Then, through the intermediate cylinder, with the help of an electromagnetic valve, the air pulse shoved the canopy and carried the air-gas mixture into a pre-vacuumed reaction tube. Then, with the help of high-voltage inductor an electric discharge voltage of 1,000 to set to the mixture have been fire.

It was shown the examination of the fire-extinguishing ability of expired standard fire extinguishing powders.

Keywords: flame-extinguishing compounds, effectiveness of explosion, suppression, extinguishing powder, dolomite, ammophos, gas-air mixture, explosion.

Introduction. In the Republic of Kazakhstan and abroad, powders are becoming more widespread among the fire extinguishing and explosion suppressing substances. This is due to high fire extinguishing efficiency and versatility of these compositions, the ability to extinguish fires of different classes and localize explosions in a wide range of operating temperatures, as well as environmental safety of powders [1,2].

The fire-extinguishing properties of a powder are mainly due to the amount of absorbed energy in the processes of decomposition and evaporation of a substance, the intensity and range width of cooling of the flame zone.

An approximate estimation of the energy capacity of a powder is obtained by theoretical method for calculating by thermal effects of processes of decomposition and dissociation of the powder

At present, the production of chemical-foam fire extinguishers is canceled, and the main emphasis is on the development of effective powder flame suppression compounds. The standard compositions used are very expensive, so it is promising to study dusty industrial waste due to their low cost, inexpensive final modifications, and the possibility of their recycling.

Flame-suppressing powders have a number of advantages, such as:

- high fire extinguishing efficiency;
- all-weather (they are used and stored in the temperature range from -50 to + 60 ° C);
- ecological compatibility (no toxicity);
- the absence of material damage, as a rule;
- universality of action (extinguishing of electrical installations with voltage up to 1000 V and quenching even such materials that cannot be extinguished with water or other means).

At the same time, the powder compositions also have some drawbacks, the main ones being their tendency to caking and pelletizing. At the same time, powders do not possess the ability to be transported through pipelines and to form a fire-extinguishing cloud.

Even during manufacturing, the powder can absorb up to 5-10% of moisture from the wet air of the shop, if it is not protected from moisture absorption with special additives. Filled in the tank of a fire

extinguisher, it is subjected to shaking and vibration during transportation or its service on transport and equipment. Being in such conditions, the powder should keep the flowability from the tank (good ejection). When solving such a problem, not only the chemical composition of the powder is significant, i.e. special additions to the basic substance, but also the technology of its manufacture, thermo and vibrostability of the powder, its anti-caking and a number of others requirements.

The explosive efficiency of the dusty wastes was determined on an experimental setup, which makes it possible to determine the volumetric concentration in kg/m^3. The experiments were carried out in the following way: a dust sample of fraction <0.05 mm was weighed on electronic scales to within a fourth sign, and placed in a nebulizer. Further, mixtures of propane-butane with air in various proportions were prepared in a mixer. Next, through an intermediate balloon, with a help of a solenoid valve, the sample was swirled and a gas-dust-air mixture was swept into the previously evacuated reaction tube. Then, with the help of a high-voltage inductor, mixtures were ignited with an electrical discharge of 1000 V. The installation scheme and the principle of its operation are described in detail in the second chapter of this dissertation.

The explosion with the spread of the flame to the top of the reaction vessel, its absence or a flare of the flame was observed visually. The results of the studies were recorded in the observation log (Table 1). Explosion is indicated as non-hatched point ○, and its absence as a hatched point ●.

The following finely dispersed substances were taken as research objects:

- slaked lime;
- a standard extinguishing powder containing ammophos;
- sediment from the chemical block of the workshop of cold rolling of steel sheet containing iron oxide;
- dolomite dust;
- baking soda (sodium bicarbonate);
- natural gypsum;
- sediment of neutralized acidic sinks.

The results of experimental studies using the adopted method are given in Table 1.

Table 1- Results of experimental studies

Name of substance	Humidity,%	t, °C	p, mmHg	Gas, %	Weight of sample	Result of experience
1	2	3	4	5	6	7
Natural gypsum	70	19,5	720	5	600	○
					700	○
					800	○
					1000	○
					1100	○
				8	1000	○
					2000	○
					3000	○
				3	600	○
					900	○
					1500	○
					3000	○
Baking soda	75	19,5	719	3	1500	○
					2000	●
				5	2000	○
					4000	◙
					4500	●
				7	3000	○
					4000	◙
					4200	●
				9	2000	●
					1500	●
					1000	○

1	2	3	4	5	6	7
Slaked lime	85	20	713	5	3000	●
					1000	○
					2200	○
					2600	○
				3	1000	●
					900	●
					500	●
					100	○
					200	○
				7	2500	●
					2000	●
					1900	○
					1800	○
				9	1800	●
					1000	●
					500	○
1	2	3	4	5	6	7
Sediment from chemical block, filtered	80	26	714	3	2000	●
					1000	○
					1500	●
					1300	●
				5	3000	○
					3500	○
					1100	●
				8	1200	○
					1700	○
					2000	○
					2500	◙
					3000	●
				9	500	◙
					1000	◙
					1100	●
1	2	3	4	5	6	7
Dolomite	85	25	715	3	1500	○
					2000	○
					3000	●
					3500	●
				6	2000	◙
					3000	○
					4000	○
					5000	○
				9	1500	○
					2000	○
					3000	●
					2500	●
				7,5	1500	○
					2000	○
					3000	○

					4000	○
				4	2000	○
					3000	○
					4000	○
					5000	●
1	2	3	4	5	6	7
Ammophos + dolomite (1:1)	80	26	727	3	400+400	●
					500+500	●
					200+200	○
					100+100	○
				6	600+600	○
					1000+1000	○
					1100+1100	●
					1250+1250	●
				7,5	1250+1250	●
					1000+1000	●
					500+500	●
					100+100	○
				9	1000+1000	●
					500+500	●
					100+100	○
1	2	3	4	5	6	7
Ammophos + lime (1:1)	75	20	720	3	500+500	●
					300+300	●
					200+200	○
					100+100	○
				5	800+800	●
					1000+1000	●
					1200+1200	○
					1300+1300	○
				7	1250+1250	○
					1000+1000	○
					500+500	●
					300+300	●
					100+100	●
				9	1250+1250	○
					1000+1000	○
					800+800	●
					500+500	●
					100+100	●

The results of more than a hundred experiments showed that the efficiency of a standard powder is much higher than that of the other samples under study. Its fire extinguishing concentration is 350 g / m³, while for dolomite - 1280 g / m³, hydrated lime - 1470 g / m³. In the remaining samples with a weight of test substances up to 2000 g / m³, it was not possible to create a fire-extinguishing concentration in the most explosive mixtures, but the dynamics of the curves yielded the following series of efficiencies:

$$Fe_2O_3 < CaSO_4 \cdot 2H_2O < Ca(OH)_2 < (Ca, Mg)CO_3 < NH_4H_2PO_4 + (NH_4)_2 HPO_4$$

From the data obtained, it follows that dolomite and lime, with an explosion-suppressing capacity of 1.28 and 1.47 kg / m³, respectively, can be accepted for the development of explosion suppressing

compositions. The experimental data correlate with the calculated data, where dolomite, with $\Delta H^0 298$ about 140 kJ / mol, is more effective than lime, with $\Delta H^0 298$ equal to 108 kJ / mol. However, their effectiveness is 3.7-4.2 times lower than that of ammophos.

To increase their explosion suppressing capacity, it was decided to mix them with expired typical powders.

Examination of the fire-extinguishing ability of expired standard fire extinguishing powders. Tests of substandard (overdue) powders of P-2AP, P-4AP, PSB-3, P-2GS grades of various years of issue have been conducted. The research task was to determine the safety of the operational properties of powders, and primarily their fire-extinguishing ability. Of all the overdue powders examined, the best technical and operational requirements have been preserved in fire extinguishing powders based on ammophos [3,4]. According to specifications, the following requirements are imposed on powders:

- Powders should have the appropriate characteristic (properties);
- Powders of P-2AP and P-4AP grades, according to TU 113-08-597-86, should have the composition given in Table 2.

Table 2- Composition of the fire extinguishing powders P-2AP and P-4AP

Component name	Grade of powder	
	P-2AP	P-4AP
Ammophos from apatite concentrate of grade A according to GOST 18918-85	88,2-91,5	92-94,5
Fine-grained chamotte-kaolin powder from electrofilters of rotating furnaces according to TU-14-8-358-80	7-10	4-6
Aerosil of AM-1-300 or AM-1-175 grades according to TU 6-18-185-79	1,5-1,8 2,2-2,5	1,5-2,0 -

The results of studies of overdue powders [5, 6], given in Table 3, showed that, despite their expiration, the explosion suppressing ability was preserved in all powders.

Table 3- Experimental data on the explosion suppressing ability of expired powders by the method of phlegmatization

No	Powder grade, overdue years	Basic component of fire extinguishing powder	Peak explosion-suppressing capacity, Φ=m/v, kg/m³
1	PSB-3 16 years	Sodium bicarbonate, 87-90%, with the addition of talc and metal stearates (iron, aluminum, calcium, zinc)	0.58
2	P-2AP 12 years	Ammophos, 88.2-91.5%, with the addition of chamotte-koalin powder and Aerosil of AM grade	0.43
3	P-2AP 14 years	Ammophos, 88.2-91.5%, with the addition of chamotte-koalin powder and Aerosil of AM grade	0.45
4	P-2GS 11 years	Chlorides of alkali metals	0.52

The volumetric fire-extinguishing capacity for P-2AP powder is Φ = 0.1 kg / m³; for PSB-3, Φ = 0.7-0.8 kg / m³; and for the powder based on ammonia of Pirant, Φ = 0.8 kg / m³.

The properties of 4 kinds of powders with different periods of expiration are investigated (see Table 4). Their fluidity and flowability appeared to be worse than normative; there were lumps of various solidity.

The investigated explosion-suppressing ability of the pre-crushed overdue powders was max 0.43-0.58 kg / m³, against 0.35 kg / m³ of the valid ammophos, and is in the interval specified by regulatory documents. So, according to the specifications, the explosion suppressing (volumetric) capacity of standard powders is in the range of 0.1-0.8 kg / m³.

Thus, it can be seen from experiments that the overdue powders have not lost their fire-extinguishing ability, and can be used as extinguishing agents. When used, it is possible to mix the conditioned and expired powders in various proportions. The expired fire extinguishing powder needs to be grinded before use, which occurs when the components of the extinguishing agent are mixed [17-20].

Table 4- Experimental quality indicators of expired fire extinguishing powders

Powder grade, overdue years	Appearance	Fluidity, kg/sec	Flowability when poured by hand	Destruction of lumps when falling from a height of 20 cm	TU 113-08-597-86 Grading of particles, %		
					Particles larger than 0.2 mm, not more than 2	Particles larger than 0.1 mm	Particles smaller than 0,05 mm, not less than 70
P-2AP 14 years	White fine powder with lumps up to 100 mm	0.34	Does not stick together, flows	Lumps are destroyed in dust	1.8-2.0	Not controlled	60-68
P-2AP 12 years	White fine powder with lumps up to 100 mm	0.30	Does not stick together, flows	Lumpse are destroyed in dust	1.8-2.0	Not controlled	68-70
PSB-3 16 years	Gray disperse powder with lumps up to 100-150 mm	0.40	Does not flow	The lumps do not destroy, they crumble into smaller ones	2.5-2.8	10-20	60-65
P-2GS 11 years	Beige fine powder without lumps, thick	0.36	Does not flow	-	2.2-2.5	5-10	60-68

A significant part of industrial waste in South Kazakhstan has been produced by the former Shymkent phosphorus plant, where, until 1995, above 3 million tons had accumulated; by the former Shymkent lead plant (more than 4 million tons of sludge); from the coal mining industry at the Lenger field (about 6 million tons of waste).

The emerging problems of dumping and storage of wastes from various industries in the Republic of Kazakhstan require the adoption of a government program for their disposal and the creation of a regulatory framework, the strengthening of measures to protect the environment and the subsoil of the earth. In manufacturing plants that produce and dump industrial waste, incentives should be generated for waste management and recycling. Therefore, to improve the ecological situation in the region, it is necessary to neutralize, recycle or dispose of industrial waste without harming the environment.

Compositions based on gypsum, as well as products made from them, are widely used as flame retardant materials. The heat-shielding, sound-insulating properties and fire resistance of gypsum materials surpass cement-based materials, and they are unparalleled in construction in terms of decorative, comfortable, and environmental performance.

At the same time, the depletion of the reserves of natural gypsum stone and their uneven distribution in the territory of Kazakhstan forced us to look at industrial waste in the form of phosphogypsum and fluorogips. The largest tonnage waste currently is phosphogypsum - a by-product obtained in the production of orthophosphoric acid and mineral fertilizers. Phosphogypsum is obtained in the form of sludge waste with humidity up to 50%.

However, the presence in phosphogypsum of pollutants in the form of phosphorus and fluorine compounds, during the preparation of which sludge wastes are emitted into the air, adversely affecting not only the human body, but also the environment [20-22].

In this regard, in order to prepare phosphogypsum for the production of flame retardant gypsum compounds, it is proposed to carry out the mechanochemical activation of phosphogypsum together with dolomitic lime using the universal disintegrator-activator technology (UDA-technology).

Conclusions. 1**.**It is experimentally established, that the fire-extinguishing capacity of powders increases in the following sequence:

$$Fe2O3 < CaSO4 \cdot 2H2O < Ca(OH)\ 2 < (Ca, Mg)CO3 < NH4H2PO4 + (NH4)2\ HPO4$$

2. Theoretically determined values of endothermic effects for decomposition reactions of the base components of extinguishing powders are correlated with the relative fire-extinguishing ability in the established series.

3. The consistency of the relative fire-extinguishing efficiency of powders with the values of endoeffects calculated according to thermograms is shown.

4. An insignificant decrease in the fire-extinguishing capacity of overdue powders has been established. Their re-grinding after additional grinding and sieving is proposed, as well as the development of complex compositions with dispersed wastes.

5. The next stage of the work is supposed to explore the physical mechanical properties of gypsum stone based on the prepared phosphogypsum and dolomitic limestone, as well as its flame retardant properties.

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ШАҢДЫ ОНЕРКӘСІПТІК ҚАЛДЫҚТАРДЫҢ ӨРТ СӨНДІРУ ТИІМДІЛІГІН АНЫҚТАУ

Аннотация. Қазіргі уақытта химиялық көбікті өрт сөндіргіштерін шығару тоқтатылып, негізінен ұнтақты өрт сөндіргіш қоспаларды әзірлеуге баса назар аударылуда. Қолданылатын стандартты құрамдар өте қымбат, сондықтан аса қымбат емес, және де олардың түпкілікті жетілдіру шығындары төмен болуына байланысты шаң тәріздес өнеркәсіптік қалдықтарды зерттеу және оларды пайдалану мүмкіндіктерін зерттеу перспективті болып табылады.

Шаң тәріздес қалдықтардың жарылғыштықты басу тиімділігі төмендегідей анықталды: шаңды фракциясының <0,05 мм үлгісі төрт таңбаның дәлдігімен электрондық таразыда өлшеніп, бүріккіш аппаратқа орналастырылды. Содан кейін түрлі аралық салмақта пропан-бутанның ауамен қоспасы әзірленді. Сонымен бірге электромагнитті клапан арқылы аралық баллонға әуе импульсы арқылы қоспаны құйындатып, одан газды-шаңды-ауа қоспасы алдын ала вакуумдалған реакциялық трубкаға тасымалданып, жоғары вольтты индуктордың көмегімен 1000 В электр разряд кернеуінде қоспа қыздырылды.

Түйін сөздер: от сөндіргіш қоспалар, жарылғышты басу тиімділігі, өрт сөндіру ұнтағы, доломит, аммофос, газ қоспасы, жарылғыштық.

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ОПРЕДЕЛЕНИЕ ОГНЕТУШАЩЕЙ ЭФФЕКТИВНОСТИ ПЫЛЕВИДНЫХ ПРОМЫШЛЕННЫХ ОТХОДОВ

Аннотация. В настоящее время выпуск химически-пенных огнетушителей отменен, и основной упор делается на разработку эффективных порошковых пламеподавляющих составов. Применяемые стандартные составы очень дороги, поэтому перспективно изучение пылевидных отходов промышленности в связи с их дешевизной, малыми затратами на окончательную доработку и возможностью их утилизации.

Взрывоподавляющую эффективность пылевидных отходов определяли следующим образом: навеску пыли фракции < 0,05 мм взвешивали на электронных весах с точностью до четвертого знака, и помещали в распылитель. Далее в смесителе, в различном соотношении, готовили смеси пропан - бутана с воздухом. Затем через промежуточный баллон, с помощью электромагнитного клапана, импульсом воздуха взвихряли навеску и увлекали газопылевоздушную смесь в предварительно вакуумированную реакционную трубку. Потом, с помощью высоковольтного индуктора, электрическим разрядом напряжением в 1000 В поджигали смеси.

Ключевые слова: пламягасящие составы, взрывоподавляющая эффективность, огнетушащий порошок, доломит, аммофос, газовоздушная смесь, взрываемость.

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THE PRECLINICAL EFFECT OF NATURAL DRUGS IN COMBINATION WITH CYTOSTATICS UPON THE GROWTH OF THE INITIAL AND DRUG-RESISTANT METASTASIS OF TUMORS

Abstract. The effect of various combinations of herbal preparations and anti-cancer compounds in rats with drug-resistant models of metastasis of Pliss's lymphosarcoma was studied. Obtained a pronounced antimetastatic effect alhidin combination with vincristine and alhidin with methotrexate in the experiments with the platform, resistant to rubomycin (lack of development of metastases in the inguinal lymph nodes, IL 174%). The combination of the effect of alidina to prospidine (ELE – extended life expectancy -308%) with an increase in immunological (cellular) indicators from them. Metastases did not develop in rats with metastasis of Pliss's lymphosarcoma resistant to lamattina from combinations of alhidin+cyclophosphamide, alhidin+sarcolysine and alhidin + prospidin + cyclophosphamide; ELE – extended life expectancy was 207%. Alhidin on mice with Lewis lung carcinoma as separately, and in combination with platidiam, cyclophosphamide and 5-fluorouracil caused a pronounced anti allergic effect: metastases did not develop 98% of the rats, ELE – extended life expectancy – 248%.

Key words: Sarcoma 45, Pliss lymphosarcoma, Lewis pulmonary carcinoma, melanoma B-16, drug resistance, herbal preparations.

As a result of years of research into the physiology and biochemistry of tumor cells, an important feature discovered for all tumors is the heterogeneity of the cell population. It is the heterogeneity of a tumor consisting of subpopulations of cells with different degrees of differentiation and growth rate that underlies progression, metastasis, and the emergence of drug resistance to it [1, 2]. The idea of heterogeneity of populations of tumor cells is crucial for the development of rational approaches to chemotherapy. If each tumor, even a highly differentiated one, contains a subpopulation of undifferentiated, actively dividing cells, then the cure of such a tumor is possible only with the combined using the anticancer drugs. Consequently, overcoming the emerging drug resistance of metastases can be expected only from combination therapy using two or more drugs with a different mechanism of action [1, 3, 4].

The emergence of drug resistance in metastases is often one of the main causes of the failure of modern specific treatment [5, 6, 9]. Taking into account these features, it was necessary to research the effect of the combination of new herbal preparations with cytostatics in animal experiments with the variants of drug-resistant metastases of Pliss lymphosarcoma that weaved under the skin of the tail from metastases developing in the inguinal lymph nodes [4, 7, 8].

The use of herbal preparations both individually and in combinations for metastases of Pliss lymphosarcoma of the original variant did not reveal any marked inhibition of tumor growth in the tail: the frequency of metastasis in rats decreased by 2.7 times, and the lengthening of the life extension of animals did not exceed 78%. On metastases of Pliss lymphosarcoma, a resistant variant to rubomycin, an inhibitory effect was noted against primary tumors in the tail of rats during treatment with alhidin and its

combination with SRS (80%, P <0.05, up to 128% of ELE – extended life expectancy). This combination caused a significant inhibition of tumors' growth and their resorption in 30% of rats with an increase in ELE to 174%, with no appearance of metastases in the inguinal lymph nodes. The combination of alhidine with methotrexate increased the ELE of animals with metastases of Pliss lymphosarcoma, a resistant variant to rubomycin, up to 142%, reducing the frequency of metastasis 7.6 times.

Histological studies of tissues of Pliss lymphosarcoma, a resistant variant for rubomycin, also found an active effect of this combination on cells.

In the control (Pliss lymphosarcoma), the tumor cells were round, often with soft pink rims of the cytoplasm, hyperchromic, oval and round, moderately polymorphic nuclei. The tumor cells were located tightly, forming different sized considerable layers separated by thin layers of connective tissue. When exposed to a combination of (Alhidin + Methotrexate), tumor cells were strongly scattered. Only a few retained the appearance of tumor cells, mostly small with pycnotic nuclei.

The same results were obtained in the treatment with sodium salt 1.2-3-keto-18-dehydroglycyrrhetic acid + Vincristine and sodium salt 1.2-3-keto-18-dehydroglycyrrhetic acid + cyclophosphamide: up to 106% and 123% ELE, respectively) and 7.6 times decrease metastasis frequency. However, a single use of drugs in these combinations did not increase ELE (80%) and reduced the frequency of metastasis only 3.8 times. Obviously, when applying this combination, therapeutic synergy from the combinants occurs.

A morphological study of metastases of Pliss lymphosarcoma resistant to rubomicin after exposure to the combination (sodium salt 1.2-3-keto-18-dehydroglycyrrhetic acid + cyclophosphamide) showed an altered histological picture in comparison with control: cells were located non-compact, without forming any structures, many different-sized foci. The nuclei of the cells are polychromic, and they were pyknotic and polygonal. The tumor had small foci of necrosis with moderate perifocal leukocyte reaction.

Natural preparations Alhidin compared with alnusidine, rubomisin and 5-fluorouracil on metastases of Pliss lymphosarcoma, both initial and resistant variants, caused the development of a primary tumor in the tail in only 30% of rats (inhibition of tumor growth to 63-75%), reducing 8.0-8.6 times metastasis in the inguinal limos nodes and an increase in ELE animals up to 95%. Pronounced inhibitory effect was obtained when exposed alhidin + rubomicin, alhidin + 5-fluorouracil + alhidin platidiam, alhidin + 5-fluorouracil and methotrexate + alnusidin where inhibition of tumor growth in the tail of rats with metastasis of Pliss lymphosarcoma, resistant to prospidin, amounted to 98% with the resorption of tumors (30%) in the absence of metastases in the inguinal lymph nodes and their immunodepressive reaction to the body with ELE to 308%. The combination of alhidin + cyclophosphamide moderately inhibited the growth of the primary tumor in the tail (63%, P <0.05) and significantly (8, 6 times) reduced the development of metastases in the inguinal lymph nodes.

Histological studies of metastases of Pliss lymphosarcoma, a resistant variant against prospidin, showed an inhibitory effect of these combinations. In the control, the tumor cells were settled scattered forming mainly around the numerous small vessels of the connective interlayers. In experimental variants of metastases, cells with polychromic nuclei were presented in the form of different-sized islands surrounded by foci of necrosis. On the periphery of necrosis, the tumor cells were polymorphic; their nuclei were in the state of pycnosis, rexis, lysis, often instead of nuclei - small clumps of chromatin.

Under the action of combinations of anticancer drugs (vincristine + cyclophosphamide) or (methotrexate + platidiam), the ELE of animals in this variant did not exceed 59 and 68%, respectively, although the incidence of metastasis decreased to 3.3 and 4.3% compared to control. Obviously, in these combinations, the summation of toxic effects takes place.

Different sensitivity of primary and metastatic tumors to chemotherapeutic effects was noted [2,4,10]. A comparative study of the properties of primary tumors and their metastases in the inguinal lymph nodes when exposed to combinations of herbal preparations with known antitumor compounds established the suppression of Pliss lymphosarcoma metastases (resistant variants) with incomplete inhibition of primary tumors in the tail. These results are coordinated with the data of some works on the higher susceptibility of metastases to the action of anticancer agents as compared with the primary tumor [2, 11, 12, 13, 14, 15].

In this case, there was revealed an interesting fact of appearance of the collateral sensitivity resistant to leucoephdin, Pliss lymphosarcoma, intertwined under the skin in the side during sarcolysin treatment (up to 95% growth inhibition with resorption of tumors in 30% of rats). In comparison with metastasis of Pliss lymphosarcoma resistant to leucoefdin, sarcolysin inhibited the growth of tumors in the tail (up to

80%, P <0.001) and reduced the frequency of metastases (up to 8%) of ELE to 126%. Obviously, with sarcolysin, collateral sensitivity is manifested in primary tumors, but the appearance of metastases in the inguinal lymph nodes is not completely inhibited. However, the combined effect of alhidin + sarcolysin, alhidin + cyclophosphamide at a therapeutic dose has a significant inhibitory effect (up to 98%, P <0.002) on primary tumors of rats with metastasis of Pliss lymphosarcoma resistant to leucoefdin, with resorption of tumors (60% of rats) and complete inhibition of the development of metastases (with ELE to 207%). Similar results were obtained by the combination of alhidin + prospidin + cyclophosphamide though using alhidin + prospidin was less effective.

The activity of herbal preparations and their combinations with cytostatics was also researched in mice with Lewis pulmonary carcinoma and melanoma B16 [6, 16, 17].

The use of alhidine in parallel with anticancer drugs (cyclophosphamide, platidiam) resulted in statistically reliable inhibitory growth of the main tumor site (up to 71%, P <0.05), 3.1 times reduced the number of metastases and 3.3 times the frequency of metastasis. The combinations of alhidin + platidiam and alhidin + cyclophosphamide led to the manifestation of antitumor (98%, P <0.001) with resorption of tumors in 60% of rats and antimetastatic effects (with ELE up to 260%). The use of alhidin + vinkristin + platidiam reduced the number of metastases by 3.9 times and the frequency of metastasis by 10% in the case of ELE - 139%.

Similar results were obtained when using sapponine, polysaccharides and sucrose monoesters in double and triple combinations with cytostatics. These vegetable compounds, having a moderate antitumor effect, are also able to intensify the selectivity of the action of anticancer drugs. A significant inhibitory effect was obtained from the use of (sucrose monoester + platidiam + alhidin) at half the maximum dose tolerated in experiments on mice with B-16 melanoma: the absence of metastases and the inhibition of growth of primary tumors (98%, P <0.001). The use of combinations of alhidin + platidiam, alnusidine + platidiam and monoester sucrose + platidiam reduced the frequency of metastasis in mice with B-16 melanoma only 3.6-4.5 times. The data obtained show that the herbal preparations (alhidin, alnusidine, sodium salt of 1.2-3-keto-18-dehydroglycyrrhetic acid, sapponine, polysaccharide, sucrose monoester) in the three models of recurrent tumors had a more pronounced antimetastatic effect as with isolated use, and in combination with anticancer drugs while reducing their toxicity. The mechanism of the antitumor action of herbal polyflavans (alhidin, ellagothannins, alnusidin) is likely to create a deficiency of kinins in the tumor capillaries, which disrupts the normal blood supply of the last, dilates the blood vessels and prevents the tumor cells from delay and settling in the capillary network [4, 10, 18, 19, 20].

The authors also proved that the introduction into the body of plant polyphenols, including flavonoids, which increase the antioxidant activity of animal tissues, increases the resistance of animals to the action of radiation with a significant increase in life expectancy [4, 10]. The data obtained give grounds to recommend the studied drugs for using in combined chemotherapy of malignant tumors and their metastases, especially for drug resistance to them. Herbal preparations have the ability to increase the selectivity of the action of cytotoxic drugs, enhancing their specific antitumor and, in particular, anti-metastatic activity against drug-resistant strains, protecting hemopoietic tissue from their toxic effect.

Thus, for the first time, we studied the effect of various variants of the combination of herbal preparations and antitumor compounds in rats with drug-resistant metastases of Pliss lymphosarcoma. A pronounced antimetastatic effect of the combination of alhidine with vincristin and alhidine with methotrexat was obtained in experiments with metastases of Pliss lymphosarcoma resistant to rubomycin: no development of metastases in the inguinal lymph nodes, ELE up to 174%. The complex effect of alhidine with rubomitsin, and alhidin with platidiam on the development of lymphosarcoma metastases resistant to prospidine: ELE to 308% with an increase in immunological (cellular) parameters in them. It was revealed that when using combinations: alhidine + cyclophosphamide, alhidine + sarkolysin and alhidin + prospidin + cyclophosphamide metastasis did not develop in rats with metastasis of Pliss lymphosarcoma resistant to leucoefdin, ELE animals at that was 207%. A pronounced antitumor effect (up to 98% inhibition of tumor growth) was shown under the action of combinations (sucrose monoester + 5-fluorouracil, sucrose monoester + adriamycin + saponin) in experiments on mice with Lewis pulmonary carcinoma and combinations (sucrose monoester + platidiam + alhidin) on animals with B-16 melanoma (ELE - up to 272%).

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БАСТАПҚЫ ЖӘНЕ ДӘРІГЕ ТҰРАҚТЫ МЕТАСТАЗДАРДЫҢ ӨСУІНЕ ЖАҢА ТАБИҒИ ПРЕПАРАТТАРДЫҢ ЦИТОСТАТИКТЕРМЕН БІРІКТІРГЕН КЕЗДЕГІ КЛИНИКАҒА ДЕЙІНГІ ӘСЕРІ

Аннотация. Инновациялық отандық өсімдік препараттарын және ісікке қарсы синтетикалық қосылыстарды Плисс лимфосаркомасының дәріге тұрақты метастаздарына біріктіріп қолдануды зерттедік. Алхидинді винкристинмен және алхидинді метотрексатпен бірге қолданғанда рубомицинге тұрақты Плисс лимфосаркомасының метастазына қарсы әсер көрсетті (шап лимфа түйіндерінде метастаздың болмауы, өмір сүру ұзақтығы 174%). Алхидинді рубомицинмен, алхидинді платидиаммен бірге қолданғанда проспидинге тұрақты Плисс лимфосаркомасының метастазын дамуын толығымен тежеді (өмір сүру ұзақтығы -308%), иммунологиялық көрсеткіштері жоғарылады. Лейкоэфдинге тұрақты Плисс лимфосаркомасының метастазын алхидин+циклофосфан, алхидин+сарколизин және алхидин+проспидин+циклофосфан қолданғанда егеуқұйрықтарда метастаз болған жоқ, өмір сүру ұзақтығы 207%. Алхидин өкпенің Льюис карциномасы бар тышқандарға жекелей және платидиаммен, циклофосфанмен және 5-фторурацилмен бірге қолданғанда айқын метастазға қарсы әсер көрсетті: 98% егеуқұйрықтарда метастаз болмады, өмір сүру ұзақтығы 248%.

Түйін сөздер: Саркома 45, Плисс лимфосаркомасы, дәріге тұрақты метастаздар, Льюис карциномасы, В-16 меланомасы, қатерлі ісікке қарсы синтетикалық препараттар.

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ДОКЛИНИЧЕСКОЕ ДЕЙСТВИЕ ИННОВАЦИОННЫХ ПРИРОДНЫХ ПРЕПАРАТОВ В КОМБИНАЦИИ С ЦИТОСТАТИКАМИ НА РОСТ ИСХОДНЫХ И ЛЕКАРСТВЕННО РЕЗИСТЕНТНЫХ МЕТАСТАЗОВ ОПУХОЛЕЙ

Аннотация. Изучено действие различных вариантов комбинаций инновационных отечественных растительных препаратов и противоопухолевых соединений на крысах с лекарственно резистентными моделями метастазов лимфосаркомы Плисса. Получен выраженный антиметастатический эффект комбинации алхидина с винкристином и алхидина с метотрексатом в опытах с метастазом лимфосаркомы Плисса, резистентной к рубомицину (отсутствие развития метастазов в паховых лимфоузлах, УПЖ 174%). Сочетание воздействия алхидина к проспидину (УПЖ-308%) приводит к повышению иммунологических показателей у них. Метастазы не развивались у крыс с метастазом лимфосаркомы Плисса, резистентной к лейкоэфдину от комбинаций: алхидин+циклофосфан, алхидин+ сарколизин и алхидин + проспидин + циклофосфан; УПЖ при этом составило 207%. Алхидин на мышах с карциномой легких Льюис как в отдельности, так и в сочетании с платидиамом, циклофосфаном и 5-фторурацилом вызывали выраженный противометастатический эффект: метастазы не развивались у 98% крыс, УПЖ – 248%.

Ключевые слова: саркома 45, лимфосаркома Плисса, карцинома легких Льюиса, меланома В-16, лекарственная резистентность, растительные препараты.

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TO THE PROBLEM OF PHYTO-AMELIORANTS INFLUENCE ON THE PRODUCTIVITY OF THE RE-SALTED LANDS IN THE SOUTH KAZAKHSTAN REGION

Abstract. The green cover of the planet is the most valuable of man's achievements. But in spite of this, until now not all the possibilities of plants have been taken into account and used by mankind. The main cultivated plants were domesticated several thousand years before our era. The ways of optimal artificial regulation of plant ontogeny are still unknown, which without pathogenetic consequences can lead to their maximum productivity. The establishment of ways to regulate plant ontogeny - which is extremely important for harvest programming taking into account the fertility of soils - is associated with the establishment of regularities that allow regulating photosynthesis, periodicity and dynamics of growth, nitrogen exchange.

At present, the state of the vegetative cover of the Earth is deteriorating. The main reason is diversity and different directions of pathological phenomena that occur in plants. Pathological phenomena are combined into three categories: pathological reactions, pathological processes and diseases.

The most dangerous are the violations that lead to the complete or partial disappearance of certain plant species. The reasons for the disappearance of plants are diverse. They can be related not only to man's anthropogenic activities, but also to certain natural disasters. The most important of them are: 1) physical extermination for agricultural and forestry purposes, for mining, construction and industrial production. The results of the research showed that phytomelioration is a set of measures to improve the state of the environment through the production or maintenance of natural plant communities. Improving the utilization of irrigated lands by phytomelioration is also environmentally and economically viable.

Key words: phyto-amelioration, productivity, plant, salt, land, improvement, soil, impact, biomeliorant, bean seeds, clover, fertilizers.

Introduction. Phyto-amelioration is a set of activities improving the environment with the help of the cultivation of natural plant communities and showing service. Phyto-amelioration is divided as humanitarian, engineering, bio-productive, interior and environment protective. As a result of a wide range of intraspecific selection, plant phyto- ameliorants, fodder which is the source of energy and 15 perspective types and ecotypes of suitable plants for the production of medicinal plants on medium saline soils watered by saline water have been found. According to the given data, strong saline clay layers of desert soils contain 48 t / ha salt. The ground phytomass of 18-20 t / ha of halophyte plants removes 8-10 tons of salts from 1 hectare soil per year. Due to evaporation, halophyte plants hinder the increase of salts to the surface the earth. Green pavement effect consists of 2.5 t / ha salt. As a result, the amount of salt in the soil area where halophytes are planted comprises 10-12,5 tons per year. Many scientists have carried out the reclamation works for desalting soils for 4-5 years in the medium saline soils and 6-7 years in strong saline soils [1].

Methods

In our case, we have conducted experiments on the soil of re-salted rice field of Karatobe village of Zhanakorgan region and non-arable land of Nurtas village of Turkistan region. Perennial legume plants were chosen as perspective bio- ameliorants for gray irrigated saline soils. They are: conventional alfalfa *(Medicago sativa)*, White clover *(Trifolium repens)*, conventional camel alfalfa *(Melilotus offisinalis)*.

Results

Perennial legume plants chosen for the study are saturated with the soil nitrogen. Their root system is developed very well as a result of which they serve for many years and influence on the emergence of humus and are characterized with a strong phyto- ameliorantion impact. In addition, the cover and strongly developed root system of perennial legume plants protect them from soil removal and flying. Therefore, they are considered as soil formers [2].

Prior to planting the plants, an analysis was conducted on the water extract of soil types that are going to be studied (table 1).

Table 1 – The result of the laboratorial analysis conducted on the water extract of the soil types

Salt ions mg / dm3	Nurtas village of Turkistan region	Karatobe village of Zhanakorgan region	According to the amount in water extract, mg / dm3
Cl^-	244,71	75,3	350
SO_4^-	0,629	2,602	500
NO_2^-	0,18	0,248	0,1
NO_3^-	169	30,93	45
NH_4^+	6,081	5,034	2,5
CO_3^-	-	-	100
HCO_3^-	305	305	1000
Ca^{2+}	572,6	157	200
Mg^+	300	123	100

The analysis works were carried out according to the following characteristics:

1) a concentration of sulphate, hydrocarbonate and carbonates, chloride, calcium, magnesium;
2) a concentration of of the nitrogen ions according to the photocolorimetry method;
3) the amount of of humus in the soil;
4) the general degree of salinity;
5) moisture;
6) the pH environment.

According to the analysis results, high exponent of the salt elements was identified in the soil of Nurtas village. The amount of chloride, nitrate, ammonium and calcium ions in the soil of Nurtas village showed slightly higher results in comparison to the soil of Karatobe village. Nitrates are 169 mg / dm^3, ammonium - 6.081 mg / dm^3, calcium 572.6 mg / dm^3, magnesium is 300 mg / dm^3 in the soil of Nurtas village, while in the soil of Karatobe village magnesium is 123mg / dm^3, ammonium 5,034mg / dm^3 and nitrite 0.248 mg / dm^3. The amount of these ions in the soil is higher than the standard. As the analysis results have shown, the carbonate ions were not observed in the composition of the soil.

A higher amount of cations and anions was observed in normal saline gray soils in the South Kazakhstan region. All micro and macro elements in the soil composition are necessary for the plants nutrition. The shortage and increase of the required elements in the soil have a negative impact on the plants. There is a considerable difference between the soil compositions of Nurtas and Karatobe villages. While studying the soil of Nurtas village, phyto-amelioration works were conducted on the soil of Karatobe village. Therefore, it is important to improve chemical and physical structure of the saline areas in the soil of Nurtas village.

The salinity degree of soils taken for conducting the study was defined before growing plants (figure 1).

Basically, saline soils are those the amount of mineral salts in which is of 0,25% and more that are malicious for the agricultural plants.

The amount of salt of the soils in the study objects is higher than 0.25%. According to table 1 in the second part: the soil of Nurtas village is defined as a strongly saline soil comprising the salinity degree of 1,9%, while the soil of Karatobe village referred to a medium saline soil of 0,6 % salinity degree.

The plants under the control were grown in the laboratory and field (figures 2, 3).

The plants were grown in the soils in two ratios: in the initial soil and the manure added soil in 1:1 ratio.

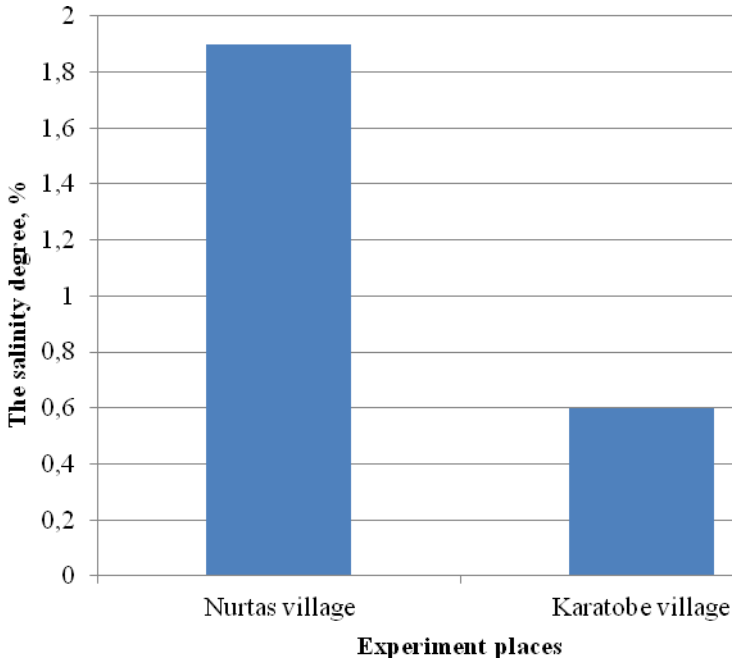

Figure 1 - The salinity degree of soil types taken as the study objects

The plants were cultivated in bottomless wooden boxes of 100x50x100 sm in the field, while in nature case they were planted in saline gray soils of the study objects. The repeatability of the experiment is three times. Analysis works were carried out to define the humus of the soils of the study objects as a result of which the soil humus of Nurtas village was 0,6%, while the soil humus of Karatobe village was defined as 1.04%.

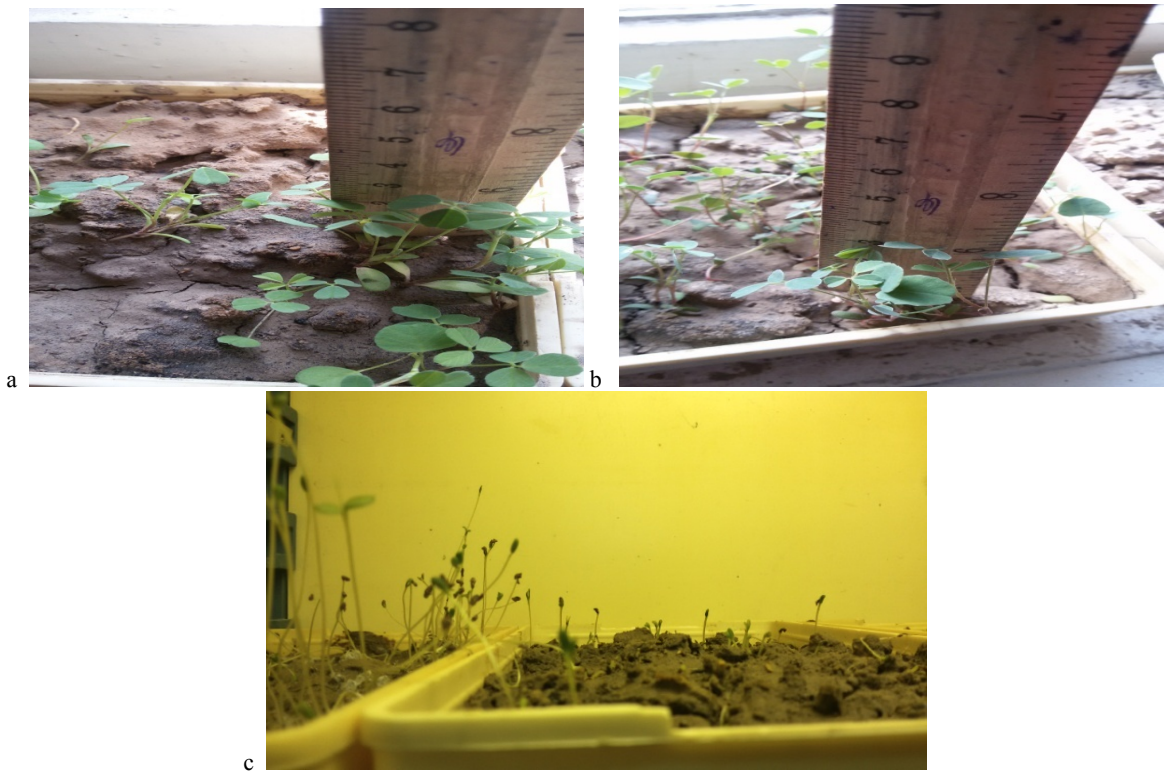

Figure 2 - The plants grown in the laboratory: a, b – plants grown in the soil type taken from Karatobe village; c – the plants grown in the soil type taken from Nurtas village.

a

b

c

Figure 3. The plants grown in the field case: a – the plants grown in the soil of Karatobe village; b, c - the plants grown in the soil of Nurtas village.

Mutagenic energy and productivity of plants grown in the laboratory were observed (table 2).

Analyzing the suitability of herbaceous plants seeds, that is, their mutagenic energy and productivity is of great importance as it is the proof of getting a qualitative product. The pictures of analysis works conducted on the productivity and mutagenic energy of the plants are given in the appendix (Appendix B).

Table 2 - Mutagenic energy and productivity of herbaceous plants under the control

Crops names	Productivity, %	Mutagenic energy
Melilotus	95,5	4
Trifolium repens	94,85	4
Medicago sativa	96,1	3

A higher mutagenic exponent was observed in conventional camel alfalfa among other the plant seeds. Its mutagenicy showed 96,1 % in comparison with conventional alfalfa and the white clover.

The saturation of plants in the soil with organic substances depends on their longevity. The main function of the plants in their growth development is due to their rooting in the soil and penetrating into the soil structure. Therefore, paying much attention to the peculiarities, usage and planting technologies of plants grown in agro systems is of paramount importance as it enables to get qualitative products in the agricultural field.

While choosing the study plants as phyto-ameliorant, firstly, the root system structure and their importance in all agricultural system and secondly, growth dynamics in all types of soil were taken into account. As it is well-known, the root system of plants freely penetrates into all layers of the soils structure with their grid-like items and affects the soil directly and indirectly. At the same time, an analysis was carried out on the role of plants in the soil structure formation.

The soil formation is dependent on the climate, relief and geological structure and affected by many ecological factors. The soil connects a biogeocenotic system with ecosystem and becomes the main joints component between them. This kind of ecosystem is an organizing plant. As the trophical relations initiative, plants are considered as producers of the first yields and the unique energy sources of the soil formation. Plants absorb one part of the solar energy and distribute to the biosphere throughout their existence while the rest of the living organisms absorb the solar energy collected by them [3].

In natural ecosystems, plants provide the normal balance of organic substances. The structural condition of soils used for arable fields are much worse than those of forests, pastures and green meadows due to growth of cultural plants leading to the balance disruption of organic substances in them. Farming does not affect the soil structure and richness in the same way and therefore, all soils cannot be phyto-ameliorants [4].

Cultural works on the arable fields such as the usage of different kinds of heavy machineries, irregular watering and using different fertilizers have potential negative consequences on the physical properties of the soil and the conditions of organic substances. For this reason, perennial herbaceous plants have a strong phyto-ameliorantant effect and are considered as a soil structure former [5].

Agrarian salinity tolerant plants were used in assessing the gray saline soils. Agrarian salinity-tolerance is a proper development of living organisms in a saline soil and an ability of giving yields meeting the needs of the agriculture in a such condition. Agrarian salinity- tolerant plants are camel alfalfa, sunflower, sorghum, cotton, canola, wheat and beets. The average salinity-tolerant plants: wheat, soy, corn, carrots, tomatoes, pepper, cloves. Low-salinity- tolerant plants: clover, celery, radishes, peas, foxtail [6].

For this purpose, meliorative properties of conventional camel alfalfa, conventional alfalfa, white clover and legumes herbaceous plants that were taken as the study object according to their salinity-tolerant exponents were considered.

Camel alfalfa (*Melilotus*) is used as food for animals in agriculture. conventional camel alfalfa provides more food biomass and has a property to improve the structure of the soil [7].

Camel alfalfa is used as a phyto- ameliorant to return saline or lands requiring recultivation in agricultural farms in the West Siberia, Kazakhstan and other regions.

Camel alfalfa is also used to decrease the salinity degree of saline soils in agricultural fields and farming. In most cases, using camel alfalfa in regions growing rice is of great importance.

Furthermore, camel alfalfa is used for recultivation of lands used for industrial purposes [8].

Conventional camel alfalfa is the best saline tolerant plant. Its roots are able to withstand different soluble saline concentrations in soils. Due to this property, its root and green mass can develop in the saline soils. Simple plants roots cannot spread in the dense layers of saline soils and the nature's sharp variable dry climate cannot provide them with water. For this reason, most plants dry before reaching a

vegetation period. However, roots of camel alfalfa penetrate into the all deep soil layers, 40 sm in the first year and 100 sm in the following year and use the water spread in the whole soil layers. In this way, camel alfalfa roots loosen the whole layers of the natural structure from the saline soil very well. Alive and dead roots parts composed in soils affect the salt in the saline layers being washed away to the deep soil layers. They considerably decrease the mineralized groundwater level in the process of desalting saline soils or biological melioration. This possibility is created by a lot of gathered organic mass alongside with camel alfalfa in and on the soil (approximately 200 kg / ha of wet weight). Moreover, camel alfalfa lessens the temperature of the earth by forming meadow grass resulting in physical evaporation on the earth surface and salt concentration in the top layer [9].

Camel alfalfa is cold and drought tolerant and can live combined with other cultural plants in simple and complex agrophytocenoses. As a phyto-ameliorant, camel alfalfa is distinguished with its stability [10].

а  б 

Figure 4. а – Conventional camel alfalfa; б - A three-year root system

Conventional alfalfa (*Medicago sativa*) is a perennial legumes plant and used for green fertilizer and fodder in the agriculture. It has also been used as pet food for agricultural purposes for a long time and is grown in almost every territory of the country today. There are more than fifty varieties of conventional alfalfa. However, only some varieties are used in the agriculture. They are very similar in terms of morphology and characterized by their tolerance to cold, alkaline environment, disease and drought [11-15].

It gives the high yield as a green fertilizer. In the case of irrigation, they give from 8–10 to 80–120 tons of grass. Living compatible with nitrogen stabilizer bacteria, alfalfa collects nitrogen from the atmosphere in the vessels of the collection. Nitrogen lives in harmony with stabilizer bacteria; alfalfa accumulates nitrogen from the atmosphere in its roots and meadow residues. Within 2–3 years alfalfa accumulates as much nitrogen in the soil as in 40-50 tons of manure (about 300 kg of nitrogen is accumulated in 1 ha of soil). When alfalfa biomassa collapses, it becomes a light humus and obtains the property of reducing the soil acidity with absorbable substances improving the soil structure. Alfalfa can be good initiative for the growth of cotton, wheat and other cultural crops. The alfalfa effect is kept for several years [12].

Deeply settled and strongly developed root system of conventional alfalfa improves the soil structure, increases its water and air conductive ability and affects the humus accumulation. In a thick meadow, it cleans valleys from weeds. Being used as phytosanitary, it is stable against different diseases damaged by nematodes and heals soils [13]**.** They use rain worms and collapsed type of soil microorganisms after improving their life function state as food. In its turn, it results in the decrease in the number of plant illnesses and increase in productivity [14].

Conventional alfalfa is also grown in valleys, and it improves meadows and pastures. It is kept in grass meadows for 10 years. It has an ability of growing fast after being cut. It has a tendency of growing in the medium saline soils; alfalfa grows in the same place for 4-6 years and is drought tolerant. Its roots can penetrate into the deep soil layers and able to provide alfalfa with water. It increases soil fertility and supplies with nitrogen. Alfalfa withstands erosion processes [15].

a  b 

Figure 5.a – conventional alfalfa; b –one-year root system

It improves the soil moisture incentively White clover *(Trifolium repens)* is a perennial legumes herbaceous plant. Its root system is fringed, penetrates the soil up to 50 sm depth, but the separate roots are located at a depth of 1 m. It can grow in different types of soil, but only strongly acidic environment complicates its growth. Through it likes moist environment, white clover is drought tolerant. It can grow in winter and is resistant to compaction, therefore it often grow in pastures. Compacted soils do not affect its growth. It is useful as pasture food for wild and domestic animals. Particularly, proteins are mostly accumulated [16].

Figure 6 – White clover

As it was mentioned above, all types of perennial herbaceous plants are used for the soil moisture improvement. In most cases, they impact much better for the accumulation of organic substances and soil structure improvement than other plants. After growing these plants, other cultural plants can be planted as well. At the same time, perennial herbaceous plants improve not only humus structure, but also the aggregation composition of the soil structure and increase their ability of withstanding erosion [17-19].

Legume herbaceous plants are well known as a nitrogen former. In this regard, an increase in the amount of the nitrogen ions was observed when carrying out analysis work on the soil in which the plants were grown [20].

An analysis work was conducted on the controlled initial soils in which the herbaceous plants had been grown and soils with manure to define their chemical composition, as a result their salinity degrees were identified (Figures 7, 8)

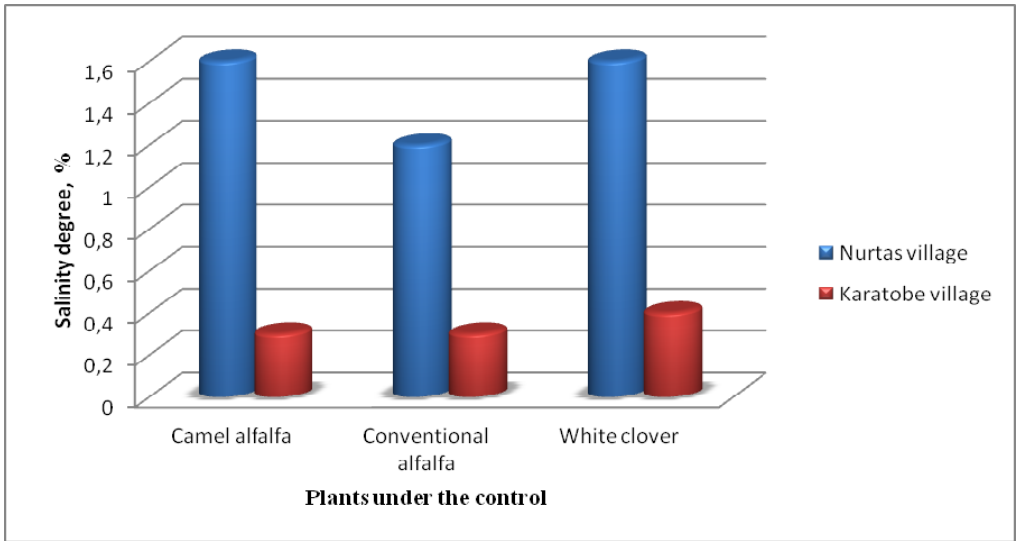

Figure 7 - A change level of salinity degree of the soil types under the control after growing plants without adding manure

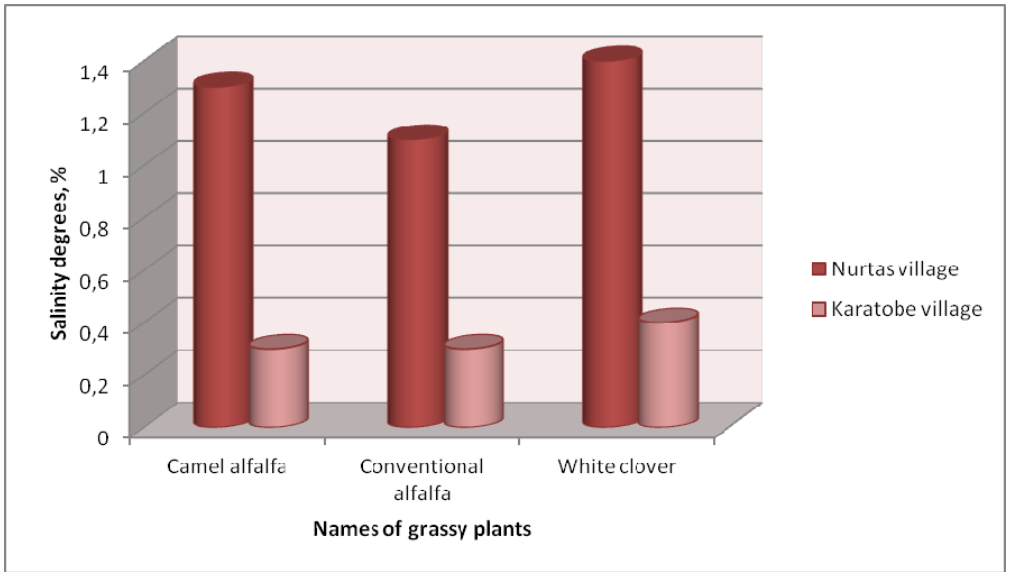

Figure 8 - A change level of salinity degree of the soil types under the control after growing plants with adding manure

The soil salinity degrees of the study objects have decreased after growing the plants. The salinity degrees in the two versions of the soil types have decreased more than the initial soil types (before growing the plants). The salinity degree of the soil types without adding manure: the salinity degree of the manure added soil of Nurtas village decreased up to 1,6 %, conventional alfalfa grown soil – 1,2%, white clover – 1,6%, while the salinity degree of the soil of Karatobe village in which camel alfalfa, conventional alfalfa and white clover had grown reduced up to 0,4%. The salinity degrees of the soils under the control were the same in all types in which the plants had benne grown.

The salinity degree of the manure added soils: the salinity degree of camel alfalfa grown soil of Nurtas village decreased to 1,3%, conventional alfalfa grown– 1,1%, white clover grown – 1,4%, the salinity degree of the camel alfalfa and conventional alfalfa grown soil of Karatobe village reduced to 0,3%, and white clover grown to 0,4%.

The duration of the experiment conducted on the soil types chosen for growing the plants under the control is 2 months.

Manure is one of the most important fertilizers for plants and a source of food necessary for their growth. It is not only plants food, but also affects the soil structure. Manure impacts pH environment of

the soil. A regular penetration of manure reduces the soil acidity and saturates the soil with calcium, magnesium and other micro elements [21].

The salinity degree of the manure added soil types was considerably reduced in comparison of the soil without manure.

Table 3 – The result of the analysis works carried out on the chemical composition of the soil types not containing manure in which the plants under the control had grown (water extract, mg / dm^3)

The study objects	Plants name	Salt ions mg / dm^3							
		Mg^{2+}	NH_4^+	Ca^{2+}	HCO_3^-	NO_3^-	NO_2	Cl^-	SO_4^{2-}
Nurtas village	Camel alfalfa	193	1, 242	264,9	168	590	0,092	150,7	0,599
	Conventional alfalfa	139	1,089	259,8	165	600	0,91	166,5	0,596
	White clover	250	2,905	150,2	305	602	0,528	188,9	0,602
	The controlled soil type	300	5,034	574,6	305	169	0,18	244,71	0,629
Karatobe village	Camel alfalfa	34	1,784	60,1	72	222	0,324	62	1,91
	Conventional alfalfa	46	1,416	65,3	73	196	0,675	53	1,8
	White clover	22	1,375	85,2	201	200	0,231	58,92	1,6
	The controlled soil type	123	5,034	157	305	30,93	0,248	75,3	2,602

Table 4 - The result of the analysis works carried out on the chemical composition of the manure added soil types in which the plants under the control had grown (water extract, mg / dm^3)

The study objects	Plants name	Salt ions mg / dm^3							
		Mg^{2+}	NH_4^+	Ca^{2+}	HCO_3^-	NO_3^-	NO_2	Cl^-	SO_4^{2-}
Nurtas village	Camel alfalfa	180	2,242	220,4	122	1008	0,074	131,7	0,569
	Conventional alfalfa	120	2,089	200,4	122	1060	0,304	150,5	0,496
	White clover	228	3,905	163,2	305	556	0,447	181,9	0,602
	The controlled soil type	300	5,034	574,6	305	169	0,18	244,71	0,629
Karatobe village	Camel alfalfa	24	1,694	50,2	61	342	0,334	56	1,72
	Conventional alfalfa	36	1,306	60,3	61	216	0,825	43,9	1,632
	White clover	12	1,285	80,12	183	269	0,301	59,02	1,53
	The controlled soil type	123	5,034	157	305	30,93	0,248	75,3	2,602

The amount of chemical elements in the soil composition has decreased. The changes in the soils compositions of the two versions are shown in Figures 5-6.

During the analysis works on the manure added soil, it was noticed that the amount of nitrogen component ions in the soils not containing manure increased by 5 times. The amount of nitrates of conventional alfalfa in the manure added soil type of Nurtas village increased from 169 mg / dm^3 to 1060 mg / dm^3 in comparison with other herbaceous plants. A high amount of nitrates defined in Karatobe village was identified in camel alfalfa grown version and it increased from 30.93 mg / dm^3 to 342 mg / dm^3. The nitrogen accumulating property of conventional alfalfa and the amount of nitrogen in the manure composition were taken into consideration.

Due to the abundance of organic substances in its composition, manure has a positive effect on the physical, chemical, mechanical and biological soil properties. A regular manure use increases humus and nitrogen composition in the soil and saturates it with the basic substances. The manure added soil version loosens easily and improves the water and air passage [22].

The difference between the given ions was noticed in all cations and anions (Tables 3, 4; Figures 5, 6). Calcium and magnesium cations were absorbed by the plants in the both versions. It is known that cations are well absorbed by plants; in this regard, ammonia nitrogen cation in the initial soil form in Nurtas village decreased to 6,081mg / dm^3, in the camel alfalfa grown to 2,242mg / dm^3, in the conventional alfalfa grown- 2.089 mg / dm^3, white clover grown– 3,905 mg/dm^3. In the grey saline soil of

Karatobe village, ammonia nitrogen reduced to 5,034 mg/dm^3, camel alfalfa grown to 1,694 mg/dm^3, conventional alfalfa grown - 1,306 mg/dm^3, white clover grown to 1,258 mg/dm^3[23].

The amount of chlorides and hydrocarbonates in the soil composition have considerably reduced. However, chlorides and hydrocarbonates were not defined while carrying out the analysis work on the plants composition. A half part of anions was washed away while watering the plants. It is necessary to identify the absorption and biological translocation coefficient of the grey soils [24].

Table 5 - pH exponents of the study plants grown soil

№	Crops name	The study objects name	
		Nurtas village	Karatobe village
		pH - environment	pH - environment
1	Initial soil form	5	5
2	Camel alfalfa	7,342	7,365
3	Conventional alfalfa	7,409	7,076
4	White clover	7,798	6,930

pH environment of soil has a positive effect on the plant growth. A favorable condition of pH soil environment for growing cultural plants cultivated in the agriculture is shown in table 6.

Table 6 - A favorable condition of pH soil exponent for the main types of plants

Cultural plants	**pH optimal exponent**
Wheat	6,0-7,6
Tea	4,8-6,2
Tomato	6,3-6,7
Or Carrot	5,5-7,0
Peas	6,0-7,0
Potato	5,0-5,5
cabbage	6,7-7,4
Шалқан	5,5 and more
Cucumber	6,0-7,0

That is, they have a positive effect on the soil structure in accordance to the descriptions of the herbaceous plants chosen for the study.

Conclusion

1. While planting, the soils' pH showed an acidity environment, it changed to neutral and slightly alkaline environment after the plants had grown. This case showed that the herbaceous legumes plants affected not only physical and chemical compositions of the soils, but also their pH environment.

2. Among other plants seeds, the sprouting exponent of conventional camel alfalfa was high. Its sprouting was 96,1 % in comparison with conventional alfalfa and white clover.

3.The salinity degree of the soils of the study objects reduced after the planting. The salinity degree of the soil types without adding manure: the salinity degree of camel alfalfa grown soil of Nurtas village decreased up to 1,6 %, conventional alfalfa grown– 1,2%, white clover grown– 1,6%, while the salinity degree of the soil of Karatobe village in which camel alfalfa, conventional alfalfa and white clover had grown reduced up to 0,4%. The salinity degrees of the soils under the control were the same in all types in which the plants.

4. The salinity degree of the manure added soil types: the salinity degree of camel alfalfa grown soil of Nurtas village decreased to 1,3%, conventional alfalfa grown– 1,1%, white clover grown– 1,4%, while the salinity degree of the camel alfalfa and conventional alfalfa grown soils of Karatobe village reduced to 0,3%, and white clover grown soil to 0,4%.

5. The amount of nitrates of conventional alfalfa in the manure added soil type of Nurtas village increased from 169 mg / dm^3 to 1060 mg / dm^3 in comparison of other herbaceous plants. A high amount of nitrates defined in Karatobe village was identified in the camel alfalfa grown version and it increased from 30.93 mg / dm^3 to 342 mg / dm^3. The nitrogen accumulating property of the conventional alfalfa and the amount of nitrogen in the manure composition were taken into consideration.

6. The cations were well absorbed by the plants; in this regard, ammonia nitrogen cation in the initial soil form in Nurtas village decreased to 6,081mg / dm^3, in the camel alfalfa grown– 2,242mg / dm^3, in conventional alfalfa grown - 2.089 mg / dm^3, white clover grown– 3,905 mg/dm^3. The ammonia nitrogen in the soil of Karatobe village reduced to 5,034 mg/dm^3, while in the plants it decreased to 1,694 mg/dm^3, 1,306 mg/dm^3 and 1,258 mg/dm^3.

7. Improving the re-salinity of the irrigated lands that were degraded in the condition of the South Kazakhstan region by the phyto-amelioration method was efficient ecologically and economically.

Д. Сунакбаева

ОҢТҮСТІК ҚАЗАҚСТАН АУМАҒЫНДАҒЫ ҚАЙТАРА ТҰЗДАНҒАН ЖЕРЛЕРДІҢ ӨНІМДІЛІГІН АРТТЫРУ ДЕҢГЕЙІНЕ ФИТОМЕЛИОРАНТТАРДЫҢ ӘСЕРІ

Қ.А.Ясауи ат. ХҚТУ, Түркістан қаласы, Қазақстан,

Аннотация. Адамзаттың ең үлкен құндылығы – әлемнің жасыл желекті болуы. Бірақ бұған қарамастан, бүгінгі күнге дейін өсімдіктердің барлық мүмкіндіктеріне адамзаттың назар сала бермейді.Негізгі өсірілетін өсімдіктер біздің дәуірімізге дейінгі бірнеше мың жыл бұрын өсірілген.Патогендік өзгеріссіз өсімдіктің өнімділігін арттыру, онтогенезін оңтайлы әрі жасанды реттеу әдісі әлі күнге дейін белгісіз. Өсімдіктердің онтогенезін реттеу жолдары - бұл топырақтың құнарлылығын ескере отырып, егін жинау бағдарламалары үшін өте маңызды болып табылады – фотосинтезді реттеу, өсімдіктің динамикасы мен мерзімділігін , азот алмасуын реттеуге мүмкіндік беретін заңдылықтарды белгілеуге байланысты болады.

Қазіргі уақытта Жердегі өсімдік жамылғысының жағдайы нашарлауда. Негізгі себеп - өсімдіктерде кездесетін патологиялық құбылыстардың алуан түрлілігі мен әртүрлілігі. Патологиялық құбылыстар үш категорияға біріктіріледі: патологиялық реакциялар, патологиялық процестер және аурулар.

Ең қауіпті өзгерістер - өсімдіктердің кейбір түрлерін толық немесе ішінара жоғалуына дейін әкелетін процесстер. Адамның антропогендік әсерінен ғана емес, белгілі бір табиғи апаттарға да қатысты болуы мүмкін. Олардың ішіндегі ең маңыздысы: 1) ауыл шаруашылық және орман шаруашылығында, тау-кен өнеркәсібінде, қазба байлықтары өндірісінде өсімдіктердің жойылып кетүі. Зерттеудің нәтижелері фитомелиорация табиғи өсімдік қауымдастығын өндіру немесе қызмет көрсету арқылы қоршаған ортаның жай-күйін жақсарту жөніндегі шаралар жиынтығы болып табылады, сондай-ақ фитомелиорациялау арқылы суармалы жерлерді пайдалануды экологиялық және экономикалық тұрғыдан тиімді болып табылады.

Түйін сөздер: фитомелиорация, өнімділік, өсімдік, тұз, жер, жақсарту, почва, әсер, биомелиорант, бұршақ тұқымдары, жоңышқа, тыңайтқыш.

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ВЛИЯНИЕ ФИТОМЕЛИОРАНТОВ НА УРОВЕНЬ ПОВЫШЕНИЯ ПРОДУКТИВНОСТИ ВТОРИЧНЫХ ЗАСОЛЕННЫХ ЗЕМЕЛЬ НА ТЕРРИТОРИИ ЮЖНО-КАЗАХСТАНСКОЙ ОБЛАСТИ

Аннотация. Зеленый покров планеты – самое ценное из достижений человека. Но несмотря на это до сих пор не все возможности растений учтены и использованы человечеством. Основные возделываемые растения были одомашнены за несколько тысяч лет до нашей эры. Все еще неизвестны пути оптимальной искусственной регуляции онтогенеза растений, которая без патогенетических последствий может привести к их максимальной продуктивности. Установление путей регуляции онтогенеза растений – исключительно важное для программирования урожая с учетом плодородия почв – связано с установлением закономерностей, позволяющих регулировать фотосинтез, периодичность и динамику роста, азотный обмен и др.

В настоящее время ухудшается состояние растительного покрова Земли. Основной причиной является разнообразие и разнонаправленность патологических явлений, возникающих у растений. Патологические явления объединены в три категории – это патологические реакции, патологические процессы и болезни.

Наиболее опасны нарушения, которые ведут к полному или частичному исчезновению определенных видов растений. Поводы для исчезновения растений разнообразны. Они могут быть связаны не только антропогенной деятельностью человека, но и некоторыми стихийными бедствиями. Важнейшими из них являются: 1) физическое истребление для сельскохозяйственных и лесохозяйственных целей, для добычи

полезных ископаемых, строительства и промышленного производства. Результаты исследований показали, что фитомелиорация - комплекс мер по улучшению состояния окружающей среды путем производства или поддержания естественных растительных сообществ. Улучшение утилизации орошаемых земель методом фитомелиорации также является экологически и экономически целесообразным.

Ключевые слова: фитомелиорация, продуктивность, растение, соль, земля, улучшение, почва, влияние, биомелиорант, семена фасоли, клевер, удобрения.

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THE IMPACT OF ADDRESS COMPOUND CONCENTRATED FEEDSTUFF ON THE DAIRY PRODUCTIVITY OF COWS AND THE QUALITY OF MILK

Abstract. As a result of the undertaken research, the chemical composition of feed in the basic farm of the Karimov SP was studied, the detailed rations were developed and the deficiency of biologically active substances was determined in them.

The most promising way to eliminate the deficit of minerals and vitamins in feeding animals is to enrich the rations with various feed additives. Of particular topicality is the use of biologically active substances in biogeochemical provinces, which are deficient in a number of macro- and microelements in soils and feeds.

Taking into account the needs and content of nutrients, macro- and microelements, as well as vitamins in the diet, their deficiency was determined, which amounted to 54.0% in sugar; 32.6% in phosphorus; 22.6% in copper; 81.1% in cobalt ; 53.1 in zinc; 73.6% in iodine; 38.5% in manganese and 81.4% in vitamin D (IU). Based on the deficit of macro-and micronutrients, as well as vitamins, a recipe for a compound concentrated feedstuff for cows with a productivity of 20-24 kg of milk per day was developed. Along with this, the chemical composition of the compound concentrated feedstuff was determined. The results of experimental studies showed that the eatability of the feed mixture in the control group was 89.46%, and in the experimental group - 93.66%, which is higher by 4.2%, and the dairy productivity of the cows in the experimental group increased by 6.98%, and in terms of 4% milk, this indicator increased by 9.98%, the cost of milk decreased by 4.9%.

Keywords: fodder base, chemical composition of feed, rations, nutrient deficiency, feed supplement, compound concentrated feed, dairy productivity.

Introduction. The feeding of highly productive animals is built on unconditional satisfaction of the physiological needs of the body for energy, nutrition, mineral, and biologically active substances. In working with highly productive animals, ration optimization is a priority. Any imbalance leads to serious metabolic disorders, reduced viability, animal productivity and quality of the obtained products [1,3]. In recent years, the negative correlation between high productivity, health and reproductive ability of animals has been increasingly noted. Scientists all over the world constantly study metabolic diseases of highly productive animals: with protein, carbohydrate, lipid, vitamin, and mineral, interrelated with each other directly or indirectly. According to the majority, among the causes of this pathology, as well as a decrease in animal productivity, the unbalanced feeding comes first. [2,4].

The development of new ways to improve the efficiency of use of feed nutrients in order to achieve full-fledged feeding of animals and to obtain high-quality animal products is particularly relevant today. To achieve this goal, complex biological products and additives that improve the taste and nutritional properties of feed are widely used, which ensures the achievement of the main feeding effect - increasing

the availability and digestibility of nutrients entering the body with a diet, increasing animal productivity [5, 8, 9, 10, 11]. Many of them are needed to regulate feed intake [15]. Today, individual components of diets, which recently seemed exotic or ballast, are increasingly being sold. [6, 12, 17].

In this regard, the study of the biological role of microbiogenic metals in all the most important metabolic reactions showed that the activity largely depends on the chelation properties. The formation of chelate compounds underlies the manifestation of reactive molecules, the conversion of biosubstrates into structurally organized specific systems, the formation of immunity, and other immunodynamic and biodynamic processes in the body. [7,13, 14].

D. Fremaut [14] indicates the distinctive properties of organic forms of microelements: a form that is protected from chemical reactions in the digestive tract; a form, ready for absorption, with a high rate of penetration through cell membranes; chelates are stable in an acidic environment; they can be absorbed in a manner similar to amino acids. High economic requirements for the profitability of production in market conditions force livestock producers to use more advanced technologies that ensure the maximum level of animal productivity, efficient use of fodder materials and lower feed costs for production. One of the tasks in the implementation of intensive resource-saving technologies in dairy farming is to create such feeding conditions in which energy and nutrient consumption are in accordance with certain standards. Under this condition, a level of productivity close to the genetic potential is achieved, health is preserved and high efficiency of production and breeding use of animals is ensured.

Modern development of animal husbandry is impossible without the use of scientific achievements [15,16]. One of the conditions for obtaining cheap high-quality products is the use in feeding animals of rations, balanced by a large number of nutrient, mineral and biologically active substances. A significant role in this is given to balancing additives, mineral and vitamin mixtures (AVMA, BMD, VMC). According to foreign and domestic practices, the use of biologically active substances in the feeding of farm animals and poultry has always proved to be profitable, that is, investing finance to purchase balancing additives, mineral and vitamin mixtures for feeding animals has always given a profit. In this regard, in the practice of feeding animals, the volume of various feed additives and especially compound feed, mineral and vitamin mixtures significantly expands every year. Thus, the intensification of livestock has led to the accelerated development of the industry of microbiological and chemical synthesis for the production of feed vitamins, amino acids, macro- and microelements, enzymes, antibiotics, carbamide and ammonium salts, tranquilizers, hormones, antioxidants and some other organic and inorganic biocatalysts [17,18].

The compositions of biologically active substances and compound feedstuffs are developed on the basis of modern scientific research on the animal's body needs for energy, protein, amino acids, vitamins, macro- and microelements, enzymes and other nutrients, taking into account the type, level of productivity, sex, and age of animals.

The extensive studies on the effectiveness of the use of various feed preparations, biologically active substances in animal husbandry were conducted [19]. At the same time, there are very few similar works in Kazakhstan, especially in dairy cattle breeding, which determines the relevance of this work.

Compensation of deficiency of minerals and vitamins in forage is an important direction in solving the problem of animals nutrition. In recent years, the lack of macro- and micronutrients and vitamins, as a rule, is replenished using inorganic salts. However, it does not take into account the antagonistic and synergistic relationships between individual mineral elements and the presence of adsorbing agents of feed origin. Salts of macro- and microelements in inorganic form are relatively difficult to digest in the gastrointestinal tract of animals, and increasing the dose to raise the level of assimilation can lead to toxicosis.

According to L.I. Shishov [20], of interest are chelated trace elements in the premixes of the Alltek company. They correspond to the natural complexes of mineral elements in forage crops and grain, have high bioavailability and bioactivity. The experiments of M.G. Volynkin [21] found that enrichment of the ration with the feed additive “Sanimix” in the amount of 1% of the daily diet of concentrated feeds allows to get 510 kg more milk than without using it. Analysis of economic efficiency showed that the introduction of feedings into the diet of lactating cows had a positive impact on the dairy productivity of animals. For the first 100 days of lactation, from cows of the experimental group, the 4% fat milk was received by 13.43% more than from animals in the control group.

M.G. Malikova, I.N. Akhmetova [22] in their studies found that balancing diets of young cattle for the missing nutrients by injecting feedings of protein-mineral-vitamin supplements (AVMA, BMD) and providing them with the necessary nutrients had a positive effect on the growth of forestomach microflora and ruminal digestion processes, while creating conditions for better digestibility and assimilation of nutrients of the diet, which contributed to a more intensive growth and development of animals ensured a high economic impact.

In their studies, L. Toporova, S. Serebrennikova, V. Galashov et al. [23] investigated the effectiveness of organomineral supplements on various types of animals and birds.

The highest live weight of one head - 1494.6 g - was established in the IV experimental group, the chickens of which received 0.15% vitabelmin as part of the compound feedstuff. In the control group, the average live weight of a broiler is 1377.9 g.

The live weight of animals at the end of fattening in the group receiving vitabelmin with the ration exceeded the control by 7.41 kg, or 2.69%.

A similar experiment was conducted on lactating cows. As a result of individual accounting of productivity indicators for each animal, it was found that after 30 days of feeding the supplement, the average daily milk yield of natural milk from cows in the experimental group was 8.3% higher than the control, and on the 90th day, the difference was 13.8%. On average, for the experimental period, 11.7% more milk was obtained from the cows of the experimental group than in the control group.

Thus, a review of the literature has shown that intensive research is being conducted in the development of doses of mineral additives and various supplements, and this is especially true for Russia. At the same time, most of the works are aimed at testing chelated microelements, conventional microelements, and microadditives, and also tests of already developed additives of a new generation are being conducted. Many studies are aimed at the development of protein-mineral-vitamin background, including not all the limiting factors of nutrition, but only some of them.

In Kazakhstan, practically no one deals with this problem in the regional aspect. Therefore, studies aimed at the investigation of affordable and cost-effective for commercialized feeding of various dressings, mineral supplements, and AVMA, which would possibly fill all the limiting factors is the current direction of research.

The aim of the research. Improving the biological full-value of diets and productivity of dairy cattle.

Methods of the research. The studies were conducted in the basic farm of Karimov SP of the Almaty region and the testing center to determine the chemical composition of feed and the quality of agricultural products of KazSRIAH&FP LLP.

Before the start of the experiment, the fodder base was studied, samples of feed were selected and their chemical composition was investigated.

For the experiment, two experimental groups of cows, 8 animals each with a yield of 5-6 thousand kg of milk per year for the previous lactation, were formed on the principle of pairs-analogues [24] (table 1).

Animals were kept in typical premises, without a leash. Caring for them was the same. Milking was conducted three times a day. The difference in feeding was that the animals of the experimental group received optimized rations with the inclusion of the feed additive, and the control group received an economic ration.

After studying the chemical composition of the feed and the formation of the experimental groups, taking into account the dairy productivity of the animals, detailed rations for the experimental group were developed and a nutrient deficiency was established, which served as the basis for the development of a recipe for compound concentrated feed. In the development of diets there were used the norms of feeding farm animals, developed by the All-Russian State Research Institute of Livestock [25].

In the course of the experiment, every ten days the quantity of given fodder was taken into account, once a month the animals' productivity, the palatability of feeds were recorded, and the milk fat content was determined.

At the beginning of the experiment, the chemical composition of the milk of experimental animals was studied on an InFraXact instrument manufactured by FOSS (Denmark).

Table 1 - Scheme of experience

Group	Number, heads	Feeding conditions
Control	8	BD – Basic diet
Experimental	8	BD + supplementary feed (compound feed - concentrate)

The obtained main digital material was processed by the method of variation statistics, using a computer program [26, 27].

Research results. In the course of the research work, the availability of feed in the farm was studied. The fodder base was represented by hay with alfalfa and mountain, corn silage, crushed barley, wheat, extruded soybeans and feed additives in the form of compound concentrated feedstuff, which compensated for the nutrient deficiency in the diet.

Samples were taken from the available feeds and their chemical composition was studied, which is presented in Table 2. The visual assessment of the feeds and the results of their chemical composition showed that the available feeds are of good quality, with the exception of corn silage. It had low quality in mind of harvesting corn during the period of full ripeness of grain.

Table 2 - Results of chemical analysis of feeds in Karimov SP in terms of natural moisture

Sample name	TM, %	DM, %	In natural appearance, %										feed unit per 1 kg	DP, g	ME, MJ	EFU
			protein	fat	fibre	NES	sugar	amylum	ash	Ca	P	carotin				
Alfalfa hay	18.54	81.46	15.3	6.5	34.0	20.4	-	31.5	5.26	0.98	0.24	27.2	0.49	99.7	7.9	0.79
Mountain hay	11.36	88.64	15.0	4.1	29.4	32.7	-	8.2	7.38	0.61	0.27	22.2	0.55	76.7	7.4	0.74
Corn silage	64.02	35.98	3.3	1.4	12.9	17.2	2.79	5.0	1.17	0.83	0.19	10.1	0.23	18.4	3.3	0.33
Wheat grain	8.04	91.96	11.9	1.5	3.6	72.9	-	54.5	2.01	0.66	0.33	-	1.22	102.7	12.2	1.22
Barley grain	7.49	92.51	10.0	1.9	5.0	73.0	-	51.4	2.51	0.20	0.31	-	1.20	56.2	11.3	1.13
Compound feed granulated	10.72	89.28	17.0	3.4	9.3	54.7	-	50.5	4.97	0.76	1.63	-	1.12	140.9	11.0	1.10
Extruded soy	8.14	91.86	34.7	17.6	5.4	28.1	-	31.9	6.15	0.36	0.64	-	1.48	305.3	13.5	1.35

Before the start of scientific and business experience, two groups of animals were formed - the control and the experimental ones. During the equalization period, both groups of animals received the same rations, which, according to the experimental design, were later intended for the control group.

After the termination of the equalizing and transitional periods, taking into account the dairy productivity of the cows, the actual chemical composition of the feed and the optimized structure of the diet, detailed feeding rations for lactating cows were developed using a computer program. Average daily rations in the reference period of the experiment are shown in Table 3.

From the data of table 3 it follows that the bulky feed in the structure of the diet in the control group of the total demand for EFU was 65%, and concentrates - 38%. At the same time, the share of hay was

25%, silage - 40, barley - 15, feed wheat - 15 and soy - 8%. In the experimental group, it was respectively 65.1; 39.0; 25; 40.1; 5; 13.4; 7 and compound concentrated feed -13.0%.

Taking into account the needs and content of nutrients, macro-and micronutrients, as well as vitamins in the diet, their deficiency was determined, which amounted to 54.0% for sugar; 32.6% for phosphorus; 22.6% for copper; 81.1% for cobalt; 53.1% for zinc; 73.6% for iodine; 38.5% for manganese and 81.4% - vitamin D (IU).

Based on the deficit of macro and microelements, as well as vitamins, a recipe for compound concentrated feed for cows with a productivity of 20-24 kg of milk per day was developed (Table 4).

Along with this, the chemical composition of the feed was determined (Table 5).

In the course of scientific and business experience, control feeding was carried out monthly, as well as control milking, and the feeding rations of cows were corrected depending on the productivity of the animals of the experimental groups.

The diets of experimental animals had no differences in the range of feed materials.

Table 3 - Average daily rations of experimental cows during the reference period of the experiment (on average per 1 head).

Feed, kg	Group			
	Control		Experimental	
	norm	feed amount, kg	norm	feed amount, kg
1	2	3	4	5
Alfalfa hay	-	4.1	-	4.22
Mountain hay	-	2.81	-	2.74
Corn silage	-	32.83	-	32.88
barley	-	2.48	-	0.83
feed wheat	-	2.74	-	2.44
Soy extr.	-	1.0	-	0.86
Compound concentrated feedstuff	-	-	-	2.19
Total	-	45.94	-	46.16
The diet contains				
EFU	19.7	20.3	19.7	20.4
ME, MJ	197.0	202.6	197.0	203.7
DM, kg	21.4	21.6	21.4	21.8
CP, g	2750.0	2663.9	2750.0	2826.6
DP, g	1820.0	1824.8	1820.0	1980.7
SP, g	1763.0	1649.0	1763.0	1775.8
USP, g	987.0	893.0	987.0	929.1
CF, kg	5000.0	5056.8	5000.0	5151.0
Amylum, g	2390.0	3934.4	2390.0	3535.1
Sugar, g	1600.0	731.2	1600.0	739.9
Crude fat, g	565.0	808.3	565.0	820.6
Ca, g	123.0	168.1	123.0	181.8
Sodium chloride	115.0	109.2	123.0	123.0
Phosphorus, g	87.0	58.6	87.0	85.6
Magnesium, g	35.0	48.9	35.0	48.8
Potassium, g	133.0	263.6	133.0	269.6
Cu, mg	155.0	119.9	155.0	1149.8
Cobalt, mg	12.3	2.3	12.3	12.9
Zink, mg	1040.0	487.7	1040.0	1586.7
Manganese, g	1040.0	639.6	1040.0	1040.6
Iodine, mg	14.2	3.7	14.2	12.9
Vitamin D, IU	16700.0	3104.1	16700.0	16604.6
Vitamin E, mg	665.0	2206.3	665.0	2320.7
Carotin, mg	745.0	879.0	745.0	921.6

The difference was only in the fact that the animals of the experimental group received a supplementary feed in the form of compound feed, which compensated for the deficiency of biologically active elements. This, in turn, influenced the palatability of the feed, and therefore the consumption of nutrients and biologically active substances.

It should be noted that the feed was given in the form of a feed mixture, so the palatability of the feed was quite high. In our experience, the palatability of the feed mixture in the control group was 89.46%, and in the experimental group - 93.66%, which is 4.2% higher. The lower palatability of the feed mixture in the control group is associated with a deficiency of certain nutrients. It is known that with a lack of biologically active substances in the diet, loss of appetite is observed, oxidative processes are slowed down, metabolism in animals is disturbed, etc.

Table 4 - Feedstuff recipe for lactating cows with a productivity of 6.0-6.5 thousand kg of milk per lactation

Name of feed	Unit of measure	content
corn	%	25
barley	%	22
feed wheat	%	13
wheat middling	%	17
cattle cake or soybean meal	%	14
oats	%	6
sodium chloride	%	1
Bulk moulding compound	%	2

Table 5 - Chemical composition of the compound concentrated feedstuff for cows with the productivity of 6.0-6.5 thousand kg of milk per lactation

Indicators	Unit of measure	content
EFU		1.17
ME	MJ	11.64
DM	g	892.8
CP	g	170.0
SP	g	110
USP	g	60
DP	g	140.0
Crude fat	g	34.0
Crude fiber	g	63.0
Amylum	g	316.0
Sugar	g	10.0
Calcium	g	2.0
Phosphorus	g	16.0
Magnesium	g	2.0
Potassium	g	11
Sulfur	g	6.0
Ferrum	mg	50.0
Cooper	mg	16.0
Zink	mg	280.0
Manganese	mg	235.0
Cobalt	mg	5.0
Iodine	mg	4.0
Carotine	mg	0.9
Vitamin D	IU	6000.0
Vitamin E	mg	10.3

On average, cows of the control group received 45.94 kg of feed mixture per day, and the cows of the experimental group - 46.16 kg. At the same time, the feed mixture included alfalfa hay, grass hay, corn silage, barley, wheat, soybean, and compound concentrated feed.

By the composition of feed, the rations of the experimental groups did not differ from each other. The structure of the rations was also almost identical. So the share of alfalfa hay in the control group was 15%,

grass hay - 13.0, corn silage 28.5, concentrates 43.5%, and in the experimental one - 16.6; 14.7; 26.7 and 42.0%.

In the experimental group, the consumption of all nutrients was higher than in the control group, which is associated with higher palatability of feed and animal productivity. In the control group, 1 kg of dry matter accounted for 123 g of protein, and in the experimental group, - 130 g, or higher, respectively, by 5.7%, which almost corresponded to the norm.

In both diets, there is a significant shortage of sugar, since at present there is almost nothing to fill it with. In this regard, it was given a little more amylum, because in the organism, part of it turns into sugar.

Introduction to the diet of the experimental group of the compound concentrated feedstuff allowed to balance the diet in accordance with the norms on trace elements and vitamins. Thus, the diet of the experimental group fully satisfied the animals' need for basic nutrients and biologically active substances, which positively affected the dairy productivity of cows and the quality of milk (Table 6).

Table 6 - Dairy productivity of cows for the experimental period

Indicator	Group	
	Control	Experimental
Milk yield for the experiment period, kg:		
natural fatness	923.22±8.13	987.62±8.47
4% fatness	826.29±7.81	908.61±8.21
Average daily milk yield, kg:		
natural fatness	20.07±0.39	21.47±0.57
4% fatness	17.97±0.38	19.76±0.47
Fat mass fraction,%	3.58±0.04	3.68±0.05
Protein mass fraction, %	3.21±0.13	3.28±0.17
Total, kg: milk fat	33.08±1.74	36.35±1.14
milk protein	29.64±3.56	32.41±2.07

From the data of table 6 it can be seen that from the cows of the experimental group, for the period of the experiment, it was obtained more natural fat milk compared to the control group by 1.40 kg or 6.98%, and in terms of 4% milk this indicator increased and amounted to 1.79 kg or 9.98%. The fat content in the milk of cows from the experimental group was 0.10% higher than in the control group. This, in turn, affected the yield of milk fat. So, 36.35 kg of milk fat was received from cows of the experimental group, and from the analogues - 33.08 kg or more by 9.8% (3.27 kg), and milk protein - by 9.35% or 2, 77 kg respectively.

Along with dairy productivity, the chemical composition of the milk of experimental animals underwent certain changes under the influence of detailed rations and compound feed (Table 7).

The data of Table 7 allow to state the positive dynamics of protein and fat content in the experimental group of cows. In terms of fat content, the milk of animals from the experimental group exceeded the control by 0.10 absolute percent, protein by 0.01%, casein by 0.06 abs.%, lactose by 0.01 abs.%. On the content of somatic cells, there are practically no differences between the experimental groups. Milk of both groups can be attributed to the highest grade.

As for urea, it should be noted that with a normal protein content in milk (3.2%), the desired urea content should be 15-30 mg/%. The content of urea in milk below 15 mg/% indicates a deficiency of protein in the rumen. This limits the activity of rumen microorganisms, which reduces feed intake and, consequently, dairy productivity. In our experience, although these indicators in both groups were within the normal range, however, in the control group it is close to the lower limit, indicating a lower protein content in the rumen.

The ratio of fat and protein in milk also characterizes the functional state of the digestive system. Normally, this ratio should be 1.15-1.40 conventional units. In the milk of the control and experimental groups, this indicator is normal.

Table 7 - The chemical composition of milk of dairy cows

Indicator	Unit of measure	Group	
		Control	Control
Fat	%	3.58±0.04	3.68±0.05
Protein	%	3.21±0.13	3.28±0.17
Somatic cells	thous./cm^3	84.5±18.1	88.02±17.4
Casein	%	2.56±0.11	2.62±0.16
Lactose	%	4.68±0.4	4.69±0.11
Urea	mg %	15.36±1.42	18.24±1.28

Summary and evaluation of the research results. The basis of feeding highly productive animals consists of unconditional satisfaction of the physiological needs of the body for energy, nutrition, mineral, and biologically active substances. In working with highly productive animals, ration optimization is a priority. Any imbalance leads to serious metabolic disorders, reduced viability, animal productivity, and product quality.

Among the factors that determine the usefulness of feeding dairy cows, the conditions of mineral and vitamin nutrition are essential.

The most promising way to eliminate the deficiency of minerals and vitamins in feeding animals is to enrich the rations with feed additives.

Of particular relevance is the use of biologically active substances in biogeochemical provinces that are deficient in a number of trace elements in soils and feeds.

The development of address recipes for compound feed concentrates for each soil-climatic zone makes it possible to fully obtain high animal productivity and increase the profitability of animal husbandry. In this regard, during the scientific and business experience, the chemical composition of the feed of the farm was studied, detailed rations were developed, the deficiency of biologically active substances was established, and a recipe for compound feed concentrate was developed on its basis.

Feeding lactating cows with compound feed in the composition of the diet made it possible to increase the palatability of the feed mixture in the experimental group by 4.2% compared with its analogues.

The best palatability of feed, optimization of nutrients in the diet of the experimental group had a positive impact on the dairy productivity of animals. So, from the cows of the experimental group for the experience period, the milk of natural fat content was obtained in comparison with the control group by 1.40 kg or 6.98%, and in terms of 4% fat milk this indicator increased and amounted to 1.79 kg or 9.98%. The fat mass fraction in the milk of cows from the experimental group was 0.10% higher than in the control group. This, in turn, affected the yield of milk fat. So, 33.08 kg of milk fat was obtained from cows in the control group, and from the analogues - 36.35 kg or more by 9.8% (3.27 kg). Analysis of the milk chemical composition allows us to state the positive dynamics of protein and fat content in the experimental group of cows. In terms of fat content, the milk of animals from the experimental group exceeded the control by 0.10 absolute percent, protein by 0.01%, casein by 0.06 absolute %, lactose by 0.01 absolute %. By the content of somatic cells, there are practically no differences between the experimental groups. Milk of both groups can be attributed to the highest grade.

As for urea, it should be noted that with a normal protein content in milk (3.2%), the desired urea content should be 15-30 mg/%. In our experiment, although these indicators in both groups were within the normal range, however, in the control group it is close to the lower limit, indicating a lower content of available protein in the rumen.

The ratio of fat and protein in milk also characterizes the functional state of the digestive system. Normally, this ratio should be 1.15-1.40 conventional units. In the milk of the control and experimental groups, this indicator was within the normal range. However, in the control group, this indicator was almost at the bottom.

Thus, the use of detailed rations and address feeds allowed to improve metabolic processes in the body, increase the dairy productivity of cows in the experimental group by 6.98%, and in terms of 4% fat milk by 9.98% and reduce the cost of milk by 4.9%.

The experience shows a high production efficiency and the use of addressed feed concentrates in the preparation of optimized detailed rations. Giving the feed available in the farm in the form of balanced rations is the basis for further improving the productivity of animals, reducing feed consumption per unit of production and its cost. In the course of scientific and business experience, detailed rations and the recipe for compound concentrated feed were developed taking into account the deficiency of biologically active substances in the diet. Based on this recipe was produced feed for dairy cows. The results of experimental studies have shown that the palatability of the feed mixture in the control group was 89.46%, and in the experimental group - 93.66%, which is higher by 4.2%.

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СҮТ ӨНІМДІЛІГІНЕ ЖӘНЕ САПАСЫНА АРНАЙЫ РЕЦЕПТІМЕН ДАЙЫНДАЛҒАН ҚҰРАМАЖЕМ-КОНЦЕНТРАТТЫҢ ӘСЕРІ

Аннотация. Тәжірибе жүргізу барысында «Каримов» ЖК базалық шаруашылығында азықтардың химиялық құрамы зерттелді, азықтағы биологиялық белсенді заттардың тапшылығы анықталып, соның негізінде тетіктелген азықтандыру рационы құрастырылды. Малдарды азықтандыруда рациондағы минералдық заттар мен дәрумендердің жетіспеушілігін болдырмаудың ең тиімді әдісі құрама жеммен қанықтыру болып саналады.

Топырақ және азық құрамында бірқатар микроэлементтер жетіспейтін биогеохимиялық аймақтарда биологиялық белсенді заттарды пайдаланудың өзектілігі артуда.

Малдың рациондағы қоректік заттардың мөлшері мен мұқтаждығын есепке ала отырып, макро- и микроэлемент-тердің, витаминдердің, басқа да қоректік заттардың тапшылығы анықталды, яғни қант 54,0%; фосфор – 32,6; мыс – 22,6; кобальт – 81,1; мырыш – 53,1; йод – 73,6; марганец- 38,5 и витамин Д (МЕ) – 81,4% құрады. Макро- и микроэлементтердің, витаминдердің, басқа да қоректік заттардың жетіспеушілігі негізінде тәулігіне өнімділігі 20-24 кг сүт беретін сауын сиырларға арналған комбикорм-концентрат рецепті дайындалды. Сонымен бірге комбикорм-концентраттың химиялық құрамы анықталды. Зерттеу жұмыстарының нәтижесі көрсеткендей, бақылау тобындағы азық қоспаларының желінуі 89,46%, ал тәжірибелік топта 93,66%, яғни 4,2% жоғары болды. Мұның барлығы өз кезегінде тәжірибе тобындағы сиырлардың сүт өнімділігін 6,98%, 4% -дық сүтке шаққанда 9,98% арттырып, сүттің өзіндік құнын 4,9% төмендетті.

Түйін сөздер: Азықтық қор, азықтардың химиялық құрамы, рациондар, қоректік заттардың тапшылығы, азықтық қоспа, құрама жем-концентрат, сүт өнімділігі.

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ВЛИЯНИЕ АДРЕСНЫХ КОМБИКОРМОВ-КОНЦЕНТРАТОВ НА МОЛОЧНУЮ ПРОДУКТИВНОСТЬ КОРОВ И КАЧЕСТВО МОЛОКА

Аннотация. В результате проведенных исследований изучен химический состав кормов в базовом хозяйстве ИП «Каримов», разработаны детализированные рационы и определен в них дефицит биологически активных веществ.

Наиболее перспективным способом ликвидации дефицита минеральных веществ и витаминов в кормлении животных является обогащение рационов различными кормовыми добавками. Особую

актуальность приобретает использование биологически активных веществ в биогеохимических провинциях, дефицитных по ряду макро – и микроэлементов в почвах и кормах.

С учетом потребности и содержания питательных веществ, макро- и микроэлементов, а также витаминов в рационе был определен их дефицит, который составил по сахару 54,0%; фосфору – 32,6; меди – 22,6; кобальту – 81,1; цинку – 53,1; йоду – 73,6; марганцу- 38,5 и витамину Д (МЕ) – 81,4%. На основании дефицита макро- и микроэлементов, а также витаминов был разработан рецепт комбикорма-концентрата для коров с продуктивностью 20-24 кг молока в сутки. Наряду с этим был определен химический состав комбикорма-концентрата. Результаты экспериментальных исследований показали, что поедаемость кормосмеси в контрольной группе составила 89,46%, а в опытной – 93,66%, что выше на 4,2%, а молочная продуктивность коров в опытной группе увеличилась на 6,98%, а при пересчете на 4%-ное молоко этот показатель увеличился на 9,98%, себестоимость молока уменьшилась на 4,9%.

Ключевые слова: кормовая база, химический состав кормов, рационы, дефицит питательных веществ, кормовая подкормка, комбикорм-концентрат, молочная продуктивность.

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RISK MANAGEMENT, AUDIT AND INTERNAL CONTROL

Abstract. Micro and micro risk management has become more relevant in recentyears due to increased turbulence in the markets and global financial instability. Acceleration of technology-related innovation processes also makes a definite contribution to increasing relevance of the topic. The pace of production processes and the speed of management decision-making are increasing. Company risk management can be vividlycompared to a brake gear of racecar. The task of effective risk management system is not about slowing down the pace, but rather ensuring safety in tight bends.

Key words: risk management, audit, internal control.

Introduction. The article serves to board of directors (the board) of national companies. It is no secret that extensive professional knowledge in this area requires special education and subject knowledge, varying greatly within subject and industry specifics. Understanding the general principles of risk management allows decision makers to address risk management topic properly and undertake right steps establishing a supervisory system to ensure competent risk management.

Methods. The article provides a general understanding of risk management, describes the role of individual management bodies in national companies, defines the main elements of a risk management system (RMS) and describes the phased actions of the board.

Results. Whatever risk management approach the board takes the most important is to form a proper control environment of the risk management culture, establish appropriate risk assessment procedures and provide support for control processes ensuring reasonable confidence in achieving company goals. The board (including non-executive and independent directors) takes ultimate responsibility for monitoring company's risks and prioritising resources of risk management.

1. Effective Risk Management

All companies face uncertainty at different stages of their development. This can be financial market fluctuations, changes in key resource value, new competition and political changes. These events may have both positive and negative effect on company development. Company success depends largely on the ability of its leadership to use the emerging opportunities, turning them into an advantage, and, at the same time, ensuring the viability and long-term business growth.

Any company is committed to creating value for shareholders and key stakeholders. However, companies inevitably face uncertainty setting strategic goals. The main challenge for the management is to achieve an optimal balance between the growth rate of shareholder value and risks.

This type of uncertainty generally contains both risks of value loss and opportunities for value creation. A company achieves value maximisation by maintaining optimal balance between growth rates, profitability and associated risks.

These qualities of RMS help a company management to achieve strategic goals and the desired level of profitability and prevent losses. RMS also should ensure effective accountability and compliance with laws and regulations and prevent damage to the company reputation.

Risk management is generally defined as the measures of identifying and assessing potential threats to a company's capital undertaken by the board, management and employees of the company in order to maintain an acceptable level of risk appetite and to ensure reasonable confidence in achieving company goals.

2. The Role of Management Bodies in RMS

Well-developed organisations have their risk management naturally built in the decision-making system at all levels, from the board all the way to low-level employee.

Following the best practice, the board determines principles and approaches to the organisation of risk management and internal control systems, approves the management policy, exercises control over the risk management and internal control system.

The Corporate Governance Code emphasises the need to achieve a balance between risk and profitability for the society as a whole, while complying with the legislation, the requirements of internal documents and the company charter, the development of adequate incentives for the company executive bodies, its structural department and individual employees. The code recommends the board to analyse and assess the risk management and internal control systems at least once a year. The analysis should be based on both management reports and internal and external audit reports. Some companies invite independent external consultants periodically (once every three years) to evaluate the risk management and internal control systems.

According to the Code, the board takes responsibilities for controlling risk disclosure and the role of the board in risk management and internal control.

The Principles of Corporate Governance emphasise the role of the board in determining risk management policies, approving risk appetite, and controlling risk disclosure.

An area of growing importance to the board that is closely related to corporate strategy is risk policy. The policy determines the types and degree of risk that the company is ready to accept to achieve its goals. Thus, it is crucial for management that must manage risks in order to maintain the desired risk profile of the company.

The board is responsible for ensuring the accuracy of company accounting and financial reporting systems, conducting independent audits and internal control systems, including risk management, financial and operational control systems, and compliance with legal requirements and relevant standards.

The board should also ensure proper oversight by the executive management. However, the board takes ultimate responsibility for ensuring the accuracy of the accounting and financial reporting systems. In some countries the chairperson of the board shall provide a report on the internal control system.

Financial information users and market participants want to be informed about significant risks that are reasonably amenable to forecasting.

Some companies create a separate risk management committee of the board. Basel Committee on Banking Supervision strongly recommends establishing such a committee in the large financial institutions. The committee can work together with company management, analysing key risk factors, identifying risk concentration scenarios, giving a more accurate risk assessment. Although the committee can be very useful in the assessment process, it should not be a substitute for the board, which should understand and feel the most significant risks for the company. If there is not a special risk committee of the board, the audit committee shall perform the risk management functions.

The risk management committee shall:

– Supervise the quality, efficiency and objectivity of control systems and the risk management and effectiveness of established risk management policies and strategies;

– Overview the culture, philosophy and strategy of risk management and establishment of policies, risk management procedures and requirements for risk notification used in the management and risk notification;

– Review information on the most significant risks and actions undertaken by management and department to control these risks within acceptable limits;

– Ensure compliance with risk policies and the overall risk profile;

– Receive and review reports from any risk assessment group, including the risk management committee and the internal audit service.

The company executive management is primarily responsible for establishing and functioning of the effective risk management and internal control system. At the same time, the relevant procedures should provide for timely notification of significant shortcomings in the internal control system.

Some companies establish the risk management committee under executive board. The committee is accountable to executive board and operates under the authority granted by the board. Committee within its competence provide advice to executive board.

The risk committee of executive board may perform the following:

1. Assist identifying significant risks by:

– submitting any material risks for consideration identified during the past assessment periods;

– considering any internal or external circumstances that may increase the risk or cause new risks.

2. Manage the work on periodic risk assessment by:

– identifying participants in the risk assessment process;

– ensuring that a risk assessment is carried out at least once a year or when significant changes in external or internal factors occur;

– analyse risk assessment results to identify areas of high risk, significant concentrations of associated risks and any deviations in results that may require further study or analysis;

– prepare reports on risk assessment results for the audit committee of the board.

3. Analyze, prioritize, and approve risk mitigation strategies by:

– analysing risk management reports and identifying areas requiring risk mitigation strategies;

– providing relevant assistance in developing measures or action plans to reduce unacceptable risks;

– analyse and / or develop risk mitigation options to control significant risks;

– approve those projects that are necessary for the implementation of risk reduction measures.

4. Monitor the implementation of risk mitigation measures by:

– receiving reports and follow-up requests for the implementation of a risk mitigation plan;

– providing recommendations for the modification and adaptation of the risk management process to ensure compliance with the requirements of the board and management.

Some companies (typically large ones) establish a risk management department. The risk management department can:

– organise the work of a risk management unit;

– create action plan for RMS annually;

– control the implementation of internal risk management documents by the company departments;

– control the process of identifying risks / organise the process of identifying the risks (identifying risks and creating a registry and identifying and registering new risks);

– form proposals assigning risk owners;

– control annual update of the risk register and risk map;

– make proposals to the audit/risk committee regarding the level of acceptable risk appetite;

– monitor the implementation of the identified risks assessment / implement risk assessment process with company experts.

There is also a practice of appointing so-called risk leaders. The risk leader acts as a risk management coordinator within each company department which is identified as a participant in the risk assessment process. Risk leaders do not have to be the leaders of their departments. They are usually appointed from among the heads of these departments. Risk leaders must fully understand the activities, processes and personnel of department, be able to organise projects and manage them. If the risk leader is not the head of the department, once appointed one receives full support from the head of the relevant department.

Risk leaders perform or delegate and manage the following activities:

– coordinating with the department management;

– supporting the activities of the risk management committee;

– identifying and analysing department risks;

– drawing up reports on identified risks of a department;

– developing risk mitigating strategies, plans, measures etc.;

– monitoring and reporting to the risk management committee on implementation risk mitigating strategies, plans, measures etc.

3. RMS Elements

Effective company risk management is not necessary to reassure shareholders or investors, but primarily to increase the likelihood of achieving company goals. Let us consider the 'brick' elements of effective RMS.

Firstelement is a control environment, which is the general atmosphere and company attitude regarding internal control. What do staff members think about the importance of control? Do they perceive the internal audit service and regular inspections a necessary thing, or rather an "inevitable evil" that waste the time? Do they consider honesty and transparency to be a requirement in their activities, or rather they share the idea "innocent till proven guilty"?

The control environment is the foundation for the entire system of internal control and risk management. The factors affecting the quality of the control environment are ethical principles, competence, honesty of employees, ethics and management style, power and responsibility distribution, and attitude of top management and the board to control issues. To establish an effective control environment the board should:

– Form the culture projecting the right attitude to the internal control and risk management top-down. If board members and the top management fail not follow the established principles, rules and procedures, the employees will hardly ever follow them as well.

– Ensure that the principles and rules are clearly articulated and understood by company employees. To this end, the board can initiate an internal survey, establish or revise internal documents like regulations, procedures, code of ethics.

– Establish a transparent organisational structure and power and responsibility distribution in the company.

The second element is a clear process for defining company objectives. In this regard, the board should ask the following questions:

– Is vision, mission and priorities of the company defined clearly?

– Are the goals properly communicated to the employees?

– Are the goals and objectives of the company clear?

The third element is risk assessment. It provides for identifying and analysing events that can possibly affect the achievement of company objectives. This is necessary to develop an adequate risk response. Effective risk assessment assumes that company management and the board:

– Identify, assess internal and external factors that may adversely affect the achievement of the company goals. The risks are usually assessed on the scale of "significance" (estimated amount of potential financial damage) and "probability" (in points, categories or percentages).

– Establish acceptable levels of risk (risk appetite), which the company and its divisions can (should) assume to achieve their goals (considering the strategy and shareholders' opinions).

– Develop relevant procedures and processes aimed at identifying and tracking changes and controlling risks.

Generally, this is the stage when a company forms the risk register, that classifies risks into groups (eg. by risk sources). What does a typical organization risk map look like today? What risk groups are the boards of the largest companies facing?

There are multiple sources of strategic risks like political events, technological and social changes, the macroeconomic situation, industrial changes, competition, etc.

Financial risks are, perhaps, the most common subject of discussion at the board meetings. How will the change in interest rates affect business? What factors influence credit ratings? What is the financial sustainability (debt to EBITDA ratio), is there enough cash flow to service the debt? What are the possible threats to the company liquidity?

Operational risks can be associated with personnel, cost management, production capacity, suppliers and contractors, quality inventory management, information technology, etc.

Compliance risks may be associated with compliance with regulatory requirements and changes in legislation.

For several companies, the environment interaction risks, which may be caused by natural phenomena or otherwise are beyond their control, are of great importance.

Most often, companies utilise an expert method to identify, classify, and assess risks. A company usually choses experts from among the top management (eg. the risk committee of the board) or board members. Another effective approach is to organiыe the board independent discussion and assessment of key risks, and then compare them with management's assessment. As a result of a joint discussion, the board members produce a common understanding of the company's risk matrix. When all stakeholders provide their reasonable estimates, they compile and discuss the results to find out how different group members assess the risks of the company and why.

Risk assessment should be completed annually. If some areas are highly exposed to specific risks, their assessment should be done more often. If the board considers certain risks particularly significant, it can monitor and reassess these risks at each board meeting. Thus, during the financial crisis, many companies that were exposed to credit and investment risks carried out this activity.

Some companies create so-called “heat maps”, highlighting the most significant and probable risks that requires increased attention of the board and senior management.

Determining company risk appetite is an important step. When establishing risk appetite, the board should consider their own business judgment and additional factors:

– What stage of the life cycle is the company in? It is typical of start-ups to be more risky ventures than of mature companies.

– Opinion of key stakeholders. Shareholders, lenders, bondholders, etc., may have a different opinion about risk appetite. The board should consider their opinion when establishing risk appetite.

– Environmental factors. For example, an economy recession or a significant regulation change, fundamental structural changes in the industry can significantly affect risk appetite.

There is a simple principle in establishing risk appetite – do not bite more than you can chew. Companies of different industries and different life cycle stage can formulate the risk appetite quantitatively (the sum of potential losses, limit values or coefficient corridors, etc.) or qualitatively (description). For example:

– capital adequacy to cover damage of a certain level;

– range for debt coverage (debt / EBITDA);

– solvency i.e. the company must be able to fulfil its obligations;

– income structure i.e. the company considers critical the loss of more than a certain percentage of income or wants to establish a maximum percentage of income depending on one or several large customers.

The fourth element is a risk-response development that involves developing a strategy for responding to each identified risk. Basic risk-response strategies usually involve:

– Risk avoidance. The company decides not to start or stop projects or activities that lead to a risk that goes beyond the risk appetite.

– Risk minimisation. The company takes measures to reduce the impact or probability of risk by developing and implementing an appropriate strategy, action plan, and relevant control procedures. In this case, several companies also estimate the level of residual risk – risk after applying control procedures and risk reduction measures.

– Risk acceptance. The company decides that minimising risk is not feasible or economically viable, and the benefits derived from projects, procedures or activities are worth the accepted risk.

– Risk transfer. The company shares possible losses or benefits from a risk with other party.

Managers and / other key company positions related to risk management activities take the responsibility for the development of measures for managing priority risks.

The board shall exercise control over the implementation of key risk management measures, while the management shall control the risks of the “yellow” and “green” zones ensuring adequate control procedures for managing all risks.

Thus, the next important element of RMS are control procedures that ensure acceptable range for the risks. The board shall do the following to exercise adequate control:

1. Create the necessary infrastructure to ensure the effectiveness of control procedures:

– control procedures are implemented at all levels of management;

– control measures are built into daily routine;

– adequate separation of duties and absence of conflicts of interest in operation.

2. Ensure periodic company checks on the compliance with the established policies and procedures for all areas of activities.

3. Ensure adequacy, completeness and accuracy of financial and management reporting, information at all levels of management.

4. Ensure compliance with the legislation.

There are several forms of control procedures: preliminary control, current control, follow-up control.

Preliminary controls may include:

– appointing a responsible officer;

– setting quality standards;

– establishing strict procedures for tender and commercial proposals of calculating the cost of construction;

– creating the management accounting and reporting system.

Current control may include:

– verifying materials and goods as they progress through the production process;

– ensure feedback of production and responsible persons on the implementation of planned indicators for a shift, day, month, quarter, year;

– ensure feedback to employees on quality indicators during the production process;

– creating a business performance assessment system;

– monitoring key performance indicators.

Follow-up control may include:

– ensuring quality control of finished products and services by quality service to determine the amount of flaw;

– assessing production volumes to determine the bonus for a department for implementing key performance indicators (KPIs) and targets.

An adequate monitoring system is also a necessary element of effective RMS. The board may initiate creating an early warning system – a system of key risk indicators that signal the upcoming risk events. Each company has its own set of risks, but there are some common elements:

– excessive self-confidence of the higher management;

– changes in accounting rules or statements that improve the picture;

– reduction of work efficiency and change in the cash flow structure in favour of one-time sources;

– outpacing growth of costs (especially overhead costs) in relation to revenues;

– negative reports of financial analysts, rating agencies, negative reactions of investors to the company results;

– unwillingness of creditors to provide additional financing;

– high staff turnover, including managerial;

– strange and unexpected actions of competitors (eg. withdrawal of investments or atypical investments);

– public sentiment, which can stimulate the actions of regulators;

– tangible customer dissatisfaction;

– substantial criticism in the media (monitoring of so-called websites of disgruntled employees or customers may be useful);

– unreasonably high activity in merging and acquisitioning.

Each company chooses its own path, which is optimal at this stage of development. At the same time, Figure 1 displays one of the options for risk management technology.

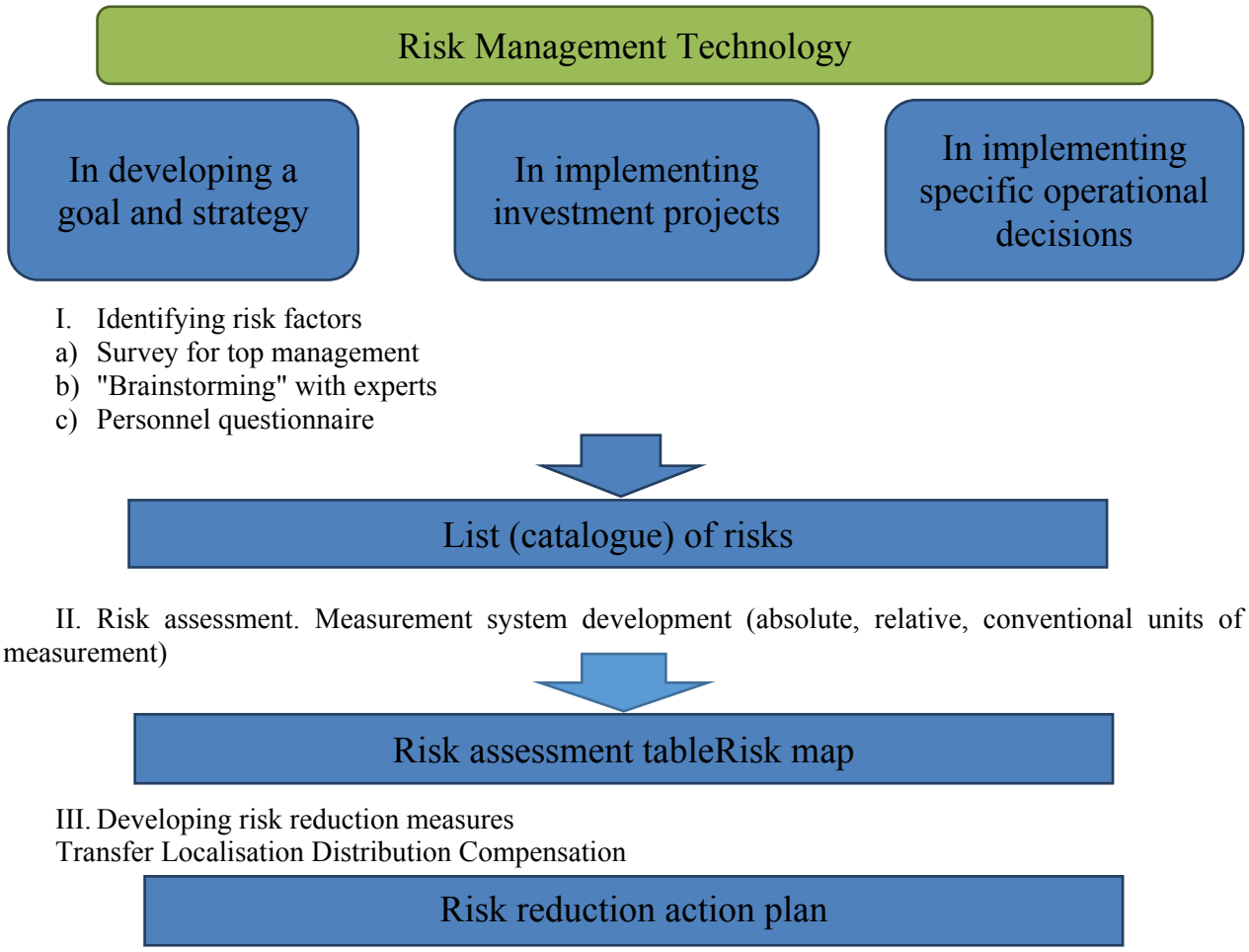

Figure 1 - Risk Management Technology

For effective monitoring, the board can take advantage of its extensive control toolkit. Each company uses several processes to obtain information about its activities and market conditions. Generally, this data gathering allows for early warning signals of a possible crisis.

Thus, adequate information and communication is also a necessary element of effective RMS. Relevant information should be collected, analysed and provided in time to company management for decision making.

The information from the following sources shall be analysed and used in strategic decision-making:

1. Reports of external auditors. Audit reports, especially the so-called letters of the auditors to the management of the company. The external auditors voice their conclusions and results that go beyond a simple verification of figures, which can be very informative. It is important for the board to communicate with external auditors directly and study their findings. The external auditors shall be appointed by the board of directors, not by the executive board to ensure their independence and critical point of view.

2. Reports of internal auditors and compliance reports. They can draw the board's attention to dangerous trends in operating activities (rather than individual incidents) that can put the company at significant risk (eg. systematic fraud in the form of a growing gap between the book value and the actual value of goods in stock).

3. Reports of regulatory actions that track company problems with regulatory compliance or issues related to compliance with established rules (eg. fines for breach of safety standards by the BP's Deepwater Horizon oil platform were well above the industry average even before the rig accident).

4. Reports on industry trends. Industry trends (ascending and descending) can often be tracked even before they affect a company, which makes it possible to take the necessary precautions and avoid both excess and insufficient capacity problems.

4. Implementation of RMS

The level RMS depends certainly on company size, industry, development stage, etc. Here are general stages of introducing RMS:

1. Appointing a responsible person (risk manager) for system management;

2. Developing risk maps, models and risk indicators, approving the level of risk appetite by the board;

3. Introducing regulations for risk monitoring and identification within the approved control procedure;

4. Developing a mechanism for registering and accounting values of risk indicators in the company databases.

5. Establishing a system of staff motivation, considering the risk they assume.

6. Creating documentary reports on current values of risk indicators for company management and employees responsible for that.

7. Regular hearing of reports by top management on the actual values of risk indicators and monitoring their location within the established standards.

The board is responsible for the long-term company development. Therefore, monitoring the existence and efficiency of RMS is one of the most important priorities of the board. Based on the specifics of the business and its priorities, the board can develop various requirements for RMS.

ӘОК 657

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ТӘУЕКЕЛДЕРДІ БАСҚАРУ, АУДИТ ЖӘНЕ ІШКІ БАҚЫЛАУ

Аннотация. Соңғы жылдары тәуекелдерді басқару тақырыбы өзекті болып отыр, бұл нарықтардағы турбуленттілік пен жаһандық қаржылық тұрақсыздықтың өсуіне байланысты. Технологиядағы инновациялық процестерді жеделдету де тақырыптың өзектілігін арттыруға нақты үлес қосады. Өмірдің қарқыны мен шешім қабылдау жылдамдығы артып келеді. Компаниядағы тәуекелдерді басқару рөлін көрсету үшін келесі салыстыруды пайдалана аласыз. Ең жылдам машиналар ең жақсы және ең сенімді тежегіштермен жабдықталғаны белгілі. Осылайша, тәуекелдерді басқарудың тиімді жүйесінің міндеті қозғалысты бәсеңдетпеу емес, керісінше, күрт бұрылыстарда қауіпсіздікті қамтамасыз ету болып табылады.

Түйін сөздер: тәуекелдерді басқару, тәуекелдерді басқару, аудит, ішкі бақылау.

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УПРАВЛЕНИЕ РИСКАМИ, АУДИТ И ВНУТРЕННИЙ КОНТРОЛЬ

Аннотация. Тема управления рисками в последние годы становится актуальной, это связано с повышенной турбулентностью на рынках и мировой финансовой нестабильностью. Свой определенный вклад в повышение актуальности темы вносит также ускорение инновационных процессов в технологиях. Темп жизни и скорость принятия решений нарастают. Чтобы проиллюстрировать роль управления рисками в компании, можно использовать следующее сравнение. Известно, что самые быстрые автомобили снабжены самыми лучшими и надежными тормозами. Так, задача эффективной системы управления рисками – не затормозить движение, а, наоборот, обеспечить безопасность на крутых поворотах.

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DEVELOPMENT OF COMPANIES AND INNOVATIVE BUSINESS MODELS

Abstract. For managing the innovative development of an enterprise, the description of its business model is important and timely. This article outlines the approach to building a business model for the innovative development of industrial enterprises. An integrated business model is an important tool for the formalization and improvement of the company. The article discusses the general rules for creating an innovative business model: functions, enterprise mission, strategy, principles, types of innovative business models. In addition, it is noted that it is necessary to conduct research on the conditions that force one to switch from one type of business model to another.

Keywords: Business model, innovative technology, enterprise activity, value chain, competitiveness.

Introduction - Creating a management system that corresponds to the strategy of innovation development and ensures the competitiveness of the enterprise is a pressing task for Kazakhstan companies and industrial enterprises. This system should be based on processes of continuous improvement in a constantly changing environment, when material resources and company (enterprise) personnel are balanced and aimed at maintaining current and future competitiveness. We note that continuous, continuous improvements are primarily associated with the development of innovative production systems based on market-oriented flow control principles. The lack of a comprehensive research methodology and methodology for creating innovative production systems of Kazakhstan enterprises, which include methods for evaluating the results of innovative development, makes research in this area of economic science important and timely.

Main part - The research methodology can be based on the principle “from the particular to the general” at the first stage and on the principle “from the general to the particular” at the second stage. At the first stage, consider (explore) the experience of both successful, growing companies, and stable companies without large incomes. At the second stage, make a comparative analysis, highlight the general characteristics that accompany successful companies. Based on the findings, formulate a list of recommendations, and then check the effectiveness and correctness of the experience of other companies who agree to follow these recommendations. Based on interviews with company managers, it is possible to determine the applicability of the principles of successful companies to the rest [1] and ultimately create a typical innovative business model for the industry. Of course, in this situation, it is necessary to take into account (compare) the principles and incoming business conditions in different industries.

The article discusses the general rules for creating an innovative business model: functions, enterprise mission, strategy, principles, types of innovative business models. In addition, it is noted that the work [5] implies the need to study the conditions that force one to switch from one type of business model to another.

In recent years, the use of business models for managing enterprises in the food industry has been actively expanding. Business modeling is the process of developing various business models of an enterprise (strategy, processes, organizational structure, resources and development) with the aim of formalizing and optimizing the activities of an enterprise. There are various approaches to the definition of the concept of “business model” [2], [3], [4]. By a business model, we mean a family of ways of doing business in a company (its structure, products, ways of delivering and servicing goods, increasing market

value), the rules of doing business, which lie in the basis of the company's strategy. In a business model, they take into account the infrastructure necessary to promote a service or product to the market so that products and services are at the same time simple for the customer and profitable for the company.

A business model (innovative) is a business method by which a company can provide itself, that is, make a profit. The business model explains how the company makes money by determining the company's position in the value chain.

Thus, an innovative business model helps to describe how a business positions itself in the value chain within its industry and how it (the business) is going to provide for itself, that is, to create profits.

Based on this definition of an innovative business model, it is necessary to consider the functions of this business model, namely what it (the company) should do in accordance with the main provisions of the model: 1) Create a value chain model and describe a competitive strategy, the goal of which will be to acquire competitive advantages; 2) To determine the values obtained as a result of innovation, to determine the necessary assets for the value chain; 3) Establish (identify) the market segment and the goals of using an innovative product, as well as establish the company's position in relations with external agents (customers, suppliers and competitors).

Before proceeding to the selection of a suitable innovative business model, a company needs to formulate and define a mission in accordance with the P2M approach ("A Guidebook of Innovative Project Management, based on the experience of Japan). The mission is the main goal of the organization, the meaning of its existence, therefore it is necessary first of all to define it, define the essence of the business, that is, from which it is impossible to refuse under any circumstances and circumstances. Refusal from the mission means significant reformatting of the company, which essentially speaks of a new company with a different strategy. In essence, the choice of the mission of an innovative company is the choice of an innovation strategy, from which the choice of principles for constructing an innovative business model follows. After choosing a strategy and principles for building an innovative business model, you can proceed to standard and non-standard building procedures: assessment of current assets (financial, human and material resources), competence assessment (protected intellectual property and high-level specialists with ready-made ideas for licensing).Note that the assessment of competence at the present time, the time of the technological structure, becomes an essential factor when choosing a suitable innovative business model. The widespread use of information technology in the 90s opened up new opportunities for their applications to project management tasks. The challenge today is the use of project management as a methodological basis for the implementation of innovative technologies at the enterprise level.

If we consider the principles of building an innovative business model, then the main three principles are: 1) Focus on managing the chain of creating innovative value: supporting the generation of ideas and projects, building a portfolio of projects, supporting project development, organizing the commercialization of projects; 2) Aiming at managing the system of relationships with partners. In particular, the processes of generating ideas and developing projects can be partially or fully, depending on their own capabilities, given to partners (outsourcing); 3) The focus on building a viable business and the main roles here are played by the team's ability and adequate, to the team's capabilities, the choice of a project portfolio. The level of ability to build on the basis of innovative technologies the flow of projects of varying complexity and duration ultimately determines the level of business viability.

Depending on which of the three main principles of an innovative business model is fundamental and in what proportion these principles are in the overall strategy of an enterprise, four types of business models can be distinguished: part of the profit); 2) Cooperative (cooperation with other partner companies in individual business processes of the chain, each of which is interested in the best results); 3) Licensed (with technological background, to form part of the profit through the sale of its own licensed products). 4) Mixed (in each link of the value chain there are elements of either a cooperative model or elements of a licensing model and at the same time all important links of the chain are under the complete control of the enterprise)

The choice of an integrating business model is due to the following reasons:

1) operational (the need to control the quality of products, tight deadlines, lack of guarantees from partners);

2) risks (slowing down the innovation business process, theft of ideas and others).

The choice of a cooperative business model is due to the following reasons:

1) Risks and their reduction (operational, technical, market and others)

2) To benefit from the division of labor in the field of innovation (a variety of innovations, the complexity of the innovation system to obtain the final product, and others).

The choice of a licensed business model due to technological background and the possession of a revolutionary technology and (or) a team of developers of new high-level technology.

At different stages of the life cycle of technology, when no one in the company knows all the options for its use, they often use the cooperative business model. When the dominant option appears, it is advisable to move on to an integrating business model. For companies at the maturity stage, the choice of business model is determined by the terms of the business.

In connection with the transition of the company from one innovative business model to another and vice versa, it becomes relevant to study the direction of changes in the rules of doing business by a company, that is, to what extent the company's strategy is flexible and adapts to changing conditions. To do this, it is necessary to find the driving forces that determine and initiate changes in the structure of the business model: organizational, strategic, financial. An analysis conducted in [1] showed that the process of transition from one business model to another is due to many factors [5], [6]. In addition, contrary to the assumptions of the company returned to the previous business model, that is, the life cycle of the enterprise cannot be described by a linear function. These statements were confirmed as a result of three rounds of interviews with 40 managers of five companies over 10 years. On the basis of the research conducted, it was concluded that there is a need for a deeper study of the factors influencing the transition from one business model to another. It is necessary to clarify the constructed model, which explains the relationship of theoretical transition rules with the actual dynamics of rule changes.

Conclusion - Speaking about the innovative development of the company as a whole,it is necessary to note the basic factors - new knowledge, information, newest technologies. All this allows to provide strategic competitive advantages in the long run. The history of the development of the most successful companies in the world such as Apple, Nestle, Toyota, Microsoft, Mersedes-Benz, Google show that it is these kinds of factors that provide not just quantitative growth, but also a qualitative change in the state of the enterprise.

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ДАМЫТУ КОМПАНИЯЛАР МЕН ИННОВАЦИЯЛЫҚ БИЗНЕС МОДЕЛЬДЕР

Аннотация. Кәсіпорынның инновациялық дамуын басқару үшін оның бизнес-моделінің сипаттамасы маңызды және уақтылы. Бұл мақалада өнеркәсіптік кәсіпорындардың инновациялық дамуы үшін бизнес-модель құру жолдары қарастырылған. Интеграцияланған бизнес-модель компанияны ресімдеу мен жетілдірудің маңызды құралы болып табылады. Мақалада инновациялық бизнес-модель құрудың жалпы ережелері: кәсіпорынның функциялары, миссиясы, стратегиясы, қағидаттары, инновациялық бизнес моделдерінің түрлері талқыланады. Сонымен қатар, бизнес-модельдің бір түрінен екіншісіне ауысуға мәжбүр ететін жағдайларға зерттеу жүргізу қажеттілігі туралы қорытынды жасалды.

Түйін сөздер: Бизнес-модель, инновациялық технологиялар, кәсіпкерлік қызмет, құндылықтар тізбегі, бәсекеге қабілеттілік.

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РАЗВИТИЕ КОМПАНИЙ И ИННОВАЦИОННЫЕ БИЗНЕС-МОДЕЛИ

Аннотация. Для управления инновационным развитием предприятия важным и своевременным является описание его бизнес-модели. В данной статье изложен подход к построению бизнес-модели

инновационного развития промышленных предприятий. Комплексная бизнес-модель является важным инструментом по формализации и улучшению деятельности компании. В статье рассматривается общие правила создания инновационной бизнес-модели: функции, миссия предприятия, стратегия, принципы, разновидности инновационных бизнес-моделей. Кроме того, делается вывод о необходимости проведения исследования условий, вынуждающих переходить от одного типа бизнес-модели к другому.

Ключевые слова: бизнес-модель, инновационная технология, деятельность предприятия, цепочка создания стоимости, конкурентоспособность.

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STRATEGY FOR INCREASING THE INVESTMENT ATTRACTIVENESS OF THE AGRO-INDUSTRIAL COMPLEX

Abstract. The article is devoted to the analysis of problems of increasing the investment attractiveness of the AIC. The role of the government in the management of investment processes is disclosed. The main factors that hold the influx of investments and measures on increasing the investment attractiveness of the AIC are given. The principles of state-private partnership in the AIC to create optimal conditions of attracting private capital to the agro-industrial complex are discussed. Необходимым условием эффективного и устойчивого развития любой отрасли народного хозяйства является наличие достаточных инвестиций, а уровень инвестиционной привлекательности является одним из важнейших показателей общеэкономической ситуации и перспектив развития отраслей экономики и региона в целом.

Keywords: investment attractiveness, agro-industrial complex, economy, agriculture, agricultural product producers, industrial investment policy.

INTRODUCTION

At the present stage of reforming organizational and economic relations in Kazakhstan, one of the priority conditions for the sustainable functioning of the agroindustrial complex is to make the fullest use of all the factors of regional economic development, including the investment process. Agriculture, as the basic sector of the agro-industrial complex, is the leading backbone of the country's economy, participating in the formation of the agrifood market, food and economic security. In addition to great strategic importance in the economy of our country, agricultural production also accounts for fairly large financial flows. Being one of the main directions of the agrarian policy of any state, ensuring food security in general gives impetus to the development of the national food system, bringing it closer to the ideal state. Therefore, the pursuit of food security is a continuous process. Often, in order to achieve it, priorities in the development of the country's agrarian policy change.

MAIN PART

Modern investment in the agricultural sector and the growth of the investment attractiveness of the agro-industrial complex are hampered by an acute shortage of financial resources, an underdeveloped material and technical base, and low effective public demand. Growth of investments is one of the main factors ensuring the economic development of the agro-industrial complex and the region as a whole, improving the quality of life of the rural population, updating the regional technical and technological base and fixed assets in the agro-industrial complex.

In the current economic situation, agricultural producers themselves cannot solve problems in the agro-industrial complex, as they are limited in the possibilities of raising prices for the products sold by low incomes of the population.

The strategy of sustainable development of the agro-industrial complex at the regional level should be based on point investments in competitive projects that can provide a multiplicative effect of production. State policy should be directed specifically at stimulating growth points at various levels of the production process.

The mechanism for implementing the strategy is a toolkit for achieving target values of investment attractiveness indicators, which serve to monitor the effectiveness of achieving strategic benchmarks.

First, the priority role of private investment in the development of territories, the limited share of the public sector in the regional economy necessitate a choice of approach to the formation of a regional investment policy based on the investment climate paradigm, which provides for an increase in investment attractiveness.

Secondly, it should be stated that a certain tax, budget, and investment legislation has been established both at the federal level and at the regional level. Therefore, the proposed concept must comply with existing legislation in the field of investment.

In order to increase the efficiency of the scientific and technical potential of the agro-industrial complex, it is necessary to preserve, further develop and strengthen the scientific and technical potential of the agro-industrial complex, and increase the efficiency of its work; provision of state support on a competitive basis to the most promising scientific research that is essential for the development of the AIC; the formation of market relations in the scientific and technical sphere in the development and implementation of the achievements of science and technology.

Creating a favorable investment climate in the agricultural sector and enhancing the investment activities of all business entities is one of the most pressing problems in agriculture. Investments form the production potential on the new scientific and technical base and determine the competitive position of the regions. In the interregional struggle for investment, the creation of a favorable investment climate plays a major role.

Investments in fixed assets - investments in order to obtain investors of economic, social or environmental effect in the case of new construction, expansion, as well as reconstruction and modernization of facilities, which lead to an increase in the initial value of the object, as well as the purchase of machinery, equipment, vehicles on the formation of the main herd, perennial plants, etc.

Investments in fixed assets in Kazakhstan in millions of tenge are presented in Figure 1.

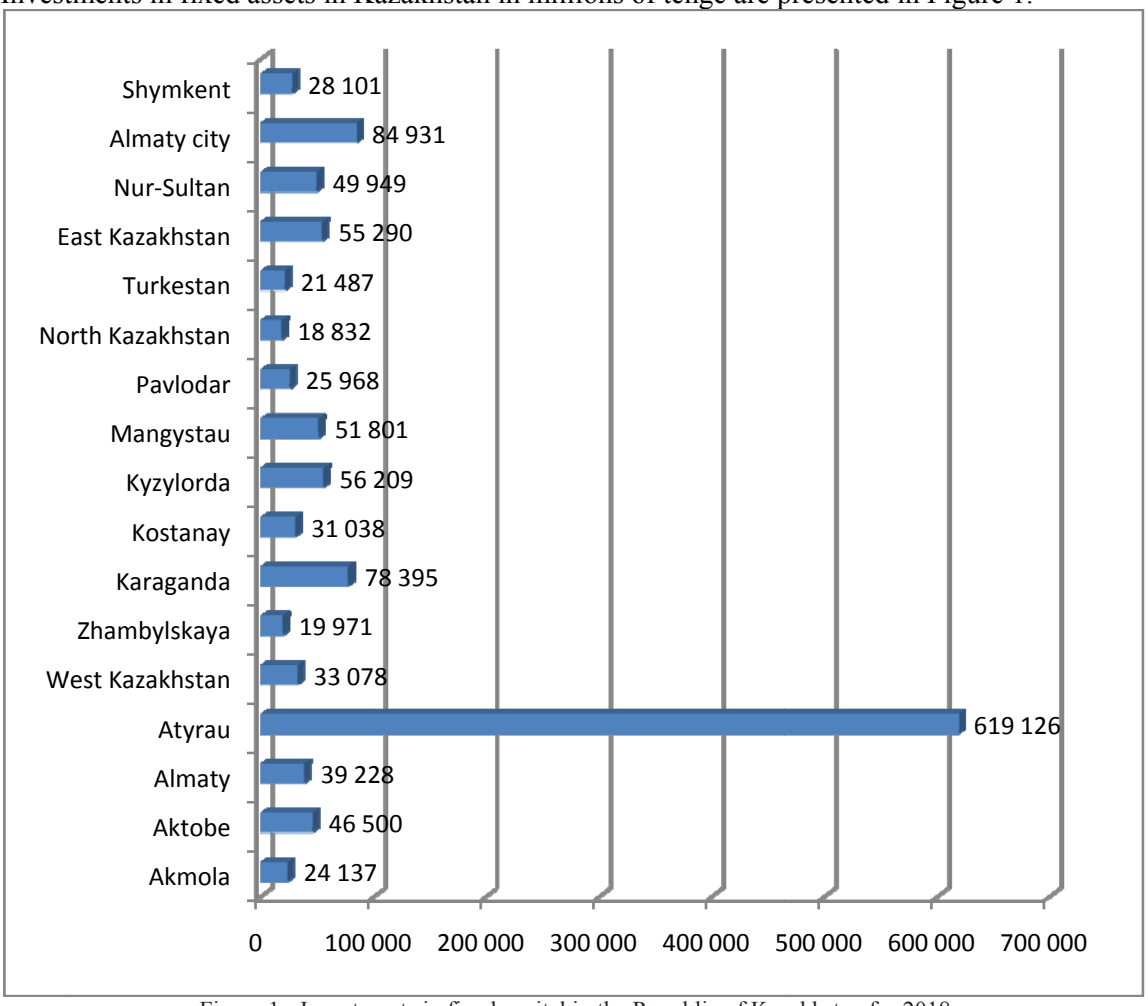

Figure 1 - Investments in fixed capital in the Republic of Kazakhstan for 2018

Investments in fixed assets share accounted for Atyrau region - 619126 million tenge, then Almaty 84931 million tenge, and Karaganda region 78395 million tenge.

In January 2018, the volume of investments in fixed assets amounted to 636.9 billion tenge, which is 65.4% more than in January 2017.

Increased investment in fixed assets compared to

Since January 2017, it is noted in 11 regions of the republic. At the same time, the largest increase in investments was observed in South Kazakhstan (2.6 times) and Atyrau (2.3 times) regions.

In January 2018, the volume of work on the construction and overhaul of buildings and structures amounted to 314.7 billion tenge.

Investments in agriculture, forestry and fisheries in January of this year decreased compared with the previous year by 2.1% and amounted to 9.9 billion tenge.

The main grain-sowing regions - North Kazakhstan, Kostanay and Akmola regions allocated 4.8 billion tenge to the industry, which accounted for the majority of investments in agriculture, forestry and fisheries (48.7%).

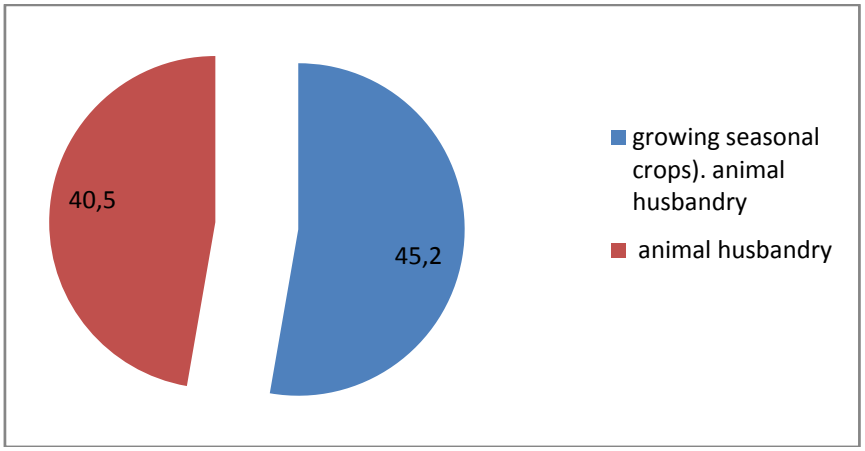

Figure 2 - Investments in the cultivation of seasonal crops (45.2%) and livestock (40.6%).
More than 85.7% of investments in fixed assets in agriculture, forestry and fisheries were directed to the cultivation of seasonal crops (45.2%) and livestock (40.6%)

Investments in fixed capital per capita in the Republic of Kazakhstan for 2018

Investments in fixed capital per capita are also in the largest mass in the Atyrau region 444.8 thousand tenge, in 2nd place of the SKR 51.9 thousand tenge, and in the city of Nursultan 36.0 thousand tenge.

You can name the following features of a positive nature. The republic is characterized by political stabilization, which ensured a reduction in the degree of investment risk to a relatively moderate level. A number of legislative acts were adopted and agreements were signed specifying the various aspects of investment activity. The high innovative potential of the region is preserved, which can be used at present. State support is provided for investment projects of a number of agricultural formations and the implementation of priority national projects. A program of industrial-innovative development of the Republic of Kazakhstan until 2020, a number of other programs. A search for mutually beneficial forms of cooperation with other regions, countries of near and far abroad, as well as the search and attraction of funds on a returnable basis for the implementation of the planned programs.

The features of a negative nature include:

- shortage of mineral resources;
- low income and low living standards;
- insufficient development of the social and economic sphere;
- subsidized nature of budgets of all levels;
- weakness and aggravating financial position of extrabudgetary funds;
- high degree of wear of the production apparatus;
- the use of mainly administrative and regulatory methods.

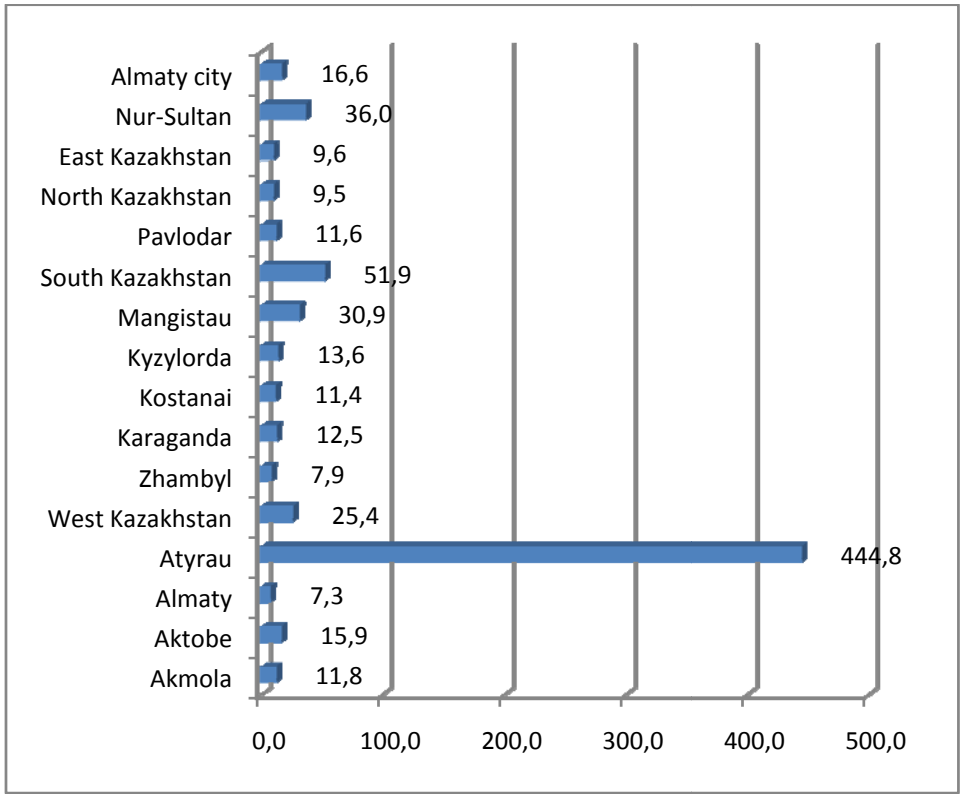

Figure 3 - Investments in fixed capital per capita in the Republic of Kazakhstan for 2018, in thousands of tenge

One of the fundamental factors determining the degree of investment attractiveness of a region is its investment policy conducted by its authorities. As one of the tools to achieve the goals of economic growth, it should play an important role in managing the economy and address issues related to financial flows, in accordance with state interests in given socio-economic conditions. Investment resources in the region are always limited and require prudent spending, and their effective use is a leading factor in the stabilization, recovery and development of the economy.

Purposeful use of the basic principles of investment activity and their practical implementation will contribute to making the right decision in the field of forming an investment strategy at various levels of the agro-industrial complex management.

To increase the investment attractiveness of the region, to achieve stable rates of its economic growth, it is necessary to identify key areas of regional policy with the implementation of the following set of measures: reducing the level of regional taxation through thresholds and the list of possible taxes, simplifying taxation; price control of natural monopolies; the fight against the shadow economy; restriction of administrative control of prices; full and timely fulfillment of obligations on collection and transfer of taxes; reduction and complete abolition of subsidies for housing and communal services and public transport; ensuring reliable guarantees of regional borrowing and their adequate reflection in the regional budget; ensuring the "transparency" of the regional budget, the consolidation of extra budgetary sources; treasury budget execution, limiting the commercial activities of regional authorities; competitive selection of funding for regional programs, orders, procurement using budget funds; improving the efficiency of social payments, targeting assistance, strengthening control over the transfer of payments to the cash form; the notification nature of the procedures for registering and conducting commercial activities, deregulation for entrepreneurs, the abolition of numerous fees, the introduction of a simplified taxation system; simplification of procedures for the coordination of investment projects.

Thus, the set of institutional changes in the agro-industrial complex will significantly expand the investment potential in the region, which in general will further enhance the competitiveness of the domestic producer of agricultural raw materials and agricultural products.

CONCLUSION

The investment policy in the AIC system should be subordinated to the tasks of economic restructuring and aimed at ensuring balanced development of all links of the complex, updating the production potential, increasing the efficiency of its use based on the implementation of scientific and technical progress, the development of resource-saving technologies, modernization and reconstruction of production. . Any investment decisions are related to the fact that the investor assumes a certain amount of risk, which is especially evident at the regional level. The corresponding investment program influences the formation and use of territorial and local budgets. This is reflected in its budgetary efficiency, the evaluation of which involves the determination of the budgetary effect. The study of the recovery of investment activity has revealed an objective need to develop new, market-oriented, approaches to investing in regions with the agricultural sector, since the investment mechanism has not been sufficiently developed, there is no financial support for agriculture that ensures the efficient functioning of agricultural production.

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СТРАТЕГИЯ ПОВЫШЕНИЯ ИНВЕСТИЦИОННОЙ ПРИВЛЕКАТЕЛЬНОСТИ АГРОПРОМЫШЛЕННОГО КОМПЛЕКСА

Аннотация. Статья посвящена анализу проблем повышения инвестиционной привлекательности агропромышленного комплекса. Раскрывается роль государства в управлении инвестиционными процессами. Приведены основные факторы, сдерживающие приток инвестиций, и меры по повышению инвестиционной привлекательности агропромышленного комплекса. Рассматриваются принципы государственно-частного партнёрства в агропромышленном комплексе РК для создания оптимальных условий привлечения частного капитала в агропромышленный комплекс. Необходимым условием эффективного и устойчивого развития любой отрасли народного хозяйства РК является наличие достаточных инвестиций, а уровень инвестиционной привлекательности является одним из важнейших показателей общеэкономической ситуации и перспектив развития отраслей экономики и региона в целом.

Ключевые слова: инвестиционная привлекательность, агропромышленный комплекс, экономика, сельское хозяйство, сельскохозяйственные товаропроизводители, отраслевая инвестиционная политика.

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АГРОӨНЕРКӘСІПТІК КЕШЕННІҢ ИНВЕСТИЦИЯЛЫҚ ТАРТЫМДЫЛЫҒЫН АРТТЫРУ СТРАТЕГИЯСЫ

Аннотация. Мақала агроөнеркәсіптік кешеннің инвестициялық тартымдылығын арттыру проблемаларын талдауға арналған. Инвестициялық үдерістерді басқарудағы мемлекеттің рөлі анықталды. Инвестициялардың ағынына кедергі келтіретін негізгі факторлар және агроөнеркәсіптік кешеннің инвестициялық тартымдылығын арттыру шаралары көрсетілген. Қазақстан Республикасының агроөнеркәсіптік кешеніндегі мемлекеттік-жекеменшік серіктестіктің қағидаттары агроөнеркәсіп кешеніне жеке капиталды тартудың оңтайлы шарттары ретінде қарастырылады. Қазақстан Республикасының ұлттық экономикасының кез-келген секторын тиімді және тұрақты дамытудың қажетті шарты жеткілікті инвестициялардың болуы болып табылады және инвестициялық тартымдылық деңгейі жалпы экономикалық жағдайдың және экономиканың және тұтастай алғанда аймақтың даму перспективаларының маңызды көрсеткіштерінің бірі болып табылады.

Түйін сөздер: инвестициялық тартымдылық, ауыл шаруашылығы, экономика, ауыл шаруашылығы, ауыл шаруашылығы тауарын өндірушілер, салалық инвестициялық саясат.

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COMPANY COMPETITIVENESS

Abstract. The article is concerned with the theory that the companies run in competitive environment within the market economy conditions what is a market immanent feature ensuring quality product output in buyer's demand.Besides, the article considers substantial differences between a company and its category of product competitiveness. As such, in his work the author emphasizes the essential features of competitive capacity of enterprises. Given recommendations on reaching up the competitiveness. The conclusion is drawn thatkeeping up with other companies is provided by all elements of marketing that an enterprise possess. The production and effective sale of competitive goods is the summarizing indicator of enterprise viability.

Keywords: level of competition, market economy, competitiveness of a company, ensuring competitiveness, competitive product.

Introduction

Within the market economy conditions enterprises,by ensuring a release of products of required quality for buyer, work in competitive environment which is a market immanent feature. It is necessary to study and analyze a competitive environment systematically and expertly for ensuring the effective performance of a companyfocused on output of products of an applicable quality and competitive advantage for a buyer.

Generally, the competitiveness is acting at every step of reproduction process and presents a tool. Substantially, the competitiveness happens during production. On the other production levels such as distribution, exchange and consumption the competitiveness of production driving factors and of products and services is carried out.

The competitivenessis carried out both between producers and between producers and consumers. Each element of the competition is connected with a division of labor, with correspondent specialization of existing special professional groups on the certain elements. It is possible with full certainty states that participants of the reproduction process are participants of a competitive struggle because the competition appears in all its levels.

Every enterprise that forms, develops and functions in the market for the goods production or services rendering strivesfor achieving the main objectiveit's a profit maximization. At the same time, this objective can be achieved while observing certain parameters: supporting of personnel, accounting of production capacities, marketing research, development of the management system, knowledge of an enterprise economic characteristics, etc.

Also, it is impossible to make stable business progress in a market economy if you do not plan for its effective development, do not constantly accumulate information about your own prospects and opportunities, about the state of target markets, about the position of competitors and their competitiveness.

The highly competitive of a company is determined by satisfaction and readiness of customers to buy products of such a company for a second time, by absence of claims to an enterprise on the part of society, shareholders, partners, prestige employment with a company.

Competitive advantage of a company being a comprehensive concern, includes not only qualitative and price parameters of industrial products but depends on management level of financial flows developed system, investment and innovation components of its activity. Besides, market condition developing on

this or that market, degree of competition experienced by an enterprise from other market participants, technological infrastructure,extent of innovation adoption, motivation and qualification of personnel and financial capability, all these influence the competitiveness [1].

Methods

Totally, the competitive capacity of enterprises defines possibilities and progress of its adoption to market competition conditions. As immediately interconnected the categories of product and company competitiveness have substantial differences.

On the first hand, competitive advantage of a firm in its structure, as a concept, is significantly more complicated than product competitiveness as the object of its application is all productive-economiccompany's business.

On the second hand, the product competitiveness is assessed and investigated in a time interval corresponding to the product life cycle, and a period of time equal to the period of the company's operation corresponds to the company's competitivenessobservations.

In the third place, the product competitiveness is considered in respect to each its aspect while the competitive advantage of a company covers all line of goods output.

In the fourth place, the level estimate of competitive advantage of a firm is carried out by itself and the estimate of product competitiveness is carried out by a customer.

As a result, to be acompetitive company means to provide, comparable with world level, the consumer, qualitative and price properties of goods or services regardless of for what market they are aimed at: domestic or foreign.

Competitiveness is a complex multi-level concept, the evaluation and analysis of which must be linked to the type and geographical scale of the competitive field. Therefore, the analysis and formation of a system of indicators and factors characterizing the competitiveness of an industrial enterprise in a high-tech industry is reasonably to begin with research on competitive processes at meso and macro levels.

To ensure the competitiveness of an business enterprise the importance of macroeconomic factors is determined by the reason that at this level the prerequisites are created for the prosperous activities of enterprises and the conditions of life of the entire economic system of the country are determined by developing and implementing economic development of effective strategies, as well as adequate monetary, fiscal industrial, foreign economic and social policy.

Promotion of product competitiveness in the market is based on balance of quality, service and price. Of course, the reason of success or fail there can be an influence of other factors. The competitiveness is founded on the level of design and production that’s why it locally comes under influence of marketing during sailing activity.

The assurance of the competitiveness is the main sphere the decision of which is connected with the development of design, production, sale and technical maintenance of goods that is with carrying-out of purposeful activity on setting, forming and supporting the required level of competitiveness at all stages of product life cycle.

As a rule, the efforts are directed towards achieving the following objectives:

- quality improvement;
- reduction of production costs;
- increase of profitability and efficiency after sales equipment;
- stimulating marketing efforts.

The constituent elements of competitiveness are multifactorial characteristics which are considered as independent management objects.

The experience of developed countries in marketing relations attests to the fact that the theoretical and practical concepts of the managementdeveloping of an enterprise competitiveness with the purpose of its increasing within the conditions of increasing market competition is a marketing. The most important marketing function at the enterprise is to determine the impact of the market environment on the effectiveness of its functioning in the conditions of market relations.

In modern conditions of development of market relations the production of competitive products is not a universal tool in the struggle for the competitiveness of enterprises. Competitiveness is an important market category. That being said, the competitiveness of the company can be represented in the following form (Figure 1) [2].

Saving or increasing of sales volumes, market share while maintaining or increasing revenues and capital. Examples of a company's competitive advantage are:

-new technologies;
- production factors;
- marketing factors;
-new or changed consumer requests;
- management factor.

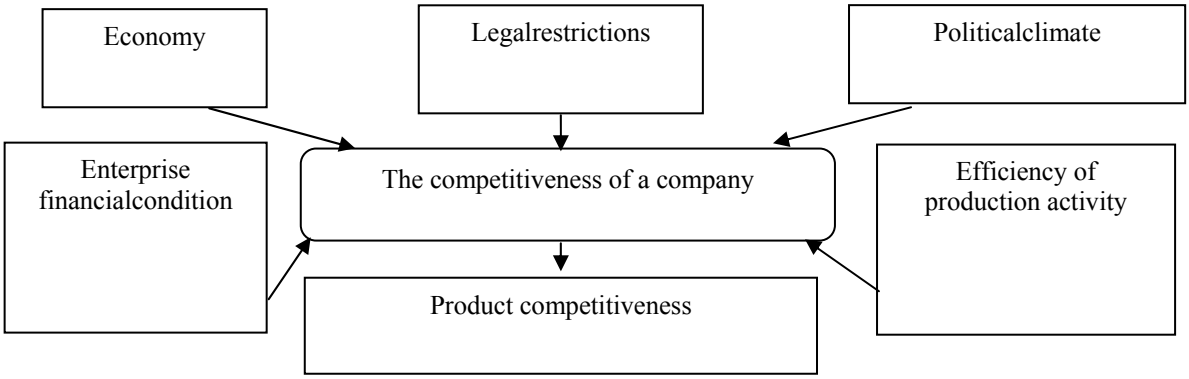
Competitiveness is influenced by external and internal factors. The competitiveness appears at all stages of the movement of goods: production, sale, operation.

Company's index of competitiveness:

- Sales volume, for example, income
- Added value
- Profit and capitalization.

Therefore, the competitiveness of an enterprise is determined by the following factors:

1. The quality of products and services;
2. The presence of an effective marketing strategy and sales;
3. The level of qualification of personnel and management;
4. Technological level of production;
5. The tax environment in which the company operates;
6. Availability of funding sources



Picture 1 - The competitiveness of a compan[3]

Moreover, the competitiveness of a company depends on several factors [3]:

- market capacity (the number of annual sales);
- ease of access to the market;
- type of goods produced;
- market homogeneity;
- the level of customer service;
- innovation;
- competitive position of enterprises already operating in this market;
- the possibility of technical innovations in the industry.

To achieve competitiveness of an enterprise, it is necessary:

1) to ensure the products competitiveness in the target market segments. Under the competitiveness of the goods means the product characteristic on the basis of which this product is superior at a certain point in time in quality and price characteristics the analogues in a particular market segment without affecting to the manufacturer;

2) to raise the potential of competitiveness of an enterprise and consequently its divisions to the level of world manufacturers in the industry. This indicator characterizes the possibility of successful work of an enterprise in the future.

To ensure competitiveness, an enterprise must have a certain assortment of internal competitive advantages, a quantitative assessment of factors can be represented as follows:

• product competitiveness,
• financial standing of a company,
• marketing performance
• return on sales,
• goodwill (brand equity),
• management effectiveness[5,6].

Conclusion

In conclusion, for your information that the competitiveness of an enterprise is the possibility of an effective economic activity and its practical profitable sales in competitive market conditions. Keeping up with other companies the competitiveness at a high level is ensured by all components of the marketing methods available to an enterprise. Production and effective implementation of competitive goods and services is a summarizing indicator of the viability of an enterprise, its ability to use its production, scientific, technical, labor, and financial potential effectively.

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КОМПАНИЯНЫҢ БӘСЕКЕГЕ ҚАБІЛЕТТІЛІГІ

Аннотация. Мақалада нарықтық экономика жағдайында компания, тұтынушы талап ететін сапалы өнімдерін шығаруды қамтамасыз ете отырып, нарықтың ажырамас ерекшелігі болып табылатын бәсекелестік ортада әрекет ететіндігі қарастырылады. Сонымен қатар, мақалада компанияның және тауардың бәсекеге қабілеттілігі категорияларының өзара тығыз байланысына қатысты, елеулі айырмашылықтары айтылады. Сонымен қатар, автор өз жұмысында кәсіпорынның бәсекеге қабілеттілігінің негізгі белгілерін айқындайды. Бәсекеге қабілеттілікке жету бойынша ұсыныстар берілген. Бәсекеге қабілеттілікті қолдау компанияда бар маркетингтік құралдардың барлық компоненттерімен қамтамасыз етілгендігі туралы қорытынды жасалған. Бәсекеге қабілетті тауарларды өндіру және тиімді жүзеге асыру кәсіпорынның өміршеңдік көрсеткіші болып табылады.

Түйін сөздер: бәсекелестік деңгейі, факторлар, нарықтық экономика, компанияның бәсекеге қабілеттілігі, бәсекеге қабілеттілігін қамтамасыз ету, бәсекеге қабілетті тауарлар.

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КОНКУРЕНТОСПОСОБНОСТЬ КОМПАНИИ

Аннотация. В статье рассматривается, что в условиях рыночной экономики компания действуют в конкурентной среде, что является неотъемлемой чертой рынка, обеспечивающего выпуск качественной продукции, востребованной потребителем.

Кроме того, в статье рассматриваются существенные различия между компанией и ее категорией конкурентоспособности товара. Также автор в своей работе выделяет основные признаки конкурентоспособности предприятия. Даны рекомендации по достижению конкурентоспособности**.** Сделан вывод о том, что поддержание конкурентоспособности обеспечивается всеми компонентами имеющихся у предприятия маркетинговых средств. Производство и эффективная реализация конкурентоспособных товаров являются обобщающим показателем жизнестойкости предприятия.

Ключевые слова: уровень конкуренции, рыночная экономика, конкурентоспособность компания, обеспечение конкурентоспособности, конкурентоспособный товар.

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INTERNATIONAL EXPERIENCE INNOVATIVE IMPLEMENTATION IN AGRICULTURE

Abstract. From the experience of foreign countries, an innovative agrarian economy is formed when agro-industrial production is based mainly on the basis of innovative activity, which is impossible without new technologies for the formation of a single financial and information space. At the same time, the introduction of innovations and the increase in the efficiency of agricultural production are creating new challenges: the industry needs more qualified personnel, at the same time there is a release of workers, which can lead to an increase in unemployment and outflow of the population.

Keywords: innovations, agriculture, economics, modernization, technology.

INTRODUCTION

A comprehensive approach to the problem of employment is required, including the creation of processing enterprises close to the production of agricultural raw materials, training programs and retraining of personnel.

In Australia, in the grain-sowing regions, the weather conditions are much more severe than in northern Kazakhstan, the precipitation is less, but the yield is 2 times higher. Holland is a country that occupies one fifth of our Almaty region, but this country annually exports $ 100 billion worth of agricultural products. And the whole of Kazakhstan, a country 66 times larger than the Netherlands, exports only 2.1 billion dollars, that is, 50 times less.

Currently, the so-called organic farming is experiencing an era of rapid development in Switzerland. But knowledge in this area is still noticeably lacking. The Swiss Research Institute for the Problems of Biological Agriculture is developing new technologies in the field of innovative agricultural production. Now in Switzerland for biological agriculture, conducted in compliance with the most serious environmental standards, given to about 12% of all farmland.

The problem, however, is that such agro-production largely depends on modern innovative know-how. One of the sources generating special agricultural knowledge is in Switzerland and it is called the "Research Institute for the Problems of Biological Agriculture"

MAIN PART

The US economy has a lot of experience in solving problems of managing the innovation process. On the basis of the functional division of labor in the economy, a special type of entrepreneurship has emerged and is actively developing, specializing in innovation, which has been called the "risk business". Within the framework of US agro-industrial companies, such management methods and forms of organization of innovation processes were developed that would fit as much as possible into the principles of functioning of large economic organizations.

Tax measures in the form that was applied in the United States, Canada or Australia, had a rather strong stimulating effect, and enterprises responded to the decrease in the R & D price by increasing their costs. For example, in the United States it turned out that how much money the state did not get in the form of taxes that could finance this kind of activity, about as many firms invested additional funds for R & D. In general, up to 40-60% of non-taxable profits of corporations are sent to the field of R & D to update production, fixed assets.

In the UK, Germany, Italy, Canada, USA and Japan, enterprises operating at a profit have the right to deduct 100% of R & D expenses from the tax base. In Austria, this value is 105%, in Australia and Denmark - 125% (according to the OECD).

In creating an innovative economy, the decisive role belongs to the state. Funding is provided by the state or through venture companies, alliances or business associations, and the state provides:

• development of forms and methods of state support of innovation entities;

• selection of priorities in the field of innovation;

• strategic planning, determining the list of goods and services that may be subject to a state order;

• formation of an innovation infrastructure, including the creation of specialized subjects of innovation activity of a state, intersectoral, sectoral and regional nature;

• stimulating the transfer of foreign technologies by creating conditions for a civilized technology market, that is, by recognizing all international conventions in the field of copyright, patent and trademark protection;

• creation of self-organization mechanisms in the innovation sphere, encouragement for the participation of large capital in innovative projects;

• examination and analysis of innovative projects.

Analysis of the innovation state in the republic consisted in the development of theoretical and methodological foundations, conceptual provisions for the formation of a system for the development of innovations in agriculture, taking into account the use of the institute of agricultural consulting in the process of innovative support for rural producers. Within the framework of the proposed system for the development of innovations in agriculture, the theoretical foundations and methodological provisions of the formation of the system for the adoption of innovations in agriculture were developed; the economic essence of innovation activity is revealed as the most effective direction for the development of the agrarian sector of the economy and a classification of innovations in agriculture is proposed.

Classification of innovations according to the criterion of significance in the development of the productive forces of society implies their division into the following groups:

• basic innovations - these are innovations that implement the largest inventions and become the basis of revolutionary upheavals in technology, the formation of its new directions, qualitative changes in the technological system, the creation of new industries. Such innovations require a long period of time and large expenditures for development, but they provide a significant level and scale national economic effect.

• major and fundamental innovations - innovations that have arisen on the basis of a similar rank of inventions, scientific and technical recommendations, which result in a change of generations of technology in this area or the emergence of a new technology while maintaining the original fundamental scientific principle.

Created as a result of mainly applied research and development, new equipment and technology have higher technical and economic indicators that allow them to meet new needs. The implementation of these innovations takes place in a shorter time and at lower costs, but the jump in the technical level and efficiency is much less.

• Medium and combinatorial innovations are the use of various combinations of constructive connection of elements. Realizing the average level of the invention and know-how, these innovations allow us to create a basis for the development of new models and modifications of this generation of technology, to improve the existing technology, to improve the basic technical and economic indicators of the products.

• small and combinatorial innovations - innovations arising on the basis of small inventions, innovation proposals, production experience. They are necessary to maintain the technical and economic level of basic or improve secondary technical and economic parameters of equipment and technology, improve the parameters of manufactured products, which contributes to a more efficient production of these products, or increase the efficiency of its use.

Problems of investment security in the agricultural sector:

• in agriculture there is a steady trend of deterioration of financial and economic indicators;

• the profound consequences of the decline in production in the industry are the consistent destruction of its reproductive potential (technology, land, human factors, undermining of intellectual forces, the state of science, etc.);

• lack of own financial resources in agriculture, a significant reduction in long-term lending led to a significant reduction in investment activity;

• there is no system for organizing investment activities in agriculture, both in the country and its regions.

Based on the theoretical and methodological analysis of investment management measures, approaches to assessing investment attractiveness were determined. The most significant is a multifactorial approach, which is based on the interrelated characteristics of a wide range of factors affecting investment attractiveness. These include economic potential; general business conditions; level of development of the market environment; political factors; social and sociocultural factors; political factors; organizational and legal; financial and several others. The main positions for forming the investment climate rating score include:

1. Formation of the initial statistical information.
2. Select the object of comparison.
3. Formation of indicators of regional development

The concept of drip irrigation appeared long ago. In its present form, it was developed by Israeli engineer Simha Blass, who found that slow and balanced watering significantly increases the yield. He invented a flexible pipeline, with which you can water in the places where it is most needed. In 1965, Netafim based a whole industry on this technology. Modern drip irrigation systems are even more efficient. Thanks to advanced technologies, the systems can self-clean and also ensure an even distribution of water, regardless of its quality and pressure. The most innovative of them allow increasing yields even in those regions where farming was not possible before.

Biological agents should be understood as beneficial insects and mites intended for the destruction of pests, as well as bumblebees used for natural pollination in greenhouses and in the open ground. Biological control is widely used in horticulture and the cultivation of berries. For example, Bio-Bee exports 8 different types of beneficial insects and bumblebees to more than 32 countries around the world. The use of these technologies in the cultivation of a number of crops, for example, sweet pepper, reduces the use of chemical fertilizers by 75%.

A number of companies, such as Hof Hasharon Dairy Farm, SAE Afimilk and SCR Precise Dairy Farming, are developing state-of-the-art herd management systems based on the monitoring of the physical condition of the livestock and control of the diet. The introduction and appropriate use of such systems increases the productivity of the herd by 60%. Thanks to diet planning, the quality of milk is also improved. Based on the growth dynamics of the dairy cattle breeding segment in Ukraine, the demand for such technologies will increase.

Applications developed by AKOL help farmers manage the process of planting, watering and harvesting; deal with drought; plant crops that best fit the climate of a particular area; ensure proper storage of the crop and temperature conditions; to be engaged in animal husbandry and plant growing. In Ukraine, the use of such tools is the exception rather than the rule, but the active development of private farms should increase the demand for such technologies in the future.

Today, there is a variety of potatoes that can grow in a hot, dry climate and be watered with sea water. Potatoes are one of the main dietary products in most countries of the world. Previously, it was impossible to grow it in the hot, desert climate of Africa and the Middle East. Now, thanks to innovative varieties, even farmers in these regions have the opportunity to grow, and moreover, sell potatoes. Tal-Ya Water Technologies has developed reusable plastic trays that, by accumulating condensate, reduce the need for crops and trees for water by 50%. Square corrugated trays made of unprocessed PET materials, recycled plastics and limestone impurities, equipped with UV filters, can be used to grow various crops and trees.

Night temperature differences lead to condensation on both surfaces of the tray, which, with the help of grooves, goes straight to the roots. When rainy weather trays increase the efficiency of water absorption by 27 times. The trays also block sunlight, preventing the development of weeds, and protect plants from extreme temperature extremes. Thus, farmers can save water and use less fertilizer, which in turn reduces pollution of groundwater.

Recently, a lot of research is underway to create unique means of protecting crops. Already today there are a number of slowly fissile herbicides and insecticides of selective action, which are not harmful to beneficial insects. The global market for herbicides is estimated at $ 15 million, with a quarter of this

amount accounted for by soil herbicides and other pesticides. Modern technologies allow herbicides to effectively split in clay soils, which provides a slow and controlled absorption of active substances, preventing their infiltration into the deeper layers of the soil. This reduces the use of fertilizers and increases their efficiency. Modern insecticides kill the caterpillars of the night moths - pests known to farmers all over the world - but at the same time, unlike standard means of protection, they practically do not harm other insects. A high level of protection is provided with minimal use of the drugs themselves, which, in turn, reduces their negative impact on the environment. Algal ponds fed by liquid industrial waste are necessary for growing usable products, as they create 30 times rawer materials for the production of biofuels than cereals. In addition, these small plants, which develop due to the absorption of carbon dioxide and sunlight, are the raw material for the production of valuable dietary supplements that are eaten throughout the world.

CONCLUSION

Successful implementation of innovation policy will be promoted by measures to stimulate investors who invest in the production of high-tech products, the replication of which will speed up the development of innovative processes in agriculture. This is important to carry out both with the help of investors and by organizing temporary teams for the implementation of some large innovative project. Other measures to stimulate this type of activity are also effective: the adoption of tax and benefits for entities implementing innovations; improvement of the depreciation policy in order to enable enterprises and organizations to increase depreciation funds as a source of investment; development of high-tech unique equipment leasing, etc.

In modern conditions, foreign economic support of enterprises and consolidation of efforts of public authorities aimed at organizing interaction with various countries are extremely important and necessary. At the same time, the participation of such organizations in international competitions can act as a separate event.

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МЕЖДУНАРОДНЫЙ ОПЫТ ИННОВАЦИОННЫХ ВНЕДРЕНИЙ В СЕЛЬСКОЕ ХОЗЯЙСТВО

Аннотация. Из опыта зарубежных стран, инновационная аграрная экономика формируется, когда агропромышленное производство базируется преимущественно на основе инновационной деятельности, которая невозможна без новых технологий для формирования единого финансово-информационного пространства. Вместе с тем внедрение инноваций и повышение эффективности сельскохозяйственного производства формирует новые вызовы: отрасли требуются более квалифицированные кадры, одновременно происходит высвобождение рабочих рук, что может привести к росту безработицы и оттоку населения.

Ключевые слова: инновации, агропромышленный комплекс, сельское хозяйство, экономика, модернизация, технологии.

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АУЫЛ ШАРУАШЫНЫҢ ХАЛЫҚАРАЛЫҚ ТӘЖІРИБЕСІ ИННОВАЦИЯЛЫҚ ІСКЕ АСЫРУ

Аннотация. Шет елдердің тәжірибесінен агроөнеркәсіптік өндіріс негізінен инновациялық қызметке негізделген, бұл бірыңғай қаржылық және ақпараттық кеңістікті қалыптастыру үшін жаңа технологияларсыз мүмкін болмаған кезде инновациялық аграрлық экономика қалыптасады. Сонымен қатар, инновацияларды енгізу және ауылшаруашылық өндірісінің тиімділігін арттыру жаңа міндеттерді тудырады: салаға білікті кадрлар қажет, сонымен бірге жұмыссыздықтың жоғарылауы және халықтың жұмыссыздық деңгейінің артуына әкелуі мүмкін.

Түйін сөздер: инновациялар, ауыл шаруашылығы, экономика, жаңғырту, технологиялар.

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STIMULATING THE DEVELOPMENT OF PUBLIC-PRIVATE PARTNERSHIP IN THE FIELD OF SCIENCE AND INNOVATION

Abstract. Currently, public-private partnership (PPP) is recognized in Kazakhstan as one of the main instruments for the implementation of economic policy, which is noted in many policy documents. However, the level of use of PPP opportunities in the field of science and innovations remains low due to the unsettled processes of interaction of PPP participants. In this regard, this article examines the issues of the expanded use of PPP in the scientific and innovative sphere in Kazakhstan. The work identified the features of the use of PPP in the science and innovation sphere, outlined its principles, and highlighted the incentives of stakeholders to participate in PPP projects. In addition, on the basis of studying the experience of developed countries, measures have been developed to expand the use of public-private partnership mechanisms in science and innovation in Kazakhstan. Prospective directions for the development of the PPP mechanism for innovation are examined through the prism of the needs and objectives of industrial modernization in the context of the sustainable development of Kazakhstan and the characteristics of the global economy, under which this modernization will be carried out.

The main conclusions and proposals formulated in the article can be applied by state bodies in the course of developing state and regional programs supporting scientific and innovative activities. The results of the study can also serve as the basis for more in-depth studies.

Keywords: public-private partnership, science, innovation, stimulation.

Introduction. In XXI century the increment of labor efficiency and GDP in the developed countries is ensured mainly due to issue and sale of science-intensive products and services. The innovation process has gradually transformed from “occasional” economic phenomena to the dominant of economic development.

The relative share of science-intensive products in the world market for the USA is 36-40%, Japan – about 30%, Germany – 16%, China – 6% [1]. Unfortunately, in Kazakhstan the share of innovative products and services is just 1.59% of the GDP [2] due to raw material orientation of the national economy sectors. Starting from 2003 Kazakhstan set to the industrial-innovative development assuming the diversification of economy and transition to the innovative model of economy development. Solving of this task is mainly connected with modernization of scientific-research sector where the important role is given to adoption of the public-private partnership (PPP) as a factor stimulating the development of innovative economy. The positive experience of the public-private partnership development in the developed countries shows that it allows not only optimizing the risks of scientific-research activity implementation, but is an instrument for attraction of large business to creation of new products and technologies.

Along with this, the process of the public-private partnership implementation in the field of science and innovations has a range of problems impeding its widespread introduction; these problems are mainly connected with insufficient methodological elaboration of PPP mechanisms forming regarding the innovation field, underestimation of real influence of PPP institute on the country economy, and, first of

all, on development of integration links of public and business-structures in joint projects that confirms the topicality of the research.

Methods. The research was based on mutually supportive general scientific and private methods of knowledge, systematic, concrete-historical and integrated approaches, instruments of strategic and production management. Each method was used according to its functional possibilities to ensure the representativeness of the research results.

Results and discussion.

The PPP programs in the innovation field differ from traditional concessional and other contractual forms of PPP in infrastructure sectors and include: stimulating of cooperation between scientific and industrial sectors of economy; support of high-technological start-up and "spin-off" companies; assistance for technologies transfer; forming of innovative clusters. Under the PPP projects implementation in scientific and innovation fields the State is a guarantor of risk share especially at initial stages of innovative process.

The PPP in the innovative field can be described as a long-term institutional and organizational alliance between the Sate and business to implement socially important projects and programs in wide range of industrial sectors and scientific researches fields [3].

According to definition of the OECD Committee on scientific and technological policy, the PPP in innovative field means "any official relations or agreements for fixed period of time between public and private participants at which both sides interact in decision making process and co-invest limited resources, such as funds, personnel, equipment and information to achieve particular goals in specific field of science, technologies, and innovations" [4].

The PPP has firm traditions in a lot of European countries, harks back to the history of the industrial revolution in Europe. Initiation and support of PPP at micro-level and assessment of programs at meso-level is a key part of many European, national, and regional programs. In the beginning of 2000 the issue was set on a new paradigm of PPP in scientific research and development works (R&D) [5].

The PPP was the important part of the industrial policy and programs of postwar Japan, especially in the mid of 1970-80-s. The structural changes favored the State to take the initiative in in assisting the cooperation between the industry and universities as means for mastering technologies to develop local economy, especially in creating of jobs [6].

The PPP in innovative field can be classified depending on the type and characteristics of participants, including:

а) partnership between universities and industry;

б) partnership between the State and industry;

в) partnership between scientific-research institutes and industry;

г) combination of the partnerships mentioned above joining several scientific-research institutes of the government with each other and industry.

The PPP becomes a key component of policy in the field of technologies and an instrument to enhance the national competitiveness. Each of the partnerships participants has its own motivation for cooperation (Figure 1).

Under the PPP the State not only shoulders a part of risk, but invests significant menas into new projects. Its main designation is creation of economy-wide conditions determining the development of innovative activity.

The successfulness of the PPP mechanisms application in the innovative projects can be determined by the following factors:

– Political and institutional base of PPP projects (clear distribution of obligations in the state system, determination of frame conditions for negotiations with private investors);

– Stable political-legal environment (general system of rules, ypical agreements, facilitation of legal system to decrease transaction fees);

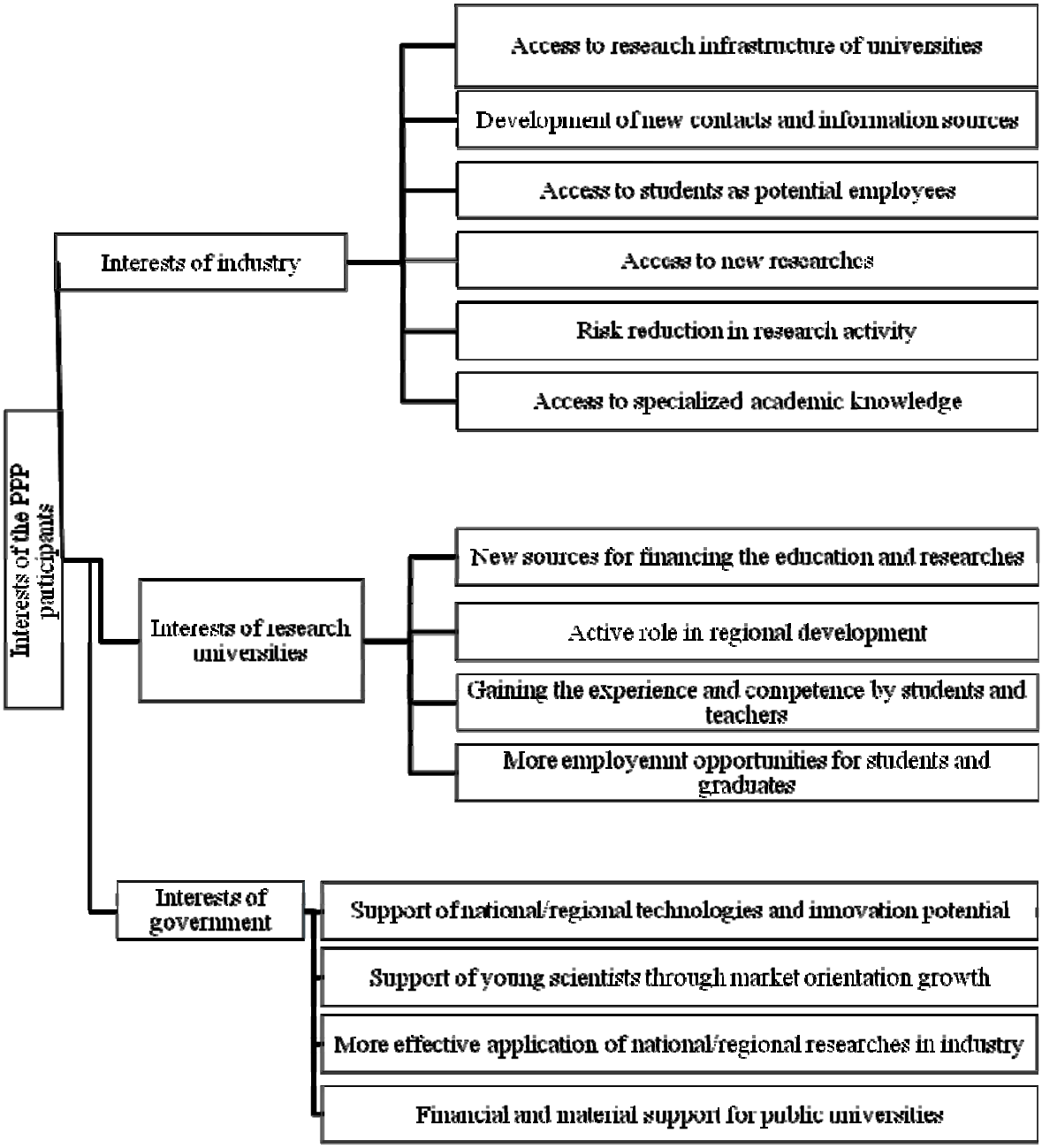

Figure 1 – Motivation for PPP participants in scientific and innovative field

– Effective structure of economy and fair distribution of opportunities and risks;

– Ability for precise calculation of fees and benefits of a project;

– Wide investment opportunities due to availability of adequate mechanisms of distribution and mitigation of risk, and financial structuring if the innovative project;

– Free access to private investment markets;

– Opportunity to optimize the mobilization of private capital per unit of government expenditures;

– Risk management of the governmental sector of economy;

– Development of effective instruments for the governmental management of innovative field.

In scientific-technological and innovative fields the following PPP forms can be applied:

– Co-financing of scientific-research projects at pre-competition stage (motivation for industry is transfer of rights on research results and developments for its further commercialization);

– Co-financing of early stages of commercialization ("seed", venture financing);

– Creation of joint investigative centers at socially important fields (healthcare, protection of environment, defense).

At the present moment a lot of developed countries reduce direct governmental interference into the innovation process and private business increase expenses for R&D [7]. At the same time, the range of indirect encouragement measures extends due to tax relief, soft loans, focused support of small business, forming of necessary innovative infrastructure and commercialization of technologies.

In view of PPP encouragement in the innovative field, interesting is the experience of some European countries. The enterprises of the European Union countries participating actively in developing and adopting of innovations has a right to form innovation not taxable funds from the received income. The size of such fund can be from 16 to 50% of the enterprise income. Tax concessions are also used in the form of tax benefits from the volume or increment of company expenditures for R&D.

The Great Britain applies actively a scheme of government lending implemented through specially created guarantee funds. The system works as follows: an innovation company addresses to a loan office for typical loan, and the State guarantees 70-85% payments of the provided amount of loan.

A lot of developed countries use widely the share form of financing of innovative projects that assumes the participation of government, private business, universities, local authorities, and other structures. This form is mostly used by the USA and such European countries as Great Britain, Greece, Spain, Netherlands, Poland, and Swiss. The application of this form of financing allows for better integration of interests of customers and R&D executors, and favors material encouragement of researchers, rational distribution of attracted funds and risk of its investments among all participants of innovative projects.

Despite some differences in details, the general principles of innovative systems forming in the developed countries assume that the governmental role is to assist in producing fundamental knowledge and a set of strategic technologies, and creation of infrastructure and favorable medium for innovative activity of private companies, and the role of private sector is to create technologies basing on own researches and developments, transfer and market mastering of innovations.

The western models of the public-private partnership in developing the innovative infrastructure assume, as rule, the domineering of the public financing at the early stage of an innovative project when "money for seeding" and reliable guarantee are required for the start.

For example, in Germany, France, Holland, the public share in common investments at creating the innovative infrastructure facilities is about 75%, in the Great Britain – 60 %. At later stages of exploitation and functioning of the facilities, the situation changes to the opposite side – the role of private sector in co-financing increases. The government finances, mainly, the fundamental research implemented by universities, research laboratories, and by institutes, renders selective aid to innovative developments in the private sector. It is interesting to note that the approach to distribution of the governmental resources to support R&D in the private sector differs depending on a country. For example,in contrast with the European Union countries (EU) with prevailing diversified approach to distribution of funds among private companies, in the USA the funds allocated by the government to research and development works are concentrated at small number of companies – only 0.5% of American companies receive 84% governmental assignations for R&D.

The model with prevailing governmental financing of R&D (more than 50%) remains in the EU countries – Portugal, Greece, Poland, Hungary, Romania, Bulgaria.

The following forms of PPP development adequate to prospective stages of Kazakhstan economy development can be assumed:

– Activation of the public institutes of developments activity with more precise orientation on the achievement of the industrial modernization goals;

– Foreign investments and assistance in Kazakhstan capital flow to foreign markets including the part of direct and portfolio investments;

– Forming of large vertically integrated companies with participation of governmental assets to create the growth points of high-technological manufactures and clusters;

– Improvement and development of different forms of the governmental protection and patronage of the national companies entering the foreign markets of the end products;

– Forming of the system of accelerated innovative-technological development of economy basing on the public-private partnership.

Considering the directions of the public-private partnership development it can be noted that in this case it is reasonable to search new, more complicated and integrated forms of PPP. This does not imply the abandoning of traditional forms, such as participation of government in business-structures capital, state procurement, rendering of the national guarantees and different types of instruments of administrative-regulatory type. However, taking into account the peculiarities and demands of the industrial modernization, these simple forms of PPP could be insufficient. In addition to the large-scale of the industrial modernization tasks, another important factor influencing on the configuration of the public-private partnership is activation of globalization processes.

It is reasonable to develop and adopt more complicated, multi-component forms and methods of joint actions of the governmental institutes and business-structures allowing for daster and more efficient implementation of the industrial modernization. At this, it is reasonable to focus on disposal of entrepreneurship potential of the government that is currently used to limited extent. Namely the entrepreneurship functions of the state can have the dramatic impact on enhancing the PPP effectiveness and accelerate the process of the industrial modernization.

The public-private partnership should be the base of a new mechanism of science financing. The allocation of the budget finds should be added with flexible mechanisms of co-financing of researches and developments by the government and business. For these purposes, in particular, it is necessary to use widely the opportunities of developing institutes (Investment Fund, Agency on Technological Development, Science Fund) and public holdings created in Kazakhstan. Now, its share is only 0.4% of all expenses on the science.

Considering the prospective trends of the PPP mechanism development regarding the industrial modernization it is necessary to base on two main imperatives: demands and tasks of the industrial modernization in the context of sustainable development of Kazakhstan and features of the global economy under the conditions of which this modernization will be implemented.

Conclusion. The conducted research allowed forming the following main trends of forming and development of the public-private partnership in scientific and innovation spheres:

1. Mutually reinforcing participation of the government and market in the innovation processes. There should be no alternative – either comprehensive regulation of innovative activity on the part of the government, or its forming under the influence of market forces nature. The government assists the market development, but not replaces it. The budget financing should play a role of a start push, be a signal sent by the government to private business encouraging it to more active activities, to attempt to “do a first step”;

2. The division of innovation risks between the government and business. It is necessary to apply an approach at which the government and private sector being the equal partners solve together the problems of innovative-technological development, and share the responsibility while implementing the innovation projects. The programs of public-private partnerships should be developed focusing on assistance of private sector in implementing the advanced and high-risk technologies. These partnerships can be in the form of cooperation agreements joining industrial enterprises, governmental agencies, research institutes, and universities in different combinations for joint achievement of definite science-technological results. While co-financing the projects on the part of the government it is desirable to concentrate the projects management in the hands of business or specialized middleman organizations;

3. Application of decentralized channels of the governmental support for the innovation activity. The governmental support should preferably be implemented not through direct financial subsidizing of budget funds, but through simultaneous use of different channels. Particularly, this requirement is met by improvement of “development institutes” network, and transfer of a part of governmental support functions to private middleman that reduces the risk of corruption;

4. Naturalization of the governmental support for the innovative activity. The transparency of the support channels strengthens is financial subsidies to industrial enterprises are replaced by services of the government. The government could undertake the financing of programs on personnel training,

international certification of small enterprises, information support, etc. For business such programs should be free. Another type of natural grant could be rendering of land sites on the territory of the state research institutes and universities to technological parks, innovation centers.

5. Support of enterprise networks. The innovations support programs in small and medium business should be focused not on individual enterprises, but on its groups, for example in the form of sectorial or territorial associations. The interaction of the government with enterprise groups will allow, on one hand, to decrease the expenditures on such programs and on another – favor the small enterprises entry into market not as individual manufacturers, but as economic entities joined into the networks by mutual connections, joint use of techniques, resources, etc. Such networks can further transform to innovation clusters.

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ҒЫЛЫМ МЕН ИННОВАЦИЯЛАР САЛАСЫНДАҒЫ МЕМЛЕКЕТТІК-ЖЕКЕ ӘРІПТЕСТІКТІҢ ДАМУЫН ЫНТАЛАНДЫРУ

Аннотация. Қазіргі уақытта Қазақстанда мемлекеттік-жеке әріптестік (МЖӘ) экономикалық саясатты іске асырудың негізгі құралдарының бірі болып табылады, бұл көптеген құжаттық бағдарламаларда белгіленген. Алайда ғылым мен инновациялар саласында МЖӘ мүмкіндіктерін қолдану деңгейі әлі күнге төмен болып отыр, оның себебі МЖӘ қатысушыларының өзара әрекеттесу процестерінің әлсіз ұйымдастырылуында жатыр. Осыған байланысты бұл мақалада Қазақстанның ғылыми және инновациялық саласында МЖӘ құралдарын кеңінен қолдану мәселелері зерттелген. Жұмыста ғылыми-инновациялық салада МЖӘ қолдану ерекшеліктері анықталған, оны қолдану қағидалары белгіленіп, МЖӘ жобаларының қатысушыларын ынталандыратын стимулдары көрсетілген. Одан басқа, дамыған елдердің тәжірибелерін зерттеу негізінде Қазақстандағы ғылыми және инновациялық қызметте МЖӘ тетіктерін қолдану шеңберін кеңейту мақсатында іс-шаралар әзірленген. Инновациялық қызметтегі МЖӘ тетігін дамытудың басым бағыттары Қазақстанның тұрақты дамуы мен жаңғырту іске асырылатын жаһандық экономика ерекшеліктері аясында индустриалдық жаңғырту қажеттіліктері мен міндеттері призмасы арқылы қарастырылған.

Мақалада қалыптастырылған негізгі ұйғарымдар мен ұсыныстар ғылыми және инновациялық қызметті қолдаудың мемлекеттік және аймақтық бағдарламаларын әзірлеу кезінде мемлекеттік органдармен қолданылуы мүмкін. Зерттеу нәтижелері сондай ақ оны ары қарай тереңдете зерттеу үшін негіз бола алады.

Түйін сөздер: мемлекеттік-жеке әріптестік, ғылым, инновациялар, ынталандыру.

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СТИМУЛИРОВАНИЕ РАЗВИТИЯ ГОСУДАРСТВЕННО-ЧАСТНОГО ПАРТНЕРСТВА В СФЕРЕ НАУКИ И ИННОВАЦИЙ

Аннотация. В настоящее время государственно-частное партнерство (ГЧП) признано в Казахстане одним из основных инструментов реализации экономической политики, что отмечается во многих программных документах. Однако уровень использования возможностей ГЧП в сфере науки и инноваций остаётся низким вследствие неналаженности процессов взаимодействия участников ГЧП. В этой связи в данной статье исследуются вопросы расширенного применения ГЧП в научной и инновационной сфере Казахстана. В работе определены особенности применения ГЧП в научно-инновационной сфере, обозначены его принципы, и выделены стимулы заинтересованных сторон от участия в проектах ГЧП. Кроме того, на основе изучения опыта развитых стран, разработаны меры по расширению применения механизмов государственно-частного партнерства в научной и инновационной деятельности в Казахстане. Перспективные направления развития механизма ГЧП в инновационной деятельности рассмотрены через призму потребностей и задач индустриальной модернизации в контексте устойчивого развития Казахстана и особенностей глобальной экономики, в условиях которой будет осуществляться эта модернизация.

Основные выводы и предложения, сформулированные в статье, могут быть применены государственными органами в ходе разработки государственных и региональных программ поддержки научной и инновационной деятельности. Результаты исследования также могут послужить основой для проведения более углубленных исследований.

Ключевые слова: государственно-частное партнёрство, наука, инновации, стимулирование.

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ACTUAL PROBLEMS OF THE FORMATION OF SOCIAL RESPONSIBILITY OF BUSINESS IN THE REPUBLIC OF KAZAKHSTAN

Abstract. The social responsibility of business is subject to interdisciplinary research. In addition to economics, psychologists, sociologists, political scientists, etc. study various aspects of entrepreneurial activity.

Government intervention in the area of social responsibility of business should be of a recommendatory, framework character. The positive Soviet experience in shaping social policy has become an example for the labor and trade union movement throughout the world. Especially important for the development of social responsibility in the country is precisely the moral support of these processes by the state - the establishment of titles, medals, prizes and certificates. Moreover, some tax breaks for corporations are even more profitable for the budget and society, since corporations are able to more accurately and efficiently solve local regional problems through social responsibility.

Keywords: social responsibility, economics, science, security, problems, corporations.

INTRODUCTION

Humankind has always been excited about the ideas of creating such a society that would provide the best natural economic order. Thinkers, scientists, researchers nurtured and developed the ideas of a social state, a social market economy, a welfare society, a social economy. Thus, the concept of the welfare state was formulated in the middle of the XIX century. German scientist Lorenz von Stein. It was based on the principles of social justice and equality, guaranteeing and protecting the state of the economic rights of all social classes, regardless of their social affiliation [1].

The concept of “market freedom” and equitable distribution according to the principle of “social equalization” was conceptually first described by A. Muller-Armak in the book “Economic Management and Market Economy”, published in 1947, where he also used the term “social market economy” for the first time. German neoliberals (V. Röpke, L. Erhard, V. Oiken, etc.) considered the “social market economy” as a path to “economic humanism”.

MAIN PART

The model of “social market economy” was largely consonant with the model of institutionalists that emerged in the 60–70s of the twentieth century about the “welfare society”. In both models, the provisions on the exploitation of man by man and class antagonism are rejected; Both models are based on the idea of an active social function of the state to ensure all citizens equal rights and equal opportunities to receive social services and improve their well-being. The outward manifestation of "universal welfare" is seen not only as an increase in the number of shareholders in various sectors of society, but also as an increased stability of all public institutions, confidence of a significant part of workers in the future, etc.

Social responsibility of business is the voluntary contribution of business to the development of society in the social, economic and environmental spheres, which is directly related to the main activity of the company and goes beyond the legal minimum.

Social responsibility of business is also divided into internal and external.

To the internal social responsibility of business

Include:

- Safety.
- Stability and maintenance of socially significant wages.
- Social security of employees.
- Development of human resources through training and advanced training programs.
- Implementing standards.

To external social responsibility of business

Relate:

- Responsibility to consumers of goods and services (production of high-quality goods).
- Promoting environmental protection.
- Social investment in local community development.
- Sponsorship and corporate charity.

All the many points of view on the problem of social responsibility of business can be laid between the following two alternatives:

1. Responsibility of a business is limited to creating jobs and ensuring their effective use. The practice of this responsibility is manifested in two main models:

- In the Anglo-American (liberal) model, the employee receives a salary and through private structures independently satisfies his diverse social needs;

- In the European (social) model, business pays rather large taxes, and the state creates the conditions for the realization of the most significant social needs of the population.

The concepts of a welfare state, a social market economy, a social economy have found concrete embodiment in the economic systems of many European countries after the Second World War. Western European countries call themselves social states, consider their economies to be social, ensuring a high level of welfare of the population, a set of socio-economic institutions that direct the functioning of all elements of this system to the realization of the goals of social justice, security, high level and quality of life.

The main goal of economic reforms in Kazakhstan is to create a social market economy based on the formation of a model of civil society. Among modern domestic studies on this issue, the scientific works of the famous economist U.B. Baimuratov to create the theoretical foundations of a new harmonious social economy such as “Social Economy”, “Socialization in the economy: from the individual to the state”, “Harmony of society and the economy: the world paradigm”. Economists rightly point out that "the author essentially laid the foundation for a new scientific direction, which has unconditional relevance and a great future" [2, p. 7].

Socialization of the economy determines the socialization of the economic activities of all economic entities and the social responsibility of entrepreneurship and business becomes an integral part of this process. The problem of social responsibility of business is one of the urgent problems of modern socio-economic development and is still the focus of attention of Western researchers [5, 6].

The trends of the world socio-economic development are also related to the economy of our country, as with the transition to a market-oriented development path, we are joining the world economic space.

Socialization of the economy and the socialization of business are interrelated and interdependent. As the socialization of the economy determines the social orientation of the activity of entrepreneurship, so its socialization is a system-forming element of the creation of a social economy. Therefore, the formation and development of social responsibility of domestic business is one of the urgent, main problems of our economy.

Today, there are a number of factors and circumstances that determine the actualization and prioritization of the problems of social responsibility of business. Among them, we will pay attention to such factors as the increasing importance of intangible factors of economic growth associated with the development of human potential and the need to expand the circle of subjects in solving social and economic problems.

In modern conditions, the competitiveness of firms operating in the world market, national economies, largely is determined by factors related to quality, not price. This is due to the domination and effect of imperfect competition. Among the factors that are on the quality side, the most significant is the

ability to innovate and perceive new technological advances, which are based on human, intellectual, social capital, that is, the quality of labor and the motivation of employees. The researchers note that this circumstance sets the economic imperatives of business socialization [7, p. 90].

In a market economy, firms act as the most important macroeconomic entity. As a major producer of goods and services, the business, until about the 1970s, was primarily financially involved in solving social problems through paying taxes and promoting charitable programs. Meeting the social needs of society remained the prerogative of the state. For the most developed countries, there is a high standard of social security coupled with a high level of government social spending.

Today, in most developed countries, the state budget redistributes from 1/3 to one // GDP. However, supporting the existing level of social guarantees requires a further increase in investment. In modern conditions, such trends of demographic and socio-economic development as the aging of the population, destabilization of employment associated with the growth of its flexible and non-standard forms and a decrease in the number of steadily employed in the state and corporate sectors, the decline of prestige of skilled industrial labor. At present, this is aggravated by the impact of the global financial crisis, which has led to an aggravation of the employment problem, to mass unemployment. The economic, political instability of the world order has led to increased migration flows from disadvantaged countries to countries of high living standards, which to some extent pose threats of extremism and terrorism. The solution to these problems can no longer be provided only at the expense of the state budget. It is necessary to develop new mechanisms for the development of the social sphere, the solution of socio-economic problems.

Firms, business structures, as a macroeconomic entity, should become an equal partner of socio-economic development. In the formation of an active strategy of social development, business should unite efforts with the state and public organizations. The competitiveness and productivity of the business itself will depend on the success of these efforts. Business must take into account the interests of the participants in the production process and bear its part of responsibility for solving growing problems in the social and labor sphere. Otherwise, this will affect the position of firms. Social polarization and destabilization will increase, which will require large financial resources for its resolution. This will lead to high taxation of commercial structures in the first place, which will reduce competitiveness, worsen the economic situation and further exacerbate social problems.

The experience of the highly developed countries of the world clearly demonstrates that social problems are not solved only by the state. The commercial sector should also be actively involved in this process, since the well-being of society, stability and competitiveness of a country depend on the responsibility of each member, each civil institution. The main prerequisite for such cooperation is to rely on a socially responsible business. The principles of corporate social responsibility, further development and improvement of collective bargaining mechanisms in labor relations have received the corresponding legal basis. In this regard, it should be noted that the norms prescribed in the old Labor Code and social legislation, enshrined the functions of social responsibility for the state itself. This led to the fact that the obligations of the employer not only to ensure the social well-being of their employees, but also the minimum social guarantees specified by law were not actually fulfilled.

Today, thanks to the actions or, rather, the awareness of entrepreneurship of their role and place in solving state tasks, the terms “socially responsible”, “socially oriented” from some virtual model are gradually becoming a reality. Elements of socially responsible entrepreneurship are taking root in the business culture of many Kazakhstani companies. Companies and entrepreneurs create new jobs, are engaged in charity work, carry out specific work on the development of the socio-cultural infrastructure of the city and village. Among them are LLP “KOKTEM GROUP LTD” from Almaty, JSC “Aksaygazservis” from the West Kazakhstan region, JSC “Kentau transformer plant” and many others.

Such examples of a responsible, humane attitude of the representatives of the country's business community to the issues of social and cultural development are not isolated, they create confidence that this phenomenon is becoming widespread. The experience of domestic entrepreneurs and companies convinces that social responsibility not only enhances its image, but also contributes to the development of the enterprise and the promotion of business. And this is normal, because global practice shows that companies that adhere to such principles can increase sales, strengthen the position of brands in the market, increase their own investment attractiveness and even reduce the cost of production.

In Western countries, social responsibility for many companies has long been a means of obtaining additional not only material, but also moral dividends. After all, a socially responsible business is a business that primarily supports the foundations of a civilized life and the establishment in society of such universal human values as morality, honesty, safe and healthy life, good and fair education, and others.

Social responsibility is a conscious investment in the future. The more successful the business, the healthier the society, and the healthier the society, the more successful the business. Similar interdependence

In all regions where Kazakhmys enterprises operate, there are 36 kindergartens on the balance of the corporation, which are attended by 5,700 children. All these children's institutions are united in a private institution “Preschooler”, the sole founder of which is the corporation. For the maintenance of preschool institutions only in the cities of Zhezkazgan and Satpayev monthly sponsorship is provided in the amount of more than 14 million tenge. Kazakhmys Corporation implements a large program, including measures for environmental protection and maintenance of environmental facilities. For these purposes, it spends about $ 23 million annually. On environmental issues, a special committee has been created in the company, which consists of independent directors and well-known experts in this field. International standards on ecology are gradually being introduced at all Kazakhmys enterprises.

In practice, it fully provides for the livelihoods of the cities of Zhezkazgan, Balkhash and Satpayev, as well as more than a dozen villages, contains over 90 large social facilities on its balance sheet.

Showing interest in raising the level of employment among the population of the Karaganda region, Kazakhmys is actively working to create new jobs. In relations with the state and its bodies, Kazakhmys, first, annually pays about $ 200 million in taxes and other obligatory payments to the budget. Therefore, in particular, the corporation provides filling up to 98% to the city budgets of Zhezkazgan and Balkhash.

One of the most notable events in the sphere of relations between our corporation and local authorities was the conclusion of a memorandum of cooperation with the Akimat of the Karaganda region. According to this document, the Akimat, in particular, undertakes to promote the company's projects in developing business activities and creating conditions for the investment climate. In addition, the authorities assume responsibility for organizing the construction and operation of transport and engineering infrastructure facilities.

At the same time, at traditional meetings with voters, we, deputies of Parliament, sometimes come across facts when, along with the successes achieved in the field of social protection of the population, the participation of the country's business structures in this humane matter, serious problems manifest themselves. Today, sometimes we have to face some facts of indifference and disregard for the provisions of labor legislation, labor protection and occupational health standards. All this in some cases becomes a reason for proceedings, complaints and dissatisfaction on the part of labor collectives. When clarifying the circumstances, it becomes obvious that such phenomena are not only a consequence of legal nihilism, but also moral "deafness" and the carelessness of individual leaders.

CONCLUSION

To eradicate these facts and solve other socially responsible issues, undoubtedly, consolidation of the efforts of the whole society is required. Solving the above problems also requires improving the legal framework for the creation of economic and moral motivational mechanisms to activate this important socio-economic process aimed at improving the welfare of citizens and ensuring stability in the country. Our national companies and large investors are currently creating new jobs, fulfilling their social obligations to employees, doing charity work, and providing real support to socially unprotected citizens. However, in order for a business to truly become a pillar of social and economic transformation, it is necessary to move on to its systemic participation in solving national problems. The corporate social responsibility standards defined in the United Nations Global Compact focus on the principles of corporate social responsibility in the field of labor relations.

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ҚАЗАҚСТАН РЕСПУБЛИКАСЫНЫҢ БИЗНЕСІНІҢ ӘЛЕУМЕТТІК ЖАУАПКЕРШІЛІГІНІҢ НЕГІЗГІ МӘСЕЛЕЛЕРІ

Аннотация. Бизнестің әлеуметтік жауапкершілігі пәнаралық зерттеуге жатады. Экономикаға қоса, кәсіпкерлік қызметтің әртүрлі аспектілері психологтар, әлеуметтанушылар, саясаттанушылар және т.б. зерттейді.

Бизнестің әлеуметтік жауапкершілігі саласындағы мемлекеттің араласуы ұсынымдық, құрылымдық сипатта болуы керек. Әлеуметтік саясатты қалыптастырудағы позитивті кеңес тәжірибесі бүкіл әлемде еңбек және кәсіподақ қозғалысына үлгі болды. Елдегі әлеуметтік жауапкершілікті дамыту үшін айрықша маңызға ие болып, бұл үдерістерді мемлекет тарапынан моральдық қолдау - атақтарды, медальдарды, жүлделер мен сертификаттарды белгілеу. Сонымен қатар, корпорациялар үшін кейбір салықтық жеңілдіктер бюджет пен қоғам үшін тиімдірек, өйткені корпорациялар әлеуметтік жауапкершілік арқылы жергілікті аймақтық проблемаларды барынша нақты және тиімді шеше алады.

Түйін: social responsibility, economics, science, security, problems, corporations.

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АКТУАЛЬНЫЕ ПРОБЛЕМЫ СТАНОВЛЕНИЯ СОЦИАЛЬНОЙ ОТВЕТСТВЕННОСТИ БИЗНЕСА В РЕСПУБЛИКИ КАЗАХСТАН

Аннотация. Социальная ответственность бизнеса является объектом междисциплинарных исследований. Кроме экономической науки, различные аспекты предпринимательской деятельности изучаются психологами, социологами, политологами и др.

Вмешательство государства в область социальной ответственности бизнеса должно носить рекомендательный, рамочный характер. Позитивный советский опыт формирования социальной политики стал примером для рабочего и профсоюзного движения во всем мире. Особенно важным для развития социальной ответственности в стране является именно моральная поддержка данных процессов со стороны государства - учреждение званий, медалей, премии и грамот. Более того, некоторые налоговые послабления для корпораций даже выгоднее бюджету и обществу, поскольку корпорации точней и результативнее способны решать через соцответственность местные региональные проблемы.

Ключевые слова: социальная ответственность, экономика, наука, безопасность, проблемы, корпорации.

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ABOUT SOME APPROACHES OF THE MIGRATORY POLITICS OF THE STATES IN INTERNATIONAL LAW

Abstract. Presently migration became one their factors of all global problems standing before humanity. Development of the world system requires the change of priorities and going near understanding of migration, to migratory politics of the states, assisting an achievement and maintenance of balance of interests of international subjects participating in adjusting of migratory processes. In itself migration is the same phenomenon, as well as right for the states to regulate the movements of persons through the borders of the states and carry out border control. Migration through the borders of the states is an international problem, as the not alone state participates in this process. On this basis, international migration is regulated by both international and national norms. Coming forward in the past mainly in the forms of nomads, soldiery and colonization migrations, international migration of population with development of the system of economic relations between the states purchased new lines. There was a necessity for the enormous moving of people. Millions of people abandoned native edges and directed in other countries in search of material sufficiency and releasing from inequality. Strengthening of tendency to the increase of migratory processes in the modern world, the necessity of international-legal permission and adjusting of different forms of migration of population affects expansion of international cooperation of the states in this sphere.

Key words: migration, politics, international law, repatriation, migratory processes, institutional mechanisms, convention mechanisms, international obligations, freedom of movement, foreign citizens.

Academic and policy debates on migration and refugee “crises” across the world have yet to engage fully with the importance of cross border population mobility for states’ diplomatic strategies. This article sets forth the concept of “migration diplomacy” as an object of analysis for academics and practitioners alike, distinguishing it from other forms of migration-related policies and practices. It draws on realist approaches in international relations to identify how the interests and power of state actors are affected by their position in migration systems, namely the extent to which they are migration-sending, migration-receiving, or transit states. The article then discusses how migration issues connect with other areas of state interest and diplomacy, including security interests, economic interests and issues of identity, soft power, and public diplomacy. Finally, the article suggests the utility of applying a rationalist framework based on states' interests in absolute versus relative gains as a means of examining the bargaining strategies used by states in instances of migration diplomacy [1, P.82].

We do so by first discussing the concept of migration diplomacy and its scope conditions, distinguishing it from other forms of migration-related research, such as research on citizenship, integration, or diasporas. Second, drawing heavily on realist approaches in international relations, we outline how the interests and power of state actors are affected by their position in migration systems according to whether they are migration-sending, migration-receiving, or transit states. Third, we discuss how migration issues connect with other areas of state interest and diplomacy, including security interests, economic interests and issues of identity, soft power, and public diplomacy. Finally, we suggest the utility of applying a rationalist framework based on state interests in absolute versus relative gains as a means of examining the bargaining strategies used by states in instances of migration diplomacy, before concluding with some thoughts regarding areas for further research.

Just as states engage with one another in areas relating to war and peace, trade, economics, culture, the environment, and human rights, migration is increasingly an important area of states' bilateral and multilateral diplomatic relations. Despite a growing range of work on the complex facets of modern diplomacy, migration has yet to feature in such analyses, even though it is prevalent in practitioners' strategies. Examples include intergovernmental agreements that aim to encourage, or limit-migratory flows; the extension of preferential treatment to certain foreign nationals; the creation of guest-worker or other temporary labor migration schemes; the expulsion or threat of expulsion of foreign nationals; and so on. This is not to say that there is an absence of work on the interplay between foreign policy and population mobility [2].

This article builds on this work and suggests the utility of the term migration diplomacy to describe states' use of diplomatic tools, processes, and procedures to manage cross-border population mobility. It is important to delineate the scope of migration diplomacy and to be clear about what it includes, but also what it excludes.

Not all attempts to manage migratory flows constitute migration diplomacy, nor should the whole gamut of issues related to migration and migrants' affairs fall under the scope of migration diplomacy. In addition, it should be noted that any state's ability to effectively use diplomatic tools and processes in relation to migration processes will be dependent on other factors, such as its overall power and available resources.

Three main scope conditions apply to our definition. Firstly, migration diplomacy refers to state actions and investigates how cross-border population mobility is linked to state diplomatic aimsas such, it does not investigate the internal workings of international organizations, the media, or social actors, such as nongovernmental organizations, although it is possible to apply the framework to state-like international actors.

State's migration diplomacy is not synonymous with its overall migration policy-migration policies may range from completely restrictive to allowing free migration, but these are only relevant when states include them as part of their foreign relations and diplomacy. For example, standard elements of migration policy such as the issuing of visas, the control of borders, or a state's refugee and asylum policy are not in and of themselves elements of migration diplomacy. Diplomacy is often about negotiation, and migration diplomacy centers on how states employ cross-border population mobility management in their international relations, or how they use diplomatic means to obtain goals relating to migration. In other words, migration diplomacy can include both the strategic use of migration flows as a means to obtain other aims or the use of diplomatic methods to achieve goals related to migration [3].

Finally, migration diplomacy highlights the importance of the management of cross-border mobility as an international issue, thus, it needs to be analytically disassociated from a wealth of migration matters that, however political, do not have a direct impact upon interstate relations; internal displacement, the regulation of immigrants' citizenship status or access to rights, tariff rules determining which goods migrants are able to transport, diaspora politics, and the welfare of refugees are only relevant to migration diplomacy insofar as they impact on interstate interactions.

For instance, a state may in some cases institutionalize diaspora engagement policies, such as preferential investment conditions for diaspora members- largely for reasons of promoting domestic economic development. Internal displacement is a major global migration issue, with millions displaced annually due to conflict, violence, and natural disasters, yet it may often be wholly unrelated to issues of interstate diplomacy [4, P.260].

Migration diplomacy functions similarly to traditional diplomacy in that it is shaped by the interests of and existing power relationship between states. Just as important as military and economic indicators of a state's power and interests, however, is its position in the web of global migration flows. A migration diplomacy framework conceptualizes states as deriving their interests and bargaining position vis-à-vis other states based in part on whether they are migration-receiving, migration-sending, or transit states—in other words, whether their main concerns are with respect to immigration, emigration, or transit migration.

These, it should be clarified, are ideal types and a state may simultaneously hold the position of migration-receiving state in some bilateral relationships while holding the position of sending or transit state in others.Receiving states, as a type, are primarily concerned about the dynamics of immigration and typically manage inflows of people.

Beyond receiving states and immigration diplomacy, sending states constitute a second group of actors that engage in migration diplomacy. These states are primarily concerned with the dynamics of emigration, or the outflow of people. Emigration diplomacy can be identified in a number of sending states' policies, both currently and historically. Emigration diplomacy practices are often identified in states of the Global South. Finally, transit states are third countries that are neither countries of origin nor destination. These states are able to engage in transit migration diplomacy usually because of their geopolitical location as part of a migrant route. States can also engage in migration diplomacy with other states in order to expel, deport, or transfer individuals or groups citing internal security concerns, as occurred in some historical cases of population transfers. Many such practices, oftentimes sanctioned by international organizations or colonial powers, have been accompanied by grave human rights abuses. But states may equally use forms of migration diplomacy to achieve economic aims [5, P.96].

Migration diplomacy is a multifaceted process, both in terms of the actors involved and the strategies employed. As highlighted above, the identity of a sending, transit, or receiving state is neither singular nor static: some states may engage solely in emigration, immigration, or transit migration diplomacy policies, while others are able to employ multiple policies vis-à-vis a number of different actors at any one time. As states' interests evolve, or their position within the web of global migration flows changes, they may also revise their migration diplomacy accordingly, as the above example of changes over time in Turkey's strategy toward Europe illustrates.

Migration diplomacy also involves linkages with other areas of states interests, including national and domestic security concerns, economic interests, and interests in promoting public diplomacy or other forms of enhancing a state's soft power. In terms of strategies, migration diplomacy can be approached as a zero-sum game by pursuing relative gains or as a positive-sum game in order to reach mutually beneficial outcomes [6, P.61].

In this article we have presented a basic framework for thinking about the relationship between cross-border mobility, state power and interests, and interstate bargaining and diplomacy.

We have proposed a definition of and delineated the scope conditions for what constitutes migration diplomacy, as well as laying the groundwork for future theorizing and empirical study. As such, the interests, linkages, and strategies identified here are not meant to be exhaustive but rather illustrative.

Further research is needed to identify the universe of cases that could be characterized as instances of migration diplomacy and to map out the diverse actors, interests, and processes that are engaged in pursuing immigration, emigration, and transit migration diplomacy.

In this regard, a key area for future research would be the conditions under which the migration diplomacy strategies of states are more or less effective. Clearly, a number of factors, including the differential levels of power and resources available to state actors, are areas that merit further examination. Finally, an additional set of questions that merits further research concerns the different mechanisms at play in instances of migration diplomacy. How applicable is a two-level game theory approach, for instance, in understanding international agreements on migration flows, and to what extent do sending, transit, and receiving states differ with regard to the mechanisms they use? Under what conditions are states most likely to achieve their aims? And what are the determining factors that lead to zero-sum versus positive-sum approaches to interstate bargaining on migration issues? These are all important questions not just for theory, but also for formulating policies to address the migration issues that are increasingly at the forefront of the international political agenda.

The concept of migration diplomacy serves to highlight the multiple effects of cross-border population mobility, not merely on numerous aspects of domestic politics but also on states' international relations. There is a well-developed literature in political science and sociology on the domestic impacts of migration on states and on the evolution of state migration control and migrant integration policies. Yet, there is less understanding of the relationship between cross-border flows of people and the national interests and diplomatic strategies of states [7, P.49]. Given the likelihood that migration will only increase in its importance to states and their policymakers in the next decades, there is plenty of room for further research on the international politics of global migration and mobility.

Before setting out a model of migration, it is useful to briefly distinguish between the sorts of explanations most often invoked. Scholars divide theories of international migration into three main types, which are not mutually exclusive. Macro theories emphasize the structural, objective conditions which act

as “push” and “pull” factors for migration. In the case of economic migration, push factors would typically include economic conditions such as unemployment, low salaries or low per capita income relative to the country of destination. Pull factors would include migration legislation and the labor market situation in receiving countries. Involuntary displacement would be explained through factors such as state repression or fear of generalized violence or civil war.

In the case of forced displacement, macro factors are more dominant than meso ones. Analyses of refugee producing situations have found, not surprisingly, that levels of displacement usually correspond to the level of violence in the country of origin. However, it is difficult for external actors to intervene to address these proximate causes of displacement once state repression or violent conflict is occurring. It therefore makes sense to look at the root causes, or underlying conditions which make escalation to violence or extreme acts of state repression more likely. What follows is a very general account of the causal dynamics that often lead to violent conflict and state repression, which in turn trigger large-scale forced displacement. The account is kept general so that it can “fit” most major refugee producing situations. Clearly, each particular case needs a far more detailed and nuanced explanation. This scheme is therefore intended as a basis for categorizing levels and types of policy response, rather than a stand-alone explanation for any given conflict.

Migration is more likely to occur between countries within a migration system, comprising relatively close trade, historical, cultural, and linguistic or other links. Such links are often established with middle income countries with proximity to receiving countries, who are important trade partners or recipients of foreign direct investment, such as the countries of Central Europe and the EU, or Central America and the US. Alternatively, they may stem from a previous bilateral agreement for recruiting migrant labor, as in the case of 1950s and 1960s “guest worker” schemes between a number of European states and countries in southern Europe, Turkey and North Africa.

Economic opportunities in destination countries are also of crucial importance in influencing decisions to migrate and the direction of flows. Thus in addition to macro push factors and migration systems, there are a number of significant “pull” factors in receiving countries.

Such chain migration may continue despite legislation in receiving countries designed to restrict immigration. However, even this phenomenon of self-sustaining migration will decrease in due course. At some point a change in macro conditions will lead to a decline in the attractiveness of migration. There is no convincing general theory as to when this point is reached.

More generally, emigration is likely to decrease when industrial development produces expanded employment opportunities for potential emigrants and returning migrants. Under these conditions, there is also likely to be a demand for additional low-skilled labor, generating immigration from other countries. Thus in the former emigration countries of Southern Europe, and more recently in some Central European countries, a decline in emigration has been accompanied by an increase in immigration flows.

In all cases, the costs, risks and feasibility of illegal entry or overstay and irregular employment will be substantially affected by migration control mechanisms, especially in countries of destination. Border checks, internal controls on residents and employer sanctions obviously make immigration and irregular stay more difficult. Thus restrictive legislation and its enforcement through policing, border controls and sanctions can limit these enabling conditions for migration.

The migration hump also suggests the need to target development aid at job creation in industries and regions particularly disrupted by economic restructuring. In this context, it may be useful to compile a list of possible indicators of situations where such economic restructuring may induce migration [5, P.97].

As discussed above, economic restructuring can initially contribute to migration pressures, especially in the absence of internal reform or external development assistance to mitigate the disruptive impact of transition. Hence the need for well-targeted development to help offset these negative impacts. However, such measures will be unable to completely offset migratory pressures. This implies the need to accept some increase in migration in a transition period, with the expectation that development will eventually reduce migration.

Regarding policies to prevent the causes of voluntary economic migration, we saw that there may be some conflict between short-termism preventive approaches and longer term development goals. The migration hump implies that successful development could increase migration pressures in the short to medium term.

In the conclusion we would like to stress, that migration diplomacy is a multifaceted process, both in terms of the actors involved and the strategies employed. As highlighted above, the identity of a sending, transit, or receiving state is neither singular nor static: some states may engage solely in emigration, immigration, or transit migration diplomacy policies, while others are able to employ multiple policies vis-à-vis a number of different actors at any one time. As states' interests evolve, or their position within the web of global migration flows changes, they may also revise their migration diplomacy accordingly, as the above example of changes over time in Turkey's strategy toward Europe illustrates. Migration diplomacy also involves linkages with other areas of states interests, including national and domestic security concerns, economic interests, and interests in promoting public diplomacy or other forms of enhancing a state's soft power. In terms of strategies, migration diplomacy can be approached as a zero-sum game by pursuing relative gains or as a positive-sum game in order to reach mutually beneficial outcomes.

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ХАЛЫҚАРАЛЫҚ ҚҰҚЫҚТАҒЫ МЕМЛЕКЕТТЕРДІҢ КӨШІ-ҚОН САЯСАТЫНЫҢ КЕЙБІР ҚЫРЛАРЫ

Аннотация. Қазіргі заманда көші-қон процесстері ғаламдық мәселелердің басты факторына айналып адамзатты өзіне көңілін аудартты. Әлемдік жүйенің өзгеруі қазіргі көші-қон процесстерін түсінуге аса маңызды көңіл аударуды талап ете отырып, мемлекеттердің көші-қон саясатын жүйелі түрде өзгертуді алдынғы қатарға қояды. Түп негізінде қарайтын болсақ, көші-қон процессі мемлекеттік құқық негізінде азаматтардың бір мемлекеттен екінші мемлекет шекарасынан өту мүмкіндіктерін жүзеге асырып, шекаралық тексерісті реттеу. Көші-қон процессін жүзеге асыру мемлекеттер арасындағы халықаралық мәселеге айналады, себебі бұл процессте бірнеше мемлекеттер қатысады. Осыларға байланысты халықаралық көші-қон халықаралық және ұлттық нормалар мен реттеледі.Ерте кездегі көшпенділік формасында, әскери және колонизаторлық көшу формаларында кездессе, қазір халықтардың халықаралық көші-қоны экономикалық жүйенің және мемлекет аралық экономикалық қатынастардың өзгеруне байланысты мүлдем басқа түрге ие болды. Еңбек күштерінің көптеп орын ауыстыру қажеттіктері туды. Экономикалық теңсіздіктерден бас тартқан миллиондаған адамдар туған жерлерінен бас тартып басқа елдерге көшуге мәжбүр болды. Қазіргі замандағы көші-қон процесстерінің күшеуі, оны халықаралық құқықтық шешудің реттелуі, көші-қон формаларының көбеюі, осы бағыттағы мемлекеттердің халықаралық байланыстарының шекарасын кеңейтті.

Түйін сөздері: көші-қон, саясат, халықаралық құқық, репатриация, көші-қон процесстері, институционалды механизмдер, конвенционалды механизмдер, халықаралық жауапкершілік, қозғалыс еркіндігі, шетелдік азаматтар.

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О НЕКОТОРЫХ ПОДХОДАХ МИГРАЦИОННОЙ ПОЛИТИКИ ГОСУДАРСТВ В МЕЖДУНАРОДНОМ ПРАВЕ

Аннотация.В настоящее время миграция стала одним их факторов всех глобальных проблем, стоящих перед человечеством. Развитие мировой системы требует изменения приоритетов и подходов к пониманию миграции, к миграционной политике государств, способствующей достижению и поддержанию баланса интересов международных субъектов, участвующих в регулировании миграционных процессов. Сама по себе миграция является таким же явлением, как и право государств регулировать передвижения лиц через границы государств и осуществлять пограничный контроль. Миграция через границы государств является международной проблемой, поскольку в этом процессе участвует не одно государство. Исходя из этого, международная миграция регулируется как международными, так и национальными нормами. Выступая в прошлом главным образом в формах кочевничества, военных и колонизационных переселений, международная миграция населения с развитием системы экономических отношений между государствами приобрела новые черты. Возникла необходимость в огромных перемещениях людей. Миллионы людей покинули родные края и устремились в другие страны в поисках материального достатка и избавления от неравенства.

Усиление тенденции к увеличению миграционных процессов в современном мире, необходимость международно-правового разрешения и регулирования различных форм миграции населения отражается на расширении международного сотрудничества государств в данной сфере.

Ключевые слова:миграция, политика, международное право, репатриация, миграционные процессы, институциональные механизмы, конвенционные механизмы, международные обязательства, свобода передвижения, иностранные граждане.

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DEVELOPMENT OF AGRICULTURE IS A CRUCIAL FACTOR OF ECONOMIC AND SOCIAL-POLITICAL STABILITY OF OUR COUNTRY

Abstract. The article outlines the importance of development of agriculture as a key factor of economic and social-political stability of the country, its necessity and the ways of development. Our country is committed to entering into the 30 most competitive countries and joining the World Trade Organization and joining the Eurasian Unionwhich imposes a great deal on agriculture sector of our country. Agriculture does not only provide production raw materials in the country, but also plays a major role in solving social problems along with sustainable economic development of the country. Therefore, it is necessary to upgrade the material and technical base with the advanced technologies for agriculture.The current structure of the agricultural production system is based on many forms and forms of production activities. Repair and maintenance of farm equipment and livestock farming equipment, logistics, transport services, agrochemical and veterinary services in the village, work with various moving mechanized groups in agricultural work, production services for agroformations. At present, there are quantitative and qualitative changes in these structures, particularly, repair is being built on a large number of machine-technological stations on commercial basis on the basis of moving mechanical units of technical enterprises and industrial production units of agro-industrial complex. The diversity of these production services contributes to the economic and social-political stability of the country, in particular, the problem of unemployment.

Keywords. The development of agriculture as the main sector of the economy has a crucial role in ensuring food security and expanding exports, and social and economic issues, including the problem of unemployment in regions.

Provision the country and other industries with raw materials is a key role of agriculture and make him asthe main branch of the economy. Agricultural products are a real sector of material production in terms of global food and natural conditions. However, agriculture can have different economic characteristicsin most of countries. That is, the level of agriculture specialization and productivity, and rapid development are different in terms of production.

Our country can be considered as a full-fledged agricultural specialist, as agriculture is the main sector of our country in two areas. In particular, it has the opportunity to grow and produce many types of crops, and to breed different types of cattle breeds. Agriculture is not only supplying raw materials to the country, but also plays a major role in solving social problems along with sustainable economic development of the country. However, agriculture needs sustainable development to address these issues. The issues for sustainable development are not satisfactory today. In developed countries, agriculture is characterized by the complexity of commodity agriculture. It develops on the basis of mechanization, chemistry, biotechnology and new selection methods. Agriculture is not a homogeneous sector in developing countries, for that reason it includes: the traditional sector (mainly small - scale farms), the modern sector (and also the organized farming and commercial farms).

At the same time, the country has a special place in cattle breeding and sheep breeding. Laws and concepts related to the development of these farms have been adopted already. These laws and concepts

can be considered as positive solutions. The picture below shows that the gross domestic product revenue from these types of farms increas year by year (Figure 1).

It is necessary to upgrade the material and technical base with advanced technologies for the integrated development of agriculture in Kazakhstan. The support from the state and the agro-industrial complex consolidation make a favorable forecast for the development of the country's agro-industrial complex. At present, there are more than 86 thousand enterprises in the agriculture of Kazakhstan and the most of them are small farms. By developing peasant farms, it is possible to increase the number of livestock and crop yields. The poultry farm has a unique place in the country. The fact that modern domestic poultry farms can not fully meet the domestic demand of the country as it is imported from abroad. Currently, there are about 81 poultry factories in our country.

The development of agriculture is an important source of social issues. The reason is that currently, agriculture is alsointersting for young generation. It is increasing in Akmola, Almaty, Mangistau, Zhambyl, West Kazakhstan and Pavlodar oblasts. Among them: the highest number of employed people aged 25-29 and 30-34 years was observed in the younger age group.

2015-2016. the level of economic activity in the countryside has changed: agriculture, forestry and fisheries have grown in all regions of the country, and the number of workers in rural areas has decreased throughout the country.

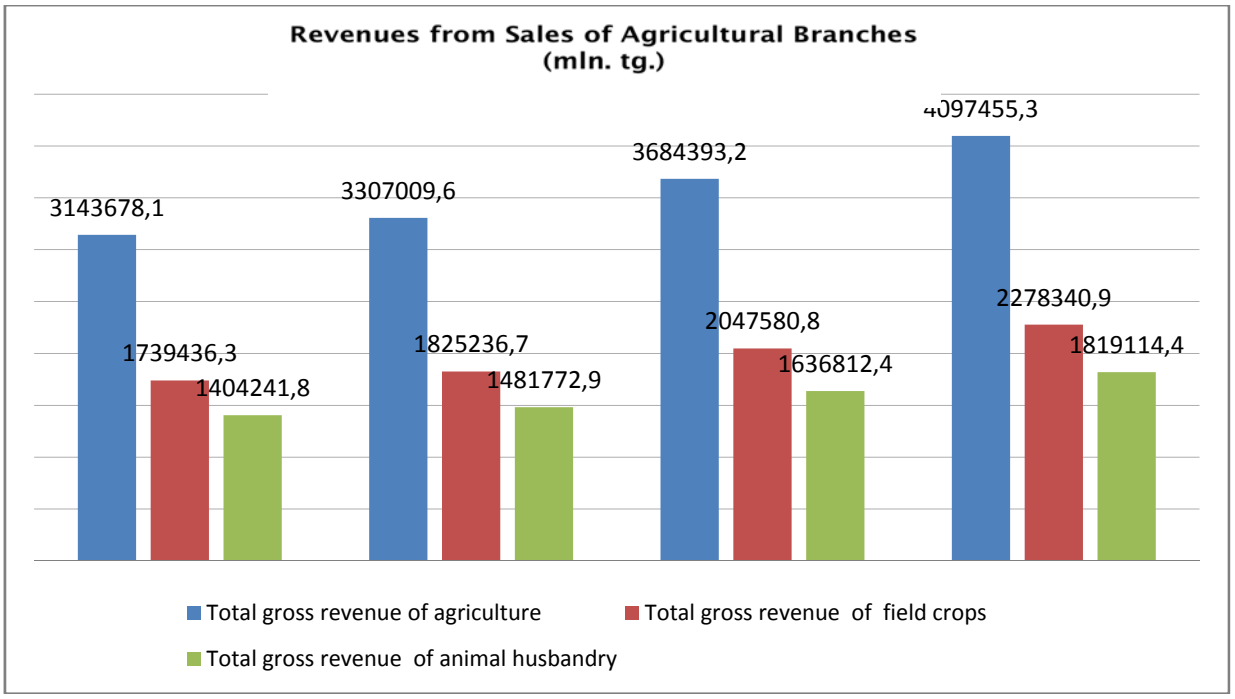

Figure 1 - Dynamics of revenues from total gross sales for agriculture between 2014-2017 [1].

Our country is committed to entering into the 30 most competitive countries and joining the World Trade Organization and joining the Eurasian Union. The development of the agrarian sector is important for the country's economic and social strategies. The positive decision of the development of agriculture is the result of the available resources and the proportion of the adequate growth of labor force in production expansion using natural resources, the decision to use the engineering infrastructure in the countryside, business development and entrepreneurship. The task of social stability and raising the country depends on the need to implement a comprehensive territorial development strategy. Taking into account the existing regional development strategiesand appropriate strategic assessment of agriculture, it is needed to expand the development of agricultural infrastructure in rural areas and industrial infrastructural development of the regional system in the investment of enterprises and sectors of the economy. As well as it is important tostrengthening spatial location of industrialization maps and schemes of interregional trade [2].

In order to improve the production and market infrastructure and industrial infrastructure through existing mechanisms and financial support, it is crucial to taking into accounta full business infrastructure system and farming for the formulation of agricultural producers, machinery and equipment, technical support and business cooperation and processing. In general, it is planned to develop at the regional level with the participation of government agencies, business associations and organizations in the creation and delivery of agro-industrial production of complex for technical and technological production which will help for organization of competitive agricultural production and develop modern agricultural production. The specifics of agricultural production are in the development of rural infrastructure and the development of a multi-regional and international optimal production capacity which is based on the development of competitive and market-oriented domestic agricultural sectors. The development of these sectors, along with the unemployment problem in the region, will bea needed solution for socio-economic issues [3].

In accordance with the needs of agricultural enterprises, in the context of a reasonable professional orientation, the labor market should be enhanced to increase the involvement of the most active population and youth in economic activities which increases a work in relevant occupations and industries, and creation of decent working conditions in rural areas [4].

The strategy of diversification of agricultural production in addressing socio-economic problems of agriculture is based on a number of key features of services, which is related to the specific services of competitors. For successful implementation of this strategy, the enterprise determines available services to identify consumers needs and changes need to be made to meet consumers' satisfaction with their consumption. Such diversification will help a company to increase its profitability and will play a role in addressing socio-economic issues by increasing service and production volumes. The following requirements must be met for diversification of production and services:

- to produce high-quality products and increase the productivity of agricultural products, it is necessary qualitive specialists and provide with needed material-technical base;
- the need for new modern and effective technologies for agricultural production and transformation;
- increase the demand for supplementary business services, technical, communication, transportation possibilities;
- timely responding to management and technical staff’ knowledge, experience and skills as well as customer’ feedback and comments;
- postponing collateral obligations to customers, provide various discounts and payment method for a their work which can be also performed in the form of a loan.

In fulfilling these requirements, there is a demand for engineering technical personnel with the technical and technical staff at an enterprise when performing a large number of services. For this purpose, it is extremly needed to increase the possibility of attracting highly-qualified specialists, including the involvement of qualified specialists from nearby districts, villages, cities [5].

In performing the early market access to the services market, the service provider will be able to provide a competitive advantage that will increase its profit, reach the fastest growth rate. Depending on the specifications of the goods market, it is necessary to enter the market of new goods on the basis of innovation. The competitive advantage will be the opportunity to become a leader in long term strategy.

The ability of agricultural enterprises to meet certain needs of basic production forms the demand for production services. The demand for agricultural production services depends on the following factors: 1) the income level of material production; 2) the possibility of moving between production facilities used; 3) the number of enterprises engaged in the production of material goods; 4) the desire for news. Therefore, a competitive person in agriculture should take into account these factors. The public expenditure of agricultural enterprises forms the supply of production services, the number of services that can be marketed at the current prices. The demand for the consumer market in the production services market is a reason for the supply. The actual production activity offers a variety of flexibility. The main purpose of this is the law of the rarity and limitations of resources, but other factors can also be affected. Manufacturing services may vary depending on the following factors: 1) cost of economic resources; 2) level of technological development of industrial infrastructure enterprises; 3) the number of enterprises in

this area; 4) presence of factors stimulating entrepreneurial activity; 5) waiting for news. In addition, the structure of the organization of agricultural production infrastructure is purposefully focused on the functional, sectoral, spatial, organizational, managerial, periodic and social relations. The service structure in agriculture should ensure that production activities are carried out in accordance with the stages of production and commercial activities of the business entity. The branch structure organizes material and technical base with the types of production services in accordance with the division of the social work, based on the needs of business entities. The spatial structure reflects the location of the production infrastructure elements and the regional use of production services. Organizational and administrative structure describes the administrative and economic structure. The periodicity structure describes the efficient use of external or internal production infrastructure for a different period of time. For example, according to experts, transport services of external organizations will be more expensive by 20% in the first two years following the acquisition of own vehicles. However, in two years from the start of the car, in some cases, it is sometimes advantageous to purchase the services from specialized enterprises, as repair costs are usually higher than the cost of that service.

The social structure of workers is based on knowledge, income levels, etc. The structure shows the structure. As a result of the dialectical interaction of all aspects of the structural organization of industrial infrastructure in agriculture, it is a set of various economic contacts with a business entity. The internal organization of the production infrastructure system is a set of services and their relationships (relationships). One element of the system can be replaced by its internal features. However, in this case, the functional properties of the element remain the same, that is, there is no change in the structure [6]. The relationship between the structure of the production infrastructure and the functionality of the system can be characterized as follows: the more diverse industrial infrastructure is its functional capabilities. If the target function of the production infrastructure determines general (internal and external) conditions as the provision of technological process conditions, the technological process of the business entity will be determined by a set of subsidiary service providers. If we define the target function as the general condition of the entire enterprise, the internal organization of the production infrastructure will expand and traditional components will be complemented by industries that need market-based.

By raising the level of agricultural specialization in the country, we will not only solve the problem of agriculture, but will also be responsible for the development of the industry in the country as well as decreasing unemployment rate. For example, although we have an opportunity to grow fruits and cereals, our country still import these products from Uzbekistan and Tajikistan and elsewhere. Eventhoughthere are a huge chance for livestock breeding capacities in the country, we still can not enter the ranks of a high productivity of livestock countries. For example, India, Brazil, the United States, China, Russia and other countries are specialized in breeding cattle. Accordingly, among the countries that specialize in producing meat, these countries are included also. In this advanced experience, specialization in the development of production services in the agrarian market economy is a crucial component of the production of agricultural products.

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АУЫЛ ШАРУАШЫЛЫҒЫН ДАМЫТУЕЛІМІЗДІҢ ЭКОНОМИКАЛЫҚ ЖӘНЕ ӘЛЕУМЕТТІК-САЯСИ ТҰРАҚТЫЛЫҒЫНЫҢ ШЕШУШІ ФАКТОРЫ

Аннотация. Мақалада ауыл шаруашылығын дамыту еліміздің экономикалық және әлеуметтік-саяси тұрақтылығының шешуші факторы ретіндегі маңызын, қажеттілігі мен дамыту жолдарын ұсынған.Еліміз 30

бәсекелі елдердің қатарына кіруге ұмтылуы және Әлемдік Сауда Ұйымына кіруі, Еуразиялық Одаққа мүшелікке енуі ауыл шаруашылығына үлкен міндетті жүктеп отыр. Ауыл шаруашылығы елімізде тек өндірісті шикізатпен ғана қамтамасыз етуді жүзеге асырмайды, сонымен қатар еліміздің тұрақты экономикалық дамуымен қатар әлеуметтік мәселелерінде шешуде рөлі жоғары. Сондықтан ауыл шаруашылығына қажетті озық технологиялармен материалдық-техникалық базаны жаңартып отыруы қажет.Ауыл шаруашылығы өндіріс жүйесі қазіргі ұйымдастыру-басқару құрылымы өндірістік қызметтің көптеген түрлері мен нысандарынан қалыптасқан. Ауыл шаруашылығы техника мен мал шаруашылығы фермаларының жабдықтарын жөндеу және техникалық қызмет көрсету, материалдық техникалық жабдықтау, көліктік қызмет көрсету, ауылдағы агрохимиялық және малдәрігерлік қызмет, егін шаруашылығы жұмыстарын жүргізу барысында түрлі қозғалмалы механикаландырылған топтармен жұмыс жүргізу, агрокұрылымдарға өндірістік қызмет көрсету. Қазіргі уақытта берілген құрылымдарда сандық және сапалық өзгерулердің болуын атап айтқанда, жөндеу техникалық кәсіпорындардың қозғалмалы механикалық бөлімшелерінің және агроөнеркәсіп кешенінің инфрақұрылымдың өндірістік бөлімшелерінің негізінде коммерциялық негізде шаруашылықтарға қызмет көрсететін кең ауқымды жұмыс атқаратын машина-технологиялық бекеттерде құрылуда. Аталған өндірістік қызметтердің көптүрлілігі еліміздің экономикалық және әлеуметтік-саяси тұрақтылығында, атап айтқанда жұмыссыздық мәселесін шешудеде үлес қосуда.

Түйін сөздер: Ауыл шаруашылығының экономиканың негізгі саласы ретіндегі дамуы азық-түлік қауіпсіздігін қамтамасыз етуге және экспорттың ауқымын кеңейтуде және аймақтағы жұмыссыздық мәселесімен қоса, әлеуметтік-экономикалық мәселелерді шешуші рөлге ие.

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РАЗВИТИЕ СЕЛЬСКОЙ ПРОМЫШЛЕННОСТИ КАК ФАКТОР ЭКОНОМИЧЕСКОЙ И СОЦИАЛЬНО-ПОЛИТИЧЕСКОЙ УСТОЙЧИВОСТИ СТРАНЫ

Аннотация. В статье рассматривается развитие сельского хозяйства как ключевой фактор экономической и социально-политической стабильности страны и пути их развития. Наша страна планирует в вступлению в 30 наиболее конкурентоспособных стран,вступила в Всемирную торговую организацию и в Евразийский союз. Сельское хозяйство не только обеспечивает производство сырья в стране, но и играет важную роль в решении социальных проблем наряду с устойчивым экономическим развитием страны. Поэтому необходимо модернизировать материально-техническую базу передовыми технологиями, необходимыми для сельского хозяйства. Нынешняя структура системы сельскохозяйственного производства основана на многих формах и формах производственной деятельности. Ремонт и техническое обслуживание сельхозтехники и оборудования для животноводства, логистики, транспортных услуг, агрохимических и ветеринарных служб в селе, работа с различными движущимися механизированными группами в сельскохозяйственных работах, производственные услуги для агроформирования. В настоящее время в этих структурах происходят количественные и качественные изменения, в частности, ремонт строится на большом количестве машинно-технологических станций на коммерческой основе на основе движущихся механических узлов технических предприятий и промышленных производств агропромышленного комплекса. Разнообразие этих производственных услуг способствует экономической и социально-политической стабильности в стране, в частности, проблемы безработицы.

Ключевые слова. Развитие сельского хозяйства как основного сектора экономики играет решающую роль в обеспечении продовольственной безопасности и расширении экспорта, а также социально-экономических проблем, включая проблему безработицы в регионе.

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MODELING THE ALLOCATION OF SOURCES OF FUNDING IN BANKS

Abstact. Funding in banks has a significant role, since, unlike companies, banks are 90 percent functioning at the expense of borrowed funds. On this basis, the attracted resources are the main source of funding for the activities of second-tier banks. Moreover, when redistributing funds in a bank, namely directing certain attracted resources to active operations, the order of this redistribution is important. That is, what raised funds should be used as sources of funding for certain active operations of banks.

The solution of this kind of problem in banks is possible with the use of linear and dynamic programming. The article presents an example of the use of mathematical statistics to determine the optimization of the allocation of funding for relevant active operations that can bring profit to the bank.

Keywords: funding in banks, linear programming, profit maximization, sources of funding.

Introduction. The traditional distinctive feature of banking is the purchase and retention of assets with a longer maturity and lower liquidity than their liabilities. Solving the problem of bank funding is an important example of a precautionary motive for maintaining liquidity. The rates that banks offer loans to individuals and legal entities, partly depend on the cost of funding. Banks in determining the cost of funding also take into account the liquidity risk associated with the financing of long-term assets with short-term liabilities.

Banks receive financing from four main sources: retail deposits, corporate deposits, debt securities issued and capital. More than a third of the funding of large banks accounted for deposits of individuals. Another third is accounted for by corporate deposits. Short-term and long-term loans constitute a large part of the remaining third of funding sources.

Attracting funds is only the first part of the problem of banks. The main task arises in their effective allocation to the implementation of active banking operations that generate income.

Literature review. Effective use and management of attracted financial resources is a key aspect of building a strategy for any bank. The system of financial resources management is aimed at optimizing the structure of assets and liabilities in terms of their urgency, quality and price characteristics, as well as the prevention of losses in the process of activity [1]. In this regard, modern second-tier banks focus on the use of modeling tools, analysis, quality assessment, rational use of attracted resources [2]. Some authors propose to use simulation modeling since funding considers the tasks of managing financial resources of a banking institution [3]. This approach allows us to take into account a large number of analyzed variables and a high level of uncertainty of simulated situations, as well as to reduce the complexity of mathematical analysis of dependencies.

A.I. Veselov in his work considers the use of mathematical modeling to build a matrix of funding in banks [4].

Effective banking funding T.N. Ivaschenko compares with the productivity of labor in the economy. As the main sources of funding, the author proposes the issuance of Eurobonds and the conduct of IPO by banks. Eurobond issuance, the author indicates, is the prerogative of a long term and lower interest rates [5]. At present, the international bond market dominates (80-90%) belongs to eurobonds. At the same time, there is a possibility for banks to issue various types of short-term and long-term debt obligations [6].

The study by Dimitriu M.C., Oaca S.C. recognizes the importance of developing a model that can be empirically tested to increase the efficiency of the funding process in banks. In fact, it is a mixed methodological approach that allows you to use the advantages of both qualitative and quantitative methods. Since the effectiveness of the transfer pricing model depends on various economic conditions and cannot be universal, the study uses a variety of qualitative data to ensure the use of the most appropriate structure [7].

Selyutin V.V. and Rudenko M.A. they used an approach to mathematical modeling of cash flow in bank assets and liabilities based on partial differential equations. This approach reflects the process of changing assets over time and at the "age" [8].

Faure and Gersbach are exploring the factors affecting the creation of money by banks. So, when prices are tight, the monetary system collapses, and capital requirements can restore the existence of equilibria with finite money creation, and in some cases can even realize the first best distribution [9]. A.P. Salina tested the Altman model on Kazakhstan banks [10].

Research methods. In order to optimize the distribution of funding in banks, we applied the methods of linear and dynamic programming. The use of combinatorial optimization allows you to determine the direction of distribution of funds, and the Bellman model makes it possible to determine the optimal amounts that need to be sent to fund relevant active bank operations.

The task of linear programming can be represented as the following objective functions and constraints [11]:

$$\sum_{i\in A}\sum_{j\in T} C(i,j)x_{ij}$$

$$\sum_{i\in A} x_{ij} = 1 \text{ для } j \in T$$

$$\sum_{j\in T} x_{ij} = 1 \text{ для } i \in A$$

$$x_{ij} \geq 0 \text{ для } i,j \in A,T$$

Where x_{ij} – purpose of funding the i-th attracted resource for the j-th active operation of the bank.

It should be noted that x_{ij} takes the value 1 if the attracted resource is assigned to fund the corresponding active operation and 0 otherwise.

The meaning of the Bellman model is as follows. If the i-th system is currently in the S_{i-1} state at the beginning of the stage, then all subsequent resource allocations xi are selected to be optimal with respect to the state of S_i. Thus, with such distributions, funding efficiency is maximized at subsequent stages i + 1, i + 2, ..., N before the formation of the optimization process:

$$E_i = \sum_{i=1}^{N} f_j\,(S_i, x_{i+1})$$

Each transition from the state of S_i to the next is characterized by a cost function at the current stage d_{i+1} (S_i, x_{i+1}), which depends on both S_i and the time period and the applied resource allocation. Therefore, it is necessary to determine the optimal distribution of the resource x^*_i, which will ensure the optimal effect of the distribution of funds, i.e.:

$$E_i^*(S_{i-1}) = \max\,(F(S_{i-1}, x_i) + E_{i+1}^*(S_i))$$

The presented equation is the basic recurrent equation of Richard Bellman [12].

Results. Table 1 presents the options for return on investment of the respective attracted funding funds. Projects involve investments in relevant assets for profit. It is required to determine the optimal distribution of investment funding, which allows to maximize profits.

Table 1 - data on profitability when using the appropriate resources

Resource	Project 1	Project 2	Project 3	Project 4	Project 5	Project 6
Deposits	10,1	11,2	7,8	6,4	9,2	10,2
Wholesale deposits	12,3	15,1	10,3	11,1	13,0	11,2
Interbank loans	10,4	11,0	9,21	12,1	9,3	9,9
Bonds	9,8	11,3	12,0	9,0	8,7	8,9
International Bonds	8,8	9,4	10,11	11,12	12,1	9,1

Based on the available data, it can be noted that the mathematical model of the problem will be reduced to the following restrictions:

Restrictions on funding resources:

$x_{11} + x_{12} + x_{13} + x_{14} + x_{15} + x_{16} = 1$

$x_{21} + x_{22} + x_{23} + x_{24} + x_{25} + x_{26} = 1$

$x_{31} + x_{32} + x_{33} + x_{34} + x_{35} + x_{36} = 1$

$x_{41} + x_{42} + x_{43} + x_{44} + x_{45} + x_{46} = 1$

$x_{51} + x_{52} + x_{53} + x_{54} + x_{55} + x_{56} = 1$

Restrictions on projects (investments in assets):

$x_{11} + x_{21} + x_{31} + x_{41} + x_{51} = 1$

$x_{12} + x_{22} + x_{32} + x_{42} + x_{52} = 1$

$x_{13} + x_{23} + x_{33} + x_{43} + x_{53} = 1$

$x_{14} + x_{24} + x_{34} + x_{44} + x_{54} = 1$

$x_{15} + x_{25} + x_{35} + x_{45} + x_{55} = 1$

$x_{16} + x_{26} + x_{36} + x_{46} + x_{56} = 1$

Given that the goal is to maximize profitability, the objective function will take the following form:

$10,1x_{11} + 11,2x_{12} + 7,8x_{13} + 6,4x_{14} + 9,2x_{15} + 10,2x_{16} + 12,3x_{21} + 15,1x_{22} + 10,3x_{23} + 11,1x_{24} + 13,0x_{25} + 11,2x_{26} + 10,4x_{31} + 11,0x_{32} + 9,21x_{33} + 12,1x_{34} + 9,3x_{35} + 9,9x_{36} + 9,8x_{41} + 11,3x_{42} + 12,0x_{43} + 9,0x_{44} + 8,7x_{45} + 8,9x_{46} + 8,8x_{51} + 9,4x_{52} + 10,11x_{53} + 11,12x_{54} + 12,1x_{55} + 9,1x_{56} \rightarrow \max$

The initial matrix (data of table 1) is modified by multiplying all its elements by (-1) and then adding them with the maximum element of the matrix. At the same time, the modified matrix should not contain negative elements:

$$\begin{bmatrix} 5 & 3,9 & 7,3 & 8,7 & 5,9 & 4,9 \\ 2,8 & 0 & 4,8 & 4 & 2,1 & 3,9 \\ 4,7 & 4,1 & 5,89 & 3 & 5,8 & 5,2 \\ 5,3 & 3,8 & 3,1 & 6,1 & 6,4 & 6,2 \\ 6,3 & 5,7 & 4,99 & 3,98 & 3 & 6 \end{bmatrix}$$

Now we will reduce the matrix in rows. For this, at least one zero will appear in the previous matrix. Then we perform a similar reduction along the columns of the matrix. In each column we define the minimum element. After subtracting the data of the minimum elements, we obtain a fully reduced matrix:

1,1	0	3,4	4,8	2	1
2,8	0	4,8	4	2,1	3,9
1,7	1,1	2,89	0	2,8	2,2
2,2	0,7	0	3	3,3	3,1
3,3	2,7	1,99	0,98	0	3
0	0	0	0	0	0
0	**0**	**0**	**0**	**0**	**0**

We carry out a search for a feasible solution by trial and error, in which all assignments are with zero cost. To do this, we fix the value (1; 2), and remove the remaining zeros in column 2 and line 1, that is, eliminate zeroes in the cells (2; 2) and (6; 2). As a result, we obtain a matrix of the following form:

1,1	**[0]**	3,4	4,8	2	1
2,8	[-0-]	4,8	4	2,1	3,9
1,7	1,1	2,89	0	2,8	2,2
2,2	0,7	0	3	3,3	3,1
3,3	2,7	1,99	0,98	0	3
0	[-0-]	0	0	0	0

Since there is no possibility to create a system of six independent zeros in the resulting matrix, since there is only 1 zero in the matrix, the solution is invalid. Similarly, we carry out the modification of the matrix to obtain the optimal matrix, which will allow us to calculate the optimal value of profitability with an appropriate distribution. Thus, the final matrix will look like this:

0,1	[-0-]	3,4	3,8	1	**[0]**
1,8	**[0]**	4,8	3	1,1	2,9
1,7	2,1	3,89	**[0]**	2,8	2,2
1,2	0,7	**[0]**	2	2,3	2,1
3,3	3,7	2,99	0,98	**[0]**	3
[0]	1	1	[-0-]	[-0-]	[-0-]

Thus, the matrix shows the optimal distribution of funding for active bank operations. In particular, according to the data received, individual deposits are better directed to fund the project 6, corporate

deposits to the project 2, interbank loans to the project 4, subordinated bonds to the project 3 and international bonds to fund the project 5. With this distribution the maximum value is reached:

$$P_{max} = 10,2 + 15,1 + 12,1 + 12,0 + 12,1 = 61,5$$

Let's see what amounts should be allocated to fund the relevant active operations of the bank (projects) in order to maximize profits. Table 2 shows the possible returns from investments in the relevant projects with an investment of 4-10 million KZT of funding.

Table 2 - The distribution of funding amounts

Investment amount, ml KZT	Project 1	Project 2	Project 3	Project 4	Project 5	Project 6
4	7,3	10,2	6,8	7,4	8,2	10,0
5	8,1	11,1	10,8	11,4	12,0	12,3
6	5,6	12,1	9,5	11,2	9,7	9,9
7	8,2	11,3	12,0	9,0	8,7	8,9
8	10	11,4	12.1	10,0	11,2	10,9
9	9,2	10,4	11,8	11,9	12,3	12,1
10	12,3	11,7	11,1	10,8	12,0	12,4

We use the method of dynamic programming, namely the method of direct sweep to optimize the distribution of funding amounts. The first stage is a conditional optimization, at which i = 1. We believe that all funds in the amount of 10 million KZT are used to fund the project 1 (Table 3).

Table 3 - The conditional optimization matrix for i = 1

	x_1	0	4	5	6	7	8	9	10
x_2	$f_2(x_2) / F_1(x_1)$	0	7,1	7,3	5,8	8	11	9	11
0	0	0	7,1	7,3	5,8	8	11	9	11
4	7,3	7,3*	14,4*	14,6	13,1	15,3*	18,3*	16,3	
5	8,1	8,1	15,2*	15,4*	13,9	16,1	19,1*		
6	5,6	5,6	12,7	12,9	11,4	13,6			
7	8,2	8,2	15,3	15,5	14				
8	10	10	17,1	17,3					
9	9,2	9,2	16,3						
10	12,3	12,3							

In table 3, on each diagonal we determine the highest value (marked with an asterisk) and enter them into the table of values (table 4).

Table 4 - Conditional Optimization Values

S_1	0	4	5	6	7	8	9	10
$F_2(S_1)$	0	7,3	14,4	15,2	15,4	15,3	18,3	19,1
x_1	0	4	4	5	5	4	4	5

In the next stage i = 2. Let us determine the optimal distribution of funding between projects 1 and 2. In this case, the Bellman's recurrence relation will have the following form:

$$F_2(S_2) = \max\,(x_2 \le S_2)(g_2(x_2) + F_1(S_2 - x_2))$$

With this ratio, the conditional optimization matrix will have the following form (Table 5).

Table 5 - The conditional optimization matrix for i = 2

	x_2	0	4	5	6	7	8	9	10
x_3	$f_3(x_3) / F_2(x_2)$	0	7,3	14,4	15,2	15,4	15,3	18,3	19,1
0	0	0	7,3*	14,4*	15,2	15,4	15,3	18,3	19,1
4	7	7	14,3	21,4*	22,2*	22,4	22,3	25,3*	
5	6	6	13,3	20,4	21,2	21,4	21,3		
6	8	8	15,3	22,4*	23,2	23,4			
7	9	9	16,3	23,4*	24,2				
8	9,8	9,8	17,1	24,2					
9	6,7	6,7	14						
10	10	10							

Similarly, as in the first stage of conditional optimization, we determine the maximum values along the matrix diagonals. Similarly, we determine at each stage of the conditional optimization, we enter the data in table 6.

Table 6 - Conditional Optimization Values

S_2	0	4	5	6	7	8	9	10
$F_3(S_2)$	0	7,3	14,4	21,4	22,2	22,4	23,4	25,3
x_2	0	1	0	4	4	6	7	4
S_3	0	4	5	6	7	8	9	10
$F_4(S_3)$	0	7,3	14,4	21,4	28,2	29	30,4	31,2
x_3	0	0	1	0	4	4	6	6
S_4	0	4	5	6	7	8	9	10
$F_5(S_4)$	0	7,3	14,5	21,6	28,6	35,4	36,3	37,6
x_4	0	0	4	4	2	4	5	4
S_5	0	4	5	6	7	8	9	10
$F_6(S_5)$								43,3
x_5	0	4	5	6	7	8	9	3

With appropriate distributions, the Bellman ratios will have the following form, respectively, at each stage:

$$F_3(S_3) = \max\,(x_3 \le S_3)(g_3(x_3) + F_2(S_3 - x_3))$$

$$F_4(S_4) = \max\,(x_4 \le S_4)(g_4(x_4) + F_3(S_4 - x_4))$$

$$F_5(S_5) = \max\,(x_5 \le S_5)(g_5(x_5) + F_4(S_5 - x_5))$$

We start the distribution from the end. In table 6, F_6 (S_5) with distribution of 10 million KZT provides the maximum value equal to 43.3. It turns out that the funding of the project 6 should be allocated 3 million KZT. The remaining amount will be:

10 - 3 = 7 million KZT

Now we will consider F_5 (S_4) with the distribution of the remaining 7 million KZT, the maximum value will be 28.6. It means that 2 million KZT should be allocated for funding project 5. Similarly, we consider all the results in table 6. As a result, funding for project 4 will be 1 million KZT, project 3 - 1 million KZT. On funding projects 1-3 remains 3 million KZT. According to the data received, it is proposed to maximize the return on the entire amount to fund the project 1.

Thus, the optimal allocation of the funding amount of 10 million KZT will be as follows:

Project 1	3 million KZT
Project 2	0 million KZT
Project 3	1 million KZT
Project 4	1 million KZT
Project 5	2 million KZT
Project 6	3 million KZT

Findings. Considering the previous calculations, we obtain the following results. Individual deposits in the amount of 3 million should be directed to fund active operations of the project 6. Interbank loans can fund project 4 operations in the amount of 1 million KZT, subordinated bonds fund project 3 operations in the amount of 1 million KZT, international bonds - project 5 operations in the amount 2 million KZT. The remaining funds in the amount of 3 million KZT (corporate deposits) should be directed to fund the project 6. As a result of this distribution, an optimal distribution of funds in the amount of 10 million KZT is achieved.

It should be noted that the tasks of this nature the bank should consider the sequence of actions and sources of funding. This mechanism can be used in banks for rational funding.

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БАНКТЕРДЕ ҚОРЛАНДЫРУ КӨЗДЕРІН БӨЛУДІ МОДЕЛЬДЕУ

Аннотация. Банктерде қорландыру маңызды рөлге ие, себебі компанияларға қарағанда банктер тартылған қаражат есебінен 90 пайызға жұмыс істейді. Осыған орай, тартылған ресурстар екінші деңгейдегі банктердің қызметін қорландырудың негізгі көзі болып табылады. Бұдан басқа, банкте қаражаттарды қайта бөлу, атап айтқанда белгілі бір тартылған ресурстарды активті орналастыру кезінде осы қайта бөлу тәртібі маңызды мәнге ие болады. Яғни қандай тартылған қаражаттарды банктердің белгілі бір активті операцияларын қорландыру көздері ретінде пайдалану қажет.

Банктегі міндеттердің осы түрін сызықтық және динамикалық бағдарламалау арқылы шешу мүмкін. Мақалада банкке пайда әкелетін тиісті активті операцияларға қорландыруды бөлуді оңтайландыру үшін математикалық статистика әдістерін қолдану мысалы берілген.

Түйін сөздер: банктерде қорландыру, сызықты бағдарламалау, пайданы жоғарылату, қорландыру көздері.

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МОДЕЛИРОВАНИЕ РАСПРЕДЕЛЕНИЯ ИСТОЧНИКОВ ФОНДИРОВАНИЯ В БАНКАХ

Аннотация. Фондирование в банках имеет значимую роль, поскольку в отличие от компаний банки на 90 процентов функционируют за счет привлеченных средств. Исходя из этого, привлеченные ресурсы являются основным источником фондирования деятельности банков второго уровня. Более того, при перераспределении средств в банке, а именно направлении определенных привлеченных ресурсов на активные операции важное

значение имеет порядок данного перераспределения. То есть какие привлеченные средства необходимо использовать в качестве источников фондирования определенных активных операций банков.

Решение данного рода задачи в банках возможно с применением линейного и динамического программирования. В статье представлен пример использования методов математической статистики для определения оптимизации распределения фондирования на соответствующие активные операции, способные принести банку прибыль.

Ключевые слова: фондирование в банках, линейное программирование, максимизация прибыли, источники фондирования.

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INNOVATIVE APPROACH IN THE FINANCIAL SPHERE IN THE CONDITIONS OF GLOBALIZATION OF ECONOMY

Abstract. In our time, there is a financial and economic globalization, which represents the internationalization of production, capital and information at a fundamentally new qualitative level, accompanied by an adequate change in economic relations. Finance has been the most affected by the globalization process. The introduction of innovations will allow banks to optimally allocate their resources, minimize costs, improve the delivery channels of banking products to the consumer, improve the quality of the services offered and thereby increase the efficiency of banking activities, and also ensure the growth of competitiveness of the bank in the financial market. At the same time, according to the authors, the new technologies provide the degrees of freedom and choice that were not previously available to the bank's customers - convenience (speed, control and independence).

Keywords: finance, innovation, banking, services, startup, banking, globalization.

INTRODUCTION

According to experts, recently the number of participants in the financial market has increased markedly, which means that competition has become tougher and new ways of fighting for the client have become relevant. Due to its scale and mobility, the global financial market has become a regulator of the effectiveness of national economies, automatically discriminating those that are uncompetitive at this stage, for example, when the national currency depreciates or due to rising interest rates. The globalization of financial markets is expressed not only in the rapid growth of the total volume of international securities transactions, but also in the emergence in recent years of more and more new varieties of these securities.

MAIN PART

Financial globalization is manifested in the deepening of monetary relations between countries, the liberalization of prices and investment flows, the creation of global transnational groups and financial centers. An obvious advantage of financial globalization is the growing competition among financial market participants, which encourages them to offer modern services, as well as attract new members and issuers.

The globalization of economic activity is developing in the following main areas:

1. Synchronization of the development of the economy of various countries in individual links of the global financial and economic system.
2. Continuous innovation on a global scale.
3. The increase in the volume of international financial transactions, with a daily turnover, measured in tens of trillions of dollars.
4. Instant "transfers" of powerful capital flows from one continent to another, taking into account the difference between the rates of profit in different countries.
5. The rapid development of foreign exchange markets. The daily volume of foreign exchange transactions in the world exceeds $ 1 trillion. Of these, less than 10% of transactions are related to international trade in goods and services.

6. Acceleration of concentration processes under the influence of such factors as obtaining a synergy effect and increasing profits.

Changes in financial markets are characterized by processes designated as globalization, securitization, innovation, and computerization. Further development of the financial services market will largely depend on the following circumstances: customer satisfaction with the services received; customer relationships with employees of service providers; degrees of professional skills of the management personnel of these institutions; development of software and information support services and production of technical means; marketing financial services.

We give the definition of financial innovation. Financial innovation is the result of the process of creating new financial methods, tools, types of operations, payment systems and techniques that improve the functioning of financial institutions; acceleration of financial flows; improvement of financing of the provided expenses; reducing risks and costs; accelerate financial transactions; improve business performance.

In the area of corporate finance, there is often a need for innovation to create new capital protection tools when conducting large-scale business operations. Very often, either the nature of financing or cost considerations require the search for a special tool or a combination of shared tools with a set of special properties.

However, the rhythm of modern life, the penetration of modern technologies into it, leads to the fact that business people ("generations X and Y") are less and less willing to interact with the bank in direct access (through branches).

At the same time, new technologies provide the degrees of freedom and choice that were not previously available to the bank's customers — convenience (speed, anytime, anywhere), speed, control, and independence.

Therefore, the most promising area of retail customer service for a bank in the near future will be the development of a network of fully automated bank branches (for example, including Cash Recycling ATMs, terminals, deposit ATMs, currency exchange machines, etc.), which should be small in size and located in places where people are in large numbers.

The traditional branch should turn into a consultant for the sale of complex banking products (mortgage loan, private banking, opening a current or new deposit account). Less complex products and transactions that do not require high involvement of a bank employee will move to more efficient channels - internet banking, call centers and IVR technologies, smart phones and communicators, mobile phones, e-wallets, micropayments with a set limit card.

The current global banking market is structured as a regular pyramid: with a broad segment of the economy class, a significant proportion of the standard segment and a small part of the premium segment. In the near future, experts say, only the economy and premium segments will remain. At the same time, the premium share will traditionally be small, which means that the economy segment will be of particular importance for customers. And banks will need to create intelligent software so that economy-class clients can easily manage their business operations. This means that banks should now provide clients (among them many unqualified investors) with such tools that will allow them to improve financial skills and learn to make independent investment decisions. For example, according to experts, the client interface of mobile devices should be so convenient as to allow making financial transactions a part of the client's daily life.

In the economy segment, the bank should be constantly available on customers' mobile phones, which can thus keep records of their financial flows. So far, not all banks, especially large ones, succeed. But even those who have a strategic understanding of the need to provide personalized service, practically do not have the quality tools for collecting and analyzing the information necessary for this. At the same time, some startups today know their customers better than banks, experts say.

Consider more innovations in the banking sector.

Internet banking allows you to perform various banking operations when you have Internet access. With the help of Internet banking, you can check your account balance, replenish your phone account, transfer money to another card, receive loans, etc. And all these operations can be performed online, in your account on the bank's website or in a smartphone application.

Clients increasingly value the convenience of accessing banking services anywhere at any time. Statistics show that about 21% of Kazakhstanis use a mobile bank.

Therefore, at present, the use of Internet banking is quite promising. Many large banks (for example, Kaspibank, Fortebank, etc.) are increasingly developing this system, which helps them to communicate with customers via the Internet. Banks are developing customer-friendly mobile applications.

Interestingly, people who have used Internet banking for more than 3 years often perform more transactions through such a system (see Figure 1). This is probably due to the emergence of confidence in Internet banking and an understanding of how much it saves their time.

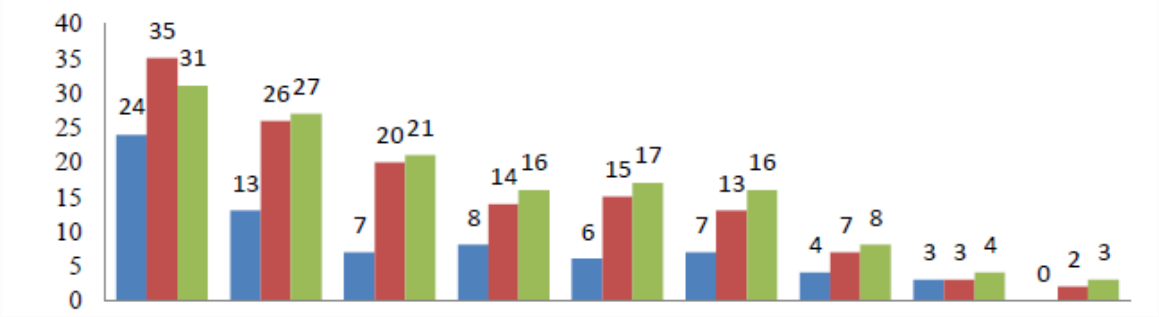

Figure 1 - Market for Internet banking services in Kazakhstan

It follows from the above that the market of banking Internet services in Kazakhstan is rapidly developing and in the coming years the volume of supply of Internet banking services in the market of services will grow at least twice. Customers expect their bank to act as an experienced coach in all their financial affairs. Over time, banks will have to take on this role - and sort out the new needs of their customers.

Currently, almost every person has a smartphone, and in this regard, banks have decided to expand opportunities for their owners. Not so long ago, a new payment method emerged - “touch the reader or phone with a new contactless card”, says the official site of MasterCard. NFC technology prompted banks to such an idea. According to a Juniper survey, by the end of 2019, about 516 million consumers will pay for purchases using contactless technology. In addition, the NFC chip can be installed in a watch, phone or card. When using the card, there will be no problems with ATMs when they “eat up” the card. [2].

Perhaps in the near future in the banking sector will appear biometric identification of customers. Nowadays, phones that have functions based on fingerprints are increasingly being developed and improved. It is possible that banks will also find something attractive in such technology. For example, instead of entering a PIN code, you will need to put a finger on the sensor and the purchase will be paid. Then you will not need to carry identity documents. You can already see examples of the use of such technology.

The use of such technologies will help in accelerating work with clients and making banking transactions. Also, most likely, plastic cards will leave the market and it will be possible to pay with the phone or with the advanced technology of biometric identification it will be possible to pay with a finger without any card.

For banks, this project with biometric identification will cost very little, since it is enough for them to provide ATMs with such a system and set conditions for the bank to switch to a new system. First, such a system will be combined with a bank card, and then the cards will leave. The shops themselves buy devices that read bank cards, so that the provision of shops with these devices will no longer concern banks. To run this project you only need to change the identification system and make some changes to the program. On the other hand, society is not yet ready for such changes, since the fingerprint reading on the smartphone appeared not so long ago. But banks can launch this innovation at any time and this will be its advantage.

As one of the innovations, you can offer a structured deposit, which is quite a profitable option for a significant part of the population who wish to invest their money profitably without a high risk.

According to this deposit, banks also guarantee a 100% money back guarantee, despite the high profitability of this deposit.

It is called structured because the funds raised are further divided into two parts for further investment. One part, in the amount of 80-90%, is invested in instruments whose yield is stable and fixed (bills of exchange, bonds, etc.). The income from them will cover the remaining 10-20% of the initial contribution. Thus, one hundred percent return of funds to the depositor is guaranteed.

The remaining 10-20% of the bank invests in riskier instruments, but at the same time more profitable, such as options. However, in this case, the bank may not receive an option premium if the latter is not exercised. Structured deposit can be described as the possibility of obtaining a higher income in the complete absence of the risks of losing initial investments.

Therefore, it is very attractive for customers who want to minimize their risks when investing their funds, but at the same time want to ensure a higher return on them.

CONCLUSION

Now not only banks and investment companies have begun to play an active role in the financial world. Numerous small financial institutions entered this market by spending relatively small amounts on computer applications and making new, innovative proposals for customers. Many of these startups are funded by venture capital. They are willing to accept the risk that some of their products will fail. And this allows them to innovate much more aggressively. Commercial banks, on their part, cannot afford to offer customers products that are not time tested, not tested by the market and, therefore, from the point of view of regulators, they cannot function properly. Many innovative banks and financial companies, using modern technology, focus on young people, those who are now 15 to 30 years old. It is known that these people are prone to new media projects. Modern websites require a large number of graphic elements, and the creation of this, as a rule, is not cheap. But sooner or later, banks will still have to find a way to create so-called "emotional" sites. By the way, many advanced financial structures have not only the official website, which speaks clearly and informatively about services and products, but also its own social network page (and sometimes in several social networks), with the help of which the bank seeks to become closer and more understandable to customers.

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ЭКОНОМИКАНЫ ЖАҢАНДАНУ ЖАҒДАЙЫНДАҒЫ ҚАРЖЫЛЫҚ САЛАСЫНДАҒЫ ИННОВАЦИЯЛЫҚ БАҒЫТТАР

Аннотация. Біздің заманымызда, экономикалық қатынастардың барабар өзгеруімен қатар жүретін, түбегейлі жаңа сапалық деңгейде өндірісті, капиталды және ақпаратты интернационалдандыруды білдіретін қаржылық және экономикалық жаһандандыру бар. Қаржы жаһандану үдерісіне ең көп әсер етті. Инновацияларды енгізу банктерге өз ресурстарын оңтайлы түрде бөлуге, шығынды азайтуға, банк өнімдерін тұтынушыларға жеткізу арналарын жақсартуға, ұсынылатын қызметтердің сапасын жақсартуға, осылайша банк қызметінің тиімділігін арттыруға, сондай-ақ банктің қаржы нарығындағы бәсекеге қабілеттілігін арттыруға мүмкіндік береді. Сонымен қатар, авторлардың пікірінше, жаңа технологиялар банктің клиенттеріне бұрын қол жетпейтін еркіндік пен таңдау дәрежесін береді - ыңғайлылық (жылдамдық, бақылау және тәуелсіздік).

Түйін сөздер: қаржы, инновация, банк, қызмет, стартап, банк, жаһандану.

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ИННОВАЦИОННЫЙ ПОДХОД В ФИНАНСОВОЙ СФЕРЕ В УСЛОВИЯХ ГЛОБАЛИЗАЦИИ ЭКОНОМИКИ

Аннотация. В наше время происходит финансово-экономическая глобализация, представляющая собой интернационализацию производства, капитала и информации на принципиально новом качественном уровне, сопровождающаяся адекватным изменением хозяйственных отношений. Сфера финансов оказалась в

наибольшей мере затронута процессом глобализации. Внедрение инноваций позволит банкам оптимально распределять свои ресурсы, минимизировать издержки, совершенствовать каналы доставки банковских продуктов до потребителя, улучшать качество предлагаемых услуг и тем самым повышать эффективность банковской деятельности, а также обеспечивать рост конкурентоспособности банка на финансовом рынке. При этом, по мнению авторов, новые технологии обеспечивают те степени свободы и выбора, которые раньше не были доступны клиентам банка - удобство (в любое время и в любом месте нахождения), быстрота, контроль и самостоятельность.

Ключевые слова: финансы, инновации, банки, услуги, стартап, банкинг, глобализация.

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GEOPOLITICAL AND GEOECONOMIC ASPECTS OF THE KAZAKHSTAN'S FOREIGN POLICY IN THE CONDITIONS OF NEW GLOBAL REALITY

Abstract. This article discusses the geopolitical and geo-economic position of the Republic of Kazakhstan at the present stage, as well as the place of the Republic of Kazakhstan in the international arena. The authors noted the special role and place of our country at the regional and international levels. The analysis of the dynamics of foreign trade turnover and attracting investment in the domestic economy. In the conclusion of the work, conclusions were made about the need to improve Kazakhstan's foreign policy towards multi-vector approach and national security, which is achievable through scientifically-based and balanced political diplomacy.

Keywords: geopolitics, geoeconomics, international relations, foreign policy, investment, trade, national economy, world community.

The geopolitical position of the state is determined by the location and territorial combination of political forces, as well as the interrelation of these factors with the spatial organization of the political life of the society [1]. In geopolitics, traditionally stands out as the main tool of foreign policy, allowing to determine the possibilities based on the principle of geographical determinism. According to the research of specialists in the field of geopolitics, namely geography as the most invariable factor seems to be the main fundamental parameter in the foreign policy of the states of the world community.

Geopolitics in its modern interpretation is connected with the logic of international relations and foreign policy mainly in the context of ensuring the national security of the state. In the conditions of growing interdependence between the subjects of international relations in the era of globalization, the countries of the world community, regardless of the resource, human, power potential or degree of development, depend on the influence of external forces [2]. No country, no matter how powerful in military and economic terms, can cope with the complex problems of our time, apart from other countries, which can be confronted only through close international and regional cooperation. On this basis, the task of individual states is a dynamic adaptation to the new environment through the revision of the previous approaches and the development of new ones on the key problems of the country's foreign and domestic policy [3].

For Kazakhstan in the early years of independence, it was extremely important to adequately assess its economic potential, its geopolitical position on the world stage. Therefore, for our republic, which has become a full-fledged subject and actor of international relations, it has become extremely important to conduct a foreign policy that would flexibly respond to the challenges of the surrounding international system and adequately respond to them, putting national interests at the forefront [4]. Kazakhstan needed to develop new approaches in foreign policy, find effective principles and models of foreign policy behavior in rapidly changing international, geopolitical and economic conditions.

The multi-vector foreign policy of Kazakhstan should have contributed to the strengthening of sovereignty and statehood, the country's entry into the system of international relations and world economic relations [5].

Being located at the junction of the East and the West, Kazakhstan throughout almost all its history was formed as a unique social and territorial entity, constantly experiencing the impact of various cultures and synthesizing the cultural and spiritual values of different peoples and civilizations. This was greatly facilitated by the passage through its territory of one of the first transnational corridors from Asia to

Europe - the Great Silk Road [6]. At the same time, the geographical factor was organically combined with the socio-cultural one. The nomadic way of life of the Kazakh people influenced the formation of such qualities as openness, hospitality, sociability, and sensitivity to the spiritual and cultural values of other nations and nations.

All this, together, allowed Kazakhstan to determine its place in the world community, as well as the basic principles and priorities of its foreign policy. First of all, in May 1992, in the "Strategy of the formation and development of Kazakhstan as a sovereign state", the First President of the Republic of Kazakhstan N.A. Nazarbayev, the thesis that "we, naturally, advocate the development of broad ties with all other countries on the basis of international justice and partnership," laid the foundation for the multi-vector principle of the republic's foreign policy [7]. At the same time, a multilevel and a third-party approach to interaction with various foreign countries and international organizations was already outlined.

Other strategically important landmarks of Kazakhstan's foreign policy were the desire for maximum openness to the outside world, as well as readiness to ensure its national security, relying mainly on political means and tools, primarily on scientifically based and balanced political diplomacy. At the same time, Kazakhstan's interest in participating in the process of creating a collective security system was emphasized, moreover, at the level of the regional and global community and active assistance to various peacemaking efforts [8].

These approaches have justified themselves during all the years of development of the sovereign Kazakh statehood and remain relevant to this day. All this, together, opened the way for Kazakhstan to the outside world and potential partners from among international and regional institutions. In addition, it was important for the development of the national economy by attracting foreign direct investment. The main investor in recent years is the United States, which has invested more than $ 5 billion in the economy of Kazakhstan and is planning their subsequent growth. Table 1 shows the dynamics of investment by industry of Kazakhstan. According to the data, there is a steady increase in investment in the industry as a whole (from 3,069,814 in 2013 to 4,769,589 million tenge in 2017), as well as in the extractive industries (respectively: 1,769,433 and 2,960,272 million). tenge) and the manufacturing sector (686,852 and 956,165 million tenge).

Table 1 - Investments by industry of Kazakhstan, million tenge

Industries	2013	2014	2015	2016	2017
Industry - total	3 069 814	3 508 871	3 863 090	4 320 396	4 769 589
including:					
Mining and quarrying	1 769 433	1 984 974	2 296 567	2 730 134	2 960 272
including:					
coal mining and lignite	46 378	46 600	43 409	29 741	59 526
crude oil and natural gas production	1 115 634	1 389 826	1 782 656	1 904 096	2 374 467
metal ore mining	218 137	267 686	373 652	425 049	343 482
other mining industries	8 826	16 707	14 479	15 780	11 169
technical services in the field of mining industry	380 458	264 155	82 371	355 468	171 628
Manufacturing industry	686 852	728 557	825 290	877 916	956 165
Water supply; sewage system, control over the collection and distribution of waste	172 017	225 155	196 169	221 475	282 358
including:					
collection, treatment and distribution of water	134 927	179 473	143 448	155 064	219 821
sewer system	29 484	36 603	44 534	58 705	44 556
collection, treatment and disposal of waste; recycling	5 994	6 850	5 784	7 042	17 913
reclamation and other waste management services	1 612	2 229	2 403	664	68

Note - compiled according to the source: Investment and construction activities in the Republic of Kazakhstan. Statistical collection. Committee on Statistics MNE RK. - Astana. - 160 p.

In terms of mineral reserves Kazakhstan ranks 1st in the CIS in chrome ore and lead, 2nd in oil, silver, copper, manganese, zinc, nickel and phosphorus raw materials, third in gas, coal, gold and tin. Kazakhstan has significant oil and gas reserves, concentrated in the west of the country, which make it

possible to classify the republic as one of the largest oil-producing countries in the world. In foreign policy, there are problems of sharing water resources with Uzbekistan and Kyrgyzstan, incomplete demarcation of the state border with CIS countries, etc.

In the beginning. 90s Twentieth century. Kazakhstan was recognized by 111 countries of the world, and with 92 of them, diplomatic relations and trade and economic ties were established. In tab. 2 shows the dynamics of foreign trade of Kazakhstan in the context of the continents and groups of countries of the world community. In March 1992, the republic became a member of the United Nations (UN), which was the starting point for integration into the system of international relations. An important event contributing to increasing the international community's confidence in Kazakhstan was the country's rejection of the use of nuclear weapons.

Table 2 - Dynamics of foreign trade of Kazakhstan, million US dollars

	2013	2014	2015	2016	2017	2014 to 2013, %%	2015 to 2014, %%	2016 to 2015, %%	2017 to 2016, %%
Total turnover	133506,0	120755,3	76 523,5	62 113,6	78 102,9	90,4	63,4	81,2	125,7
Export	84 700,4	79 459,8	45 955,8	36 736,9	48 503,3	93,8	57,8	79,9	132,0
Import	48 805,6	41 295,5	30 567,7	25 376,7	29 599,6	84,6	74,0	83,0	116,6
Trade with the CIS countries	33 553,6	28 599,5	20 970,3	17 691,2	22 430,9	85,2	73,3	84,4	126,8
Export	10 881,5	11 052,5	7 908,3	6 327,6	8 298,9	101,6	71,6	80,0	131,2
Import	22 672,1	17 547,0	13 062,0	11 363,6	14 132,0	77,4	74,4	87,0	124,4
Trade with the EAEU countries	24 603,7	22 095,6	16 323,9	13 793,7	17 780,7	89,8	73,9	84,5	128,9
Export	5 933,6	7 155,1	5 120,3	3 930,2	5 262,5	120,6	71,6	76,8	133,9
Import	18 670,1	14 940,5	11 203,6	9 863,5	12 518,2	80,0	75,0	88,0	126,9
Trade with other countries of the world	99 952,4	92 155,8	55 553,2	44 422,4	55 672,0	92,2	60,3	80,0	125,3
Export	73 818,9	68 407,3	38 047,5	30 409,3	40 204,4	92,7	55,6	79,9	132,2
Import	26 133,5	23 748,5	17 505,7	14 013,1	15 467,6	90,9	73,7	80,0	110,4
Trade with Europe	59 785,7	58 172,1	34 215,1	27 034,7	33 364,7	97,3	58,8	79,0	123,4
Export	50 446,0	49 273,7	27 138,1	21 147,3	27 388,8	97,7	55,1	77,9	129,5
Import	9 339,7	8 898,4	7 077,0	5 887,4	5 975,9	95,3	79,5	83,2	101,5
Trade with the EU countries	55 193,3	53 316,0	31 325,1	24 372,1	30 015,8	96,6	58,8	77,8	123,2
Export	46 120,2	44 681,1	24 445,5	18 680,1	24 276,4	96,9	54,7	76,4	130,0
Import	9 073,1	8 634,9	6 879,6	5 692,0	5 739,4	95,2	79,7	82,7	100,8
Non-EU countries									
Turnover	4 592,4	4 856,1	2 890,0	2 662,6	3 348,9	105,7	59,5	92,1	125,8
Export	4 325,8	4 592,6	2 692,6	2 467,2	3 112,4	106,2	58,6	91,6	126,2
Import	266,6	263,5	197,4	195,4	236,5	98,8	74,9	99,0	121,0
Trade with Asia	33 610,1	29 665,0	18 235,0	14 482,2	19 571,0	88,3	61,5	79,4	135,1
Export	20 161,2	17 815,4	10 077,7	8 253,1	11 999,0	88,4	56,6	81,9	145,4
Import	13 448,9	11 849,6	8 157,3	6 229,1	7 572,0	88,1	68,8	76,4	121,6
America									
Turnover	6 073,4	3 886,1	2 811,7	2 617,3	2 352,3	64,0	72,4	93,1	89,9
Export	3 091,5	1 187,4	760,7	914,9	643,8	38,4	64,1	120,3	70,4
Import	2 981,9	2 698,7	2 051,0	1 702,4	1 708,5	90,5	76,0	83,0	100,4
African trade	367,2	336,0	215,5	249,6	353,7	91,5	64,1	115,8	141,7
Export	112,2	122,1	64,0	88,1	168,6	108,8	52,4	137,7	191,4
Import	255,0	213,9	151,5	161,5	185,1	83,9	70,8	106,6	114,6
Trade with Australia and Oceania	116,0	96,6	75,9	38,6	30,3	83,3	78,6	50,9	78,5
Export	8,0	8,7	7,0	5,9	4,2	108,8	80,5	84,3	71,2
Import	108,0	87,9	68,9	32,7	26,1	81,4	78,4	47,5	79,8

Note - compiled according to the source: Foreign Trade of the Republic of Kazakhstan. Statistical collection. Committee on Statistics MNE RK. - Astana. - 268 p.

According to table 2, there is a certain decrease in the volume of trade both in exports and in imports of goods and products. So, the total trade turnover in 2013 amounted to $ 133,506.0 million, and in 2017 - $ 78,102.9 million; exports, respectively - $ 84,700.4 and $ 48,503.3 million; imports - 48,805.6 and $ 29,599.6 million. In order to conduct a correct analysis, it is necessary to take into account the commodity-product structure of foreign trade operations by agents. According to analysts, the reduction in trade turnover is attributable to the protracted financial crisis affecting the economies of all continents and groups of countries and causing a decrease in supply and demand in foreign markets of international and regional scale. In the current decade, the global economy grew by 3.6% per year (2011-2017). According to forecasts: IMEMO RAS, the growth of world GDP will be 3.8%, the IMF - 3.7% [9]. The forecast for global economic growth characterizes the lowest possible estimate. Moreover, it is necessary to take into account the fact that prices for raw materials have increased and are kept at a high level, and this has contributed to a higher growth rate for its exporters.

The group of developing countries and countries with economies in transition, according to IMEMO, will accelerate its growth. The general trend that has emerged in the global economy is a long-term trend: in the coming years, developed countries will grow at a higher rate, and developing countries with transitional economies - lower than in the first decade of the 21st century.

In the post-crisis period of 2011-2016. This ratio has decreased due to the fall in 2015-2016. world exports to all regions of the world. From 2017, growth in world trade has been resumed.

Despite the complex regional and global processes, our country has close partnerships with all its neighbors and leading world powers. Kazakhstan has acceded to key international treaties, repeatedly demonstrating its support for the global fight against international terrorism and taking a balanced and responsible position on the issue of non-proliferation of weapons of mass destruction.

Due to the geopolitical factor, the United States, Russia, China and the republics of Central Asia took the first positions in the foreign policy priorities of Kazakhstan [10]. Next in order of priority are Turkey, Pakistan, the APR countries, Zap. Europe, other countries of near and far abroad, as well as international organizations. In the framework of multilateral cooperation at the regional and global levels, Kazakhstan has achieved the following:

- participation in the development of integration processes in the post-Soviet space, starting from the creation of the Commonwealth of Independent States (CIS) and ending with the formation of the Eurasian Economic Union (EAEU);
- on a global scale, the promotion of a kind of application for a leading position in the development of the world order;
- Chairmanship of the Organization for Security and Cooperation in Europe (OSCE) in 2010;
- in 2010 the nomination of the country's candidacy to non-permanent members of the UN Security Council for 2017–2018. etc.

One of the main priorities of Kazakhstan's foreign policy is the development of relations and the strengthening of a democratic partnership with the United States as an important condition for the effective participation of our country in world economic processes, in international political, financial, economic and defense institutions, as well as access to advanced technologies and investments. Kazakhstan in its relations with the United States relies on the provisions of the basic document - the Charter on Democratic Partnership, signed in February 1994. In cooperation with the United States, great attention is paid to the economic sphere. An important place is given to the following factors:

- interaction with the US administration in order to attract US private investment;

- cooperation in the field of defense conversion;

- interaction in solving acute problems of health and ecology in the region of the Aral Sea and the Semipalatinsk nuclear test site;

- development of contacts in the humanitarian line, etc.

Also one of the strategic directions of the foreign policy activity of the Republic of Kazakhstan is the development of comprehensive cooperation with Russia [11]. The Russian direction in the foreign policy of Kazakhstan has always been one of the most important because of the geopolitical neighborhood, the consolidation of political weight in the system of international relations, the economic potential of the Russian Federation, etc.

The traditional positions of the Russian Federation in the Republic of Kazakhstan are based on factors that are of a long-term nature and are determined by such categories as geography, geopolitics and history; these also unite historical communities, spiritual, cultural and ethnic ties. The Russian vector largely determines the foreign policy situation around Kazakhstan on a regional and international scale. The special place of the Russian Federation is in the military-political sphere as a leader and guarantor of regional security. At the present stage, according to experts, the nature of bilateral relations between the Russian Federation and Kazakhstan will be determined by the new geopolitical situation in the region of Central Asia.

It is also very important to take into account the relationship of Kazakhstan with the People's Republic of China. Strategically, they are aimed at the establishment and development of the traditions of friendship and good neighborliness with China. Kazakhstan is interested in translating bilateral relations into stable and dynamic contacts both in the economic sphere and in the political sphere, including issues of strengthening security, confidence-building measures in military activities. The main principles of cooperation with the PRC should be mutual benefit, the rejection of the use of force or its threat, the inviolability of existing borders, which corresponds to the long-term interests of the Republic of Kazakhstan. Mutual interest is also noted during the construction of gas and oil pipelines from Kazakhstan to China. The construction of communication lines connecting Europe with the Asia-Pacific region through the territory of both countries seems promising.

Major political and economic advantages are caused by the intensification of relations between Kazakhstan and Japan, which occupies one of the leading places in the world economy, the largest donor, and in the future - the most important investor in the economy of our country. Of particular interest to Kazakhstan is the activity of Japan in the formation of the Commonwealth of Nations of the Asia-Pacific region within the framework of the Asia-Pacific Economic Cooperation Organization (APEC), through which Kazakhstan can gain access to high-tech and financial institutions of the dynamically developing Asian community.

In the context of developing political and economic relations, strengthening the role and place of Kazakhstan in Asia, expanding access to developing Asian markets, new industrialized countries are of great importance for Kazakhstan: Singapore, Republic of Korea, Malaysia, Thailand, Indonesia, and Vietnam.

The formation of foreign policy priorities of Kazakhstan is influenced by the factor of intracontinentity [12]. The geographical location, which has no access to the sea, has a negative impact on economic development. Intracontinental countries are generally less developed than countries with a sea coast. There are 44 countries in the world, whose borders have no access to the oceans: in Africa - 16 countries, Europe - 14, Asia - 12 and South. America - 2 countries. Two states that do not have access to the sea, namely Uzbekistan and Liechtenstein, border exclusively on countries that also do not have access to the World Ocean. 9 of 15 CIS countries do not have borders with the World Ocean. After the collapse of the USSR in 1991, Uzbekistan became the second such state. Ethiopia, where 93.8 million people live, is the largest of the countries with no access to the World Ocean. Also, more than 30 million people. live in Uganda (34.8 million), Uzbekistan (33.0 million) and Nepal (30.4 million). The largest of the states that do not border the oceans is Kazakhstan (2,724,900 km²); Mongolia (1 566500 km²), Chad (1 284000 km²), Niger (1 276000 km²), Mali (1 240 000 km ²), Ethiopia (1 104300 km ²), Bolivia (1 098581 km ²) have the territory of more than 1 million km2.

Having no access to sea communications, Kazakhstan is actively using its niche in the Caspian Sea zone, developing infrastructure. Thus, the Decree of the President of the Republic of Kazakhstan, adopted in April 1993, initiated the formation of the republic's Naval Forces (Navy), which include modern rocket-artillery ships, small patrol vessels and boats. With the creation in 1998 of the National Maritime Shipping Company Kazmortransflot, the development of merchant shipping began. The company has more than 20 vessels providing oil cargo transportation and ferry transportation.

The port infrastructure in the Caspian is also actively developing. A ferry complex is being built in the port of Kuryk with a transshipment capacity of 4 million tons of cargo per year. By 2020, it is planned to increase the throughput capacity of the seaports of Kazakhstan to 48 million tons.

Also, projects are being implemented that allow Kazakhstan to reach the world maritime communications, as well as access to the Pacific Ocean. With the introduction of the transnational railway

Kazakhstan-Turkmenistan-Iran, ways are opened for the delivery of Kazakhstani goods to Iranian ports in the Persian Gulf.

Kazakhstan participates in the implementation of a set of strategically important transport and logistics projects, allowing it to become a key link between the countries of Asia and Europe. This includes the development of international transport corridors North-South, Europe-Caucasus-Asia (TRACECA) and the China-Turkey-Europe Trans-Caspian international transport route, as well as the completion of the Kazakhstan section of the construction of the Western Europe-Western China transport corridor. In addition, the practice of creating and operating "dry ports", namely the Khorgos transport and logistics center, through which goods are transported from China to Central Asia, Europe and the Middle East, is carried out in Kazakhstan. According to forecasts, by 2020 the cumulative cargo traffic from China to Europe through Kazakhstan will increase to 170 million tons.

The republic uses its geopolitical potential and versatile formats of interaction in the interests of ensuring regional security. It is a member of the following international structures and initiatives: the Collective Security Treaty Organization (CSTO), the Shanghai Cooperation Organization (SCO), the United Air Defense System of the CIS, the NATO Partnership for Peace program. Almaty has a Central Asian Regional Information Coordination Center (CARICC) to combat illicit trafficking in narcotic drugs, psychotropic substances and their precursors, in which all countries of Central Asia, Azerbaijan and Russia participate. Various international military, peacekeeping and anti-terrorism exercises with the participation of Russia, China, the United States and other countries are also held on the territory of the Republic of Kazakhstan.

Kazakhstan is expanding participation in international trade and economic relations. The assets of domestic investors abroad have grown. Major projects include oil refining and the sale of petroleum products in Romania, Bulgaria and other European countries.

Thus, possessing significant reserves of strategic mineral resources, located at the intersection of the main transcontinental trade and transport corridors, maintaining internal stability and being the initiator of the creation and development of a significant number of integration projects, Kazakhstan plays an increasingly important role as one of the leading participants in international and regional political and economic relations and mutually beneficial cooperation. In this direction, first of all, the implementation of state and national programs of foreign policy, socio-economic development of the republic for the near, medium and long-term prospects, the desire of our state to become a full participant in global economic relations. All this in general contributes to the expansion of our country's capabilities to determine and promote its strategic goals and geopolitical interests that meet its national interests on the world stage.

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ЖАҢА ЖАҺАНДЫҚ ЖАҒДАЙДА ҚАЗАҚСТАННЫҢ СЫРТҚЫ САЯСАТЫНЫҢ ГЕОСАЯСИ ЖӘНЕ ГЕОЭКОНОМИКАЛЫҚ АСПЕКТІЛЕРІ

Аннотация. Осы мақалада Қазақстан Республикасының қазіргі кезеңдегі геосаяси және геоэкономикалық жағдайы, сондай-ақ Қазақстан Республикасының халықаралық аренадағы орны қарастырылады. Авторлар еліміздің аймақтық және халықаралық деңгейдегі ерекше рөлі мен орнын атап көрсетті. Сыртқы сауда айналымының динамикасына және отандық экономикаға инвестиция тарту мәселелеріне талдау жасалды. Жұмыстың қорытындысында ғылыми негізделген және теңгерімді саяси дипломатия арқылы Қазақстанның сыртқы саясатын көп бағдарлы көзқарас пен ұлттық қауіпсіздікті жетілдіру қажеттілігі арқылы қол жеткізуге болатыны тұжырымдалды.

Түйін сөздер: геосаясат, геоэкономика, халықаралық қатынастар, сыртқы саясат, инвестиция, сауда, ұлттық экономика, әлемдік қоғамдастық

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ГЕОПОЛИТИЧЕСКИЕ И ГЕОЭКОНОМИЧЕСКИЕ АСПЕКТЫ ВНЕШНЕЙ ПОЛИТИКИ КАЗАХСТАНА В УСЛОВИЯХ НОВОЙ ГЛОБАЛЬНОЙ РЕАЛЬНОСТИ

Аннотация. В данной статье рассматривается геополитическое и геоэкономическое положение Республики Казахстан на современном этапе, а также место Республики Казахстан на международной арене. Авторами

отмечена особая роль и место нашей страны на региональном и международном уровнях. Проведен анализ динамики внешнеторгового оборота и привлечения инвестиций в отечественную экономику. В заключении работы сделаны выводы о необходимости совершенствования внешней политики Казахстана в сторону многовекторности и обеспечения национальной безопасности, что достижимо через научно-обоснованную и взвешенную политическую дипломатию.

Ключевые слова: геополитика, геоэкономика, международные отношения, внешняя политика, инвестиции, товарооборот, национальная экономика, мировое сообщество.

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THE PROBLEMS OF THE SYSTEM OF COST ACCOUNTING IN BANKS OF THE SECOND LEVEL

Abstract. As you know, the role of the banking sector is great. In modern conditions of financial market development, banks are the main source of financing for various sectors of the economy, such as industry, trade, agriculture, etc., and also have a great importance in protecting the country from financial crises. On this basis, the need to apply a cost accounting system in such a vital sector is important, in order to control costs, measure the costs of various processes and provide the necessary analytical and detailed data based on scientific standards to make informed decisions.

The article discusses the role and importance of the formation of an effective cost accounting system in banks, as well as the problems of calculating the costs of banking operations in Kazakhstan.

Keywords: cost accounting in banks, cost calculation, bank accounting, direct and indirect costs.

Introduction. Accounting reform ensured the adequacy of the accounting system of Kazakhstan to the requirements and characteristics of a market economy, allowed to form a new conceptual apparatus corresponding to the current level of development of accounting science and world trends [1]. Nowadays banks need the cost accounting system for making important decisions, since cost accounting system has direct influense on bank profitability, also on its ability to quick adaptation to changing market conditions, in order to save competitive positions. Moreover, the data provided by cost accounting system is important for making decisions on the cost of banking products, establishment of budgets and cost reduction [2]. All this indicates importance of cost accounting system in banks, especially in making various decisions, in particular, such as the prices of bank operations.

Despite the importance of cost accounting system in banks, for today in Kazakhstan it had not had adequatee development. As a rule, in Kazakhstan, accounting standards that are established by banking system regulators, traditionally makes starting point helping banks to form their accounting policies. At the same time, internal features of banking products and process of their formation create difficulties of application of traditional cost accounting system in banks. These causes range of problems for banks when forming cost accounting system. First, banks speak as the main financial intermediaries at the market that complicates traditional cost accounting. Secondly, capital redistribution which is carried out as a result of fundraising and its further transformation in certain banking products, such as credits, securities, etc., creates problem of determination of results and costs. Thirdly, it is a syndrome of constant expenses and limit income, complexity of distribution of indirect costs on cost objects.

In the meantime, development of banking system of Kazakhstan, information technologies, increased competition led to the corresponding high-quality changes in cost accounting system of banks. In particular, as a result of rising competition in the banking sphere and margin reductions banks had to attach the increasing importance to planning and control of their non-financial costs. Development of IT technologies led to application of various software on cost accounting in banks. However, despite it, the problem of formation of effective cost accounting system remains unresolved. In addition, accounting is important for making effective management decisions [3].

Literature review. In world financial literature there are many researches concerning essence and need of cost accounting system in banks. For example, Ahmed, N.R. notes need of studying of pricing on

banking services, which has the specific features in view of the fact that banks produce nothing and pricing very strongly depends on a human factor [4]. Bhasin M.L. writes that practice of cost accounting is always deliberate attempt to get unjustified advantage to accountants and managers of banks [5].

Ability to develop banking products (services) with the minimum costs and to reach savings in this process plays a key role to define, how successfully banks will function [6].

Choice of calculation system and its project is crucial for bank, since if cost calculation provides information on inexact costs of bank, then the management can make incorrect and inefficient decisions [7]. Such decision depends on various contextual, organizational and cultural factors and it is especially important concerning banks, as their cost structure generally consists of indirect costs [8].

The content and structure of costs influences the order of calculation accounting of products, the system of planned calculations and characteristic of the obtained data on prime cost of a banking product [9].

As mentioned, importance of the banking sphere in economy is huge. The banking sphere and level of its development reflects the level of economy health. Banks contribute to the development of production processes, distribution, exchange and consumption, allowing economy to develop and grow [10]. Therefore if banks do not create the effective system of cost calculation, these could cause wrong decisions that will lead to negative consequences for economy. If the bank has no effective cost accounting system, the data provided by such system can be inexact. For example, data on profitability of certain banking product can be incorrect that can lead bank to choose the wrong set of profitable products. This, in turn, can lead banks to overrate the credits and, as a result, will lose potential profitable clients. Therefore, it will cause damage to economic development of the country.

Evaluation and measurement of using money is complexity of cost accounting system in banks. For example, industrial companies create certain tangible product, which is easy to identify and estimate its costs, but banking services are non-material and estimation of their cost is rather problematic [11]. Besides, if some divisions of bank carry out one or two bank operations, then others carry out much more, and this complicates the way of defining of the extra charge added to operations by each department before the service reaches the client. Moreover, it is difficult to bank to define specific goals of use of the most part of the money [12]. Deposits have several types, some of them connected with date, savings or current account, and each has an interest rate. The prices of each type can also differ from time to time and from client to client. Besides, there is a difference in the cost of the credits as sources of their financing are various. Thus, bank management has to be completely informed on cost details because of their influence on profit calculation for evaluation of prices and marketing strategy.

Results. Calculation of bank operations is decisive factor of bank profitability and its ability to adapt to the market. The cost of definite bank operation also depends on structure of the market in general and on the competition in providing certain services, in particular. Importance of decision on prices of banking services increases in connection with modern achievements in bank operations, on the one hand, and fierce competition between banks and other non-bank financial institutions, on the another hand.

Thus, based on the previously mentioned it is possible to mark out some characteristic features of banking business, which affect cost structure and their calculation system (figure 1).

As far as we can see, the considerable weight of indirect costs in relation to cost objects, that complicates their tracking in the relation the cost of objects, is the most relevant factor affecting applicability of various cost systems in banking institutions. In the same way, considering that the most part of the operations, which are carried out by banking institutions, has the repeating character and is subject to standardization, it gives the chance to consider a question of calculation of costs of these operations and their distribution by cost objects, and also to enter use of standard costs as the instrument of planning and control.

Classification of non-financial expenses of banking institutions can be useful when studying applicability of various cost systems to banks. In this case, the difference between transformational and overhead costs is the most important. Transformational costs are costs, which are generated in profit centers and in operating activities while overhead cost are the cost of the centers of the general service.

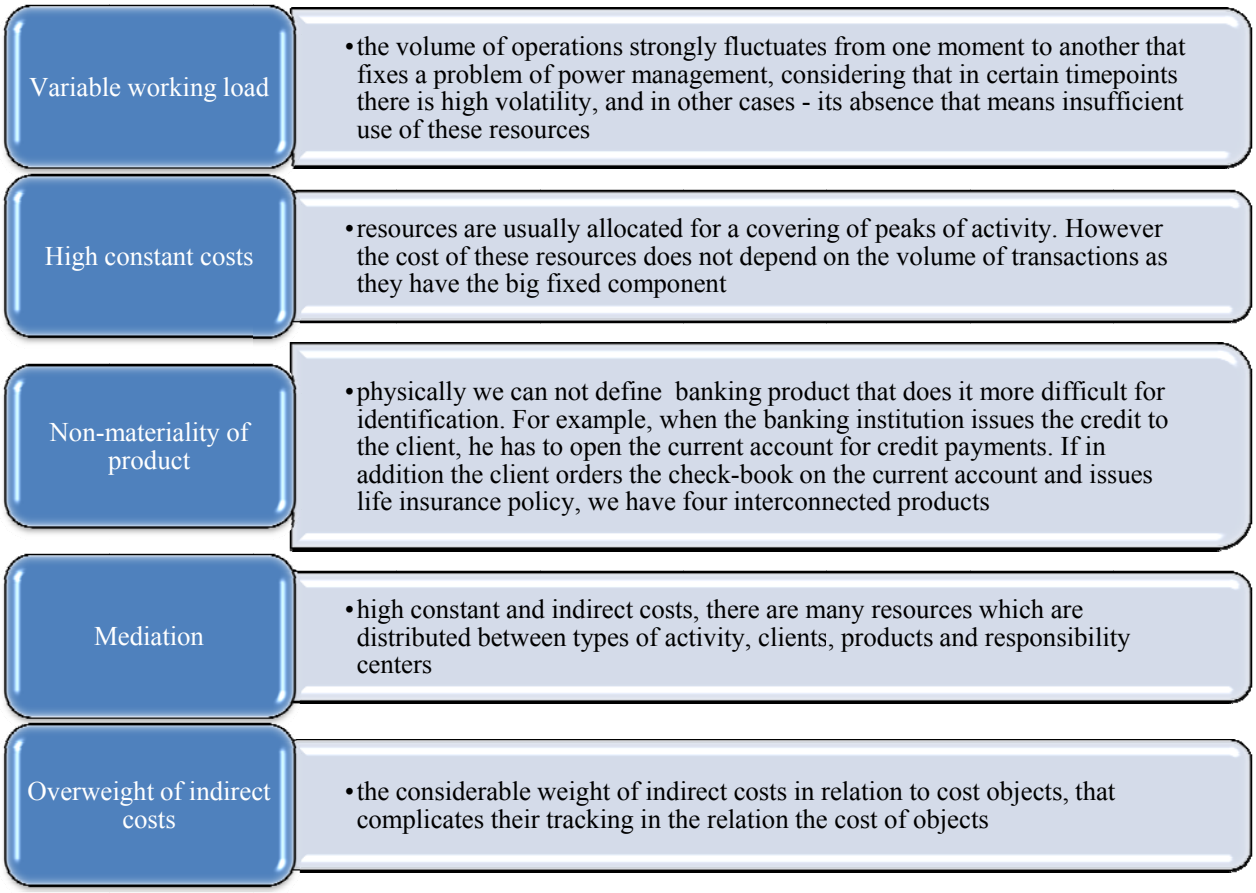

Figure 1 – Features of cost accounting banks

As a rule, expenses of these centers are directly or indirectly connected with consumption of products and services by clients. At the same time, costs of transformation can be divided into direct and indirect costs depending on their relation to cost objects. Direct costs are those costs, which can be unambiguously and directly allocated to cost objects; otherwise, their distribution is controlled economically individually. Indirect costs are costs, which cannot be distributed directly between cost objects as there is no exact distribution of funds which allows us to evaluate consumption of these costs by cost carriers.

As a result, the total cost of banking service consists of constants and variable costs.

It should be noted that significant amount of costs in banks is dual in character, if to look on the basis of the previous criterion of classification, to the extent in which certain costs can be straight lines in relation to branches network, but indirect in relation to products and clients. In banking institutions cost demanding distributions, generally correspond to costs of personnel, depreciation and other total costs, which despite of the fact that it is difficult to distribute them between clients and products are, as a rule, easier for distributing on the responsibility centers.

The second category of expenses corresponds to overhead costs, which are generated in the organizational centers of bank. These costs are generated by various functions connected with management, administration, organization and control. As a rule, they are indirect in relation to all cost objects.

These costs are considered as the expenses intended for support of all bank functions and as such, they do not depend on the volume of services, the existing product lines and the markets, which they serve.

The traditional calculation systems assign such costs first of all to the centers of costs, which usually correspond to departments in an organizational structure of bank. Besides, the traditional cost calculation system is the system based on the volume, as she uses indicators of volume of services (in terms of production), such as working hours or number of checks, as a basis for distribution / assignment of these

overhead costs or indirect costs to cost objects. It means that such cost objects as products and services, consume overhead costs highly in comparison with quantity of the made units of production, for example, in the industrial companies. In other words, it is supposed that the production of product or service is higher, the its overhead costs are higher.

In world practice it is accepted to divide two types of cost accounting system in banks: partial and full.

The partial system considers only direct costs for cost object conversion and does not assign indirect costs for conversion and overhead costs which are just distributed in places of emergence of costs or divisions. Application of \ system of partial costs in the bank sphere generally is a consequence of existence of considerable volume of the total and joint costs in relation to different objects that complicates their distribution to the cost of objects. But at the same time, considering that direct costs are usually quite insignificant and that variable costs can be practically absent, and it is difficult to measure their results, evaluation of efficiency and effectiveness by means of partial cost system seams excessively limited approach. At the same time, such structure of costs helps to explain why banking institutions pass to the overall cost of an accounting system more slowly, than it is done by the companies of other sectors of economy.

However, as the mass of indirect costs gradually increases, direct costs system or the system of contributions become less and less important for the purposes of planning and control, though all this is still applicable to certain special types of decision-making. Therefore the partial system of cost accounting has limited application in case of multidisciplinary organizations, including the banks having the high level of indirect costs. Therefore, considering structure of costs of banking institutions (prevalence of the fixed indirect costs), the margin received for cost objects by this method can be insignificant.

Besides direct costs, the system of full cost also distributes everything or a part of their indirect costs of cost objects. The traditional methods of full cost accounting applied to banking are based on creation of the cost centers, as a rule, connected with organizational structure, which then transfer the costs of various organizational units, products, clients. The full system of cost accounting assumes consecutive distribution of non-financial expenses between various centers of responsibility as it is visible in figure 2.

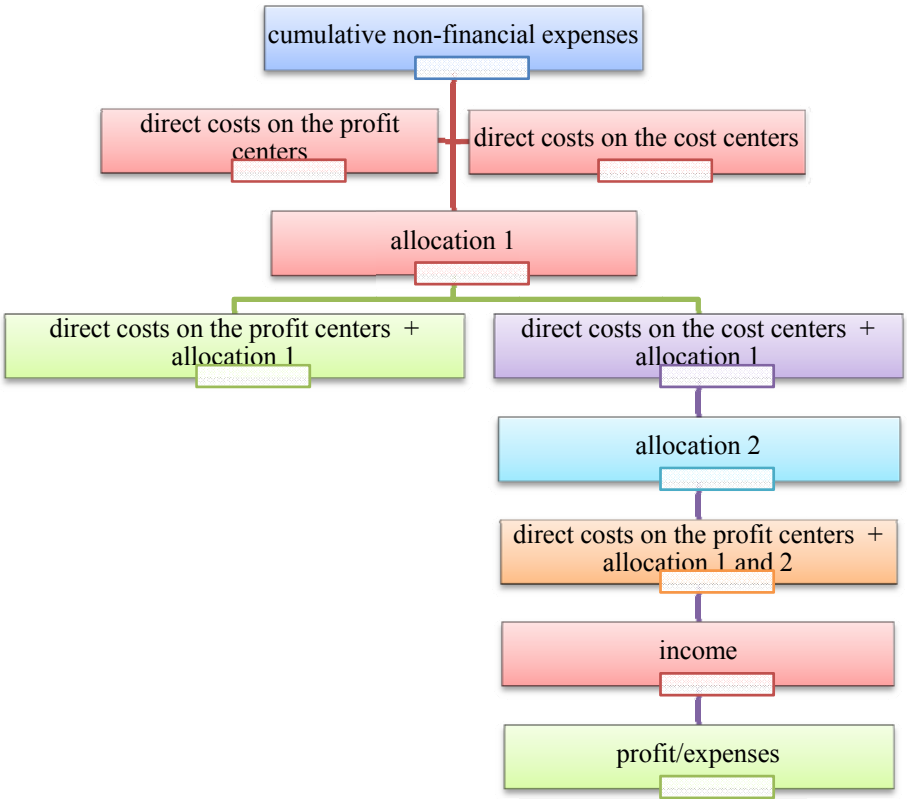

Figure 2 - System of full cost accounting

Note: made on the basis of a source [13]

Considering the above, it is possible to draw a conclusion that application of any of the traditional systems of accounting leads to a paradoxical situation. On the one hand, when choosing a system of partial costs and considering only direct costs on final cost objects, there is a situation when only direct costs can be carried to cost objects, whereas the others which are indirect are not considered on the centers of responsibility, products or clients.

On the other hand, when choosing a system of overall cost, it is possible to face a number of restrictions. Many authors considering systems of cost accounting in banks claim that the traditional systems of accounting applied in the bank sphere assume that influence of indirect costs is ignored, despite the fact that what variety of operations and what difficult impact are had on indirect costs [14], [15].

Besides, as banking institutions develop new banking products for the purpose of the satisfaction of new competitive requirements, the specific weight of indirect costs in their structure increases as costs of market researches, marketing, introduction of new products, automation of transactions, new technologies, etc. obviously grow. Besides, the number of the factors influencing costs which were used for reference of indirect costs of cost objects are not enough, that complicates identification of differences between accounting of various services in bank. Therefore, it is almost impossible to trace costs, and it complicates their accounting and improvement of their management. Thus, the system of full costs, which distributes indirect costs on several categories on the basis of business volume can be acceptable in the industries where the share of indirect costs is rather small, and the volume of services is rather uniform. However it is not applicable for the companies with several non-uniform products which are difficult for measuring and which have high percent of indirect expenses. It, first of all, belongs to banks.

As it was already mentioned above, traditional allocation of costs is often based on the volume, such as quantity of the made products, the number of working hours, the number of production machine hours, etc. In banks especially in the conditions of globalization and development of the new directions of operations, available the total or indirect costs which are not caused by the output. As a result, traditional allocation of costs in banks has to be based on something another, but not on root causes of costs.

Considerable part of overhead costs even on production can be not caused by production machine hours, but overhead costs are distributed with use of these hours. For example, some products of the producer with a small volume can demand significant technical changes, additional checks, frequent installations of the machine with unusually short production cycles, special processing, additional storage and so on. Distribution of these special costs on all products on the basis of the number of production machine hours (instead of distribution of these costs on the basis of their main reasons) will lead to the fact that separate costs of a product will be inexact and misleading. In banks such problem is especially relevant as by the nature banks do not make material products per se, and carry out the customer service called by banking products. Services sector cannot be subordinated to the traditional scheme of cost accounting, it just becomes impossible.

In banks now the traditional system of accounting applies indirect cost to products on the basis of in advance certain rate of overhead costs. The traditional system of accounting considers overhead costs as a uniform pool of indirect expenses. Traditional accounting is optimum when indirect costs are lower, than straight lines. Thus, modern traditional process of cost calculation in banks consists of several stages:

1. definition of indirect expenses;
2. assessment of indirect expenses for the corresponding period (month, quarter, year);
3. the choice of a factor with relationship of cause and effect with the cost (working hours, machine hours);
4. factor sum assessment for the corresponding period (the number of working hours a quarter, etc.);
5. calculation of in advance defined norm of overhead costs (a rate of overhead costs);
6. distribution of overhead costs of products of bank with use of the rate of overhead costs defined earlier.

The rate of overhead costs is estimated as follows:

$$R_{ov} = \frac{Ov}{C_{es}}$$

Ov - calculated overhead costs; C_{es} – the rated sum of a factor influencing cost.

For example, at the sum of overhead costs of 500 thousand tenges and 12 thousand working hours the rate of overhead costs is equal to:

$$\frac{500}{12} = 41{,}67$$

Discussion. Thus, in spite of the fact that the traditional systems of cost calculation used in banks today are simpler in fact and more simply in implementation, such cost calculation is not absolutely exact and can lead to considerable understating and overestimate of costs.

As a result it is possible to note existence of problems in a system of cost accounting in banks. First, the traditional system of cost accounting creates the inadequate database. As forming of costs of future period is based on costs of the last periods "corrected" on inflation and an exchange rate, thus the created budgets bear in themselves errors of last years which have property to collect.

Secondly, absence in banks of a comprehensive system of cost accounting. Each bank operation is unique on the, however, the traditional system of cost accounting does not consider feature of each bank operation. Even banks experience difficulties with information processing about clients in intra bank processes that is necessary for meeting requirements of each department. At the same time, if the client manages several accounts in several banks, discrepancies grow even more.

Thirdly, banks do not make material products. There are difficulties of accounting of overhead costs. The traditional system just transfers these costs of the total amount of bank costs. As a result, there is no cost accounting of separate bank operations that does not allow to reveal unprofitable and profitable services of bank.

Fourthly, with growth of IT technologies also overhead costs of banks increase, and traditional approach does not allow to consider them rationally.

Thus, now there was an urgent need of search of the most adequate method of the cost accounting allowing it is not just rational to distribute costs of banking services, but also to create cost value of each separate bank operation.

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ЕКІНШІ ДЕҢГЕЙДЕГІ БАНКТЕРДЕГІ ШЫҒЫНДАРДЫ ЕСЕПКЕ АЛУ ЖҮЙЕСІНІҢ МӘСЕЛЕЛЕРІ

Аннотация. Банк секторының рөлі зор екені белгілі.. Қаржылық нарықты дамытудың заманауи жағдайында банктер, өнеркәсіп, сауда, ауыл шаруашылығы және т.б. сияқты экономиканың әртүрлі секторларын қаржыландырудың негізгі көзі болып табылады, сол сияқты, елді қаржылық дағдарыстан қорғауда үлкен маңызға ие. Осыған орай, шығындарды бақылау, шығындарды бақылау, әртүрлі үрдістердің шығындарын өлшеу және нақты шешімдерді қабылдауға арналған ғылыми стандарттарға негізделген қажетті талдамалық және толық, жан-жақты деректерді ұсыну үшін осындай маңызды сектордағы шығындар есебінің жүйесін қолданудың қажеттілігі артып отыр.

Мақалада банктердегі шығындарды есепке алудың тиімді жүйесін қалыптастырудың рөлі мен маңызы, сондай-ақ Қазақстандағы банк операциялары бойынша шығындарды калькуляциялау мәселелері қарастырылған.

Түйін сөздер: банктердегі шығындар есебі, шығындарды калькуляциялау, банктік есеп, тікелей және жанама шығындар.

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ПРОБЛЕМЫ СИСТЕМЫ УЧЕТА ЗАТРАТ В БАНКАХ ВТОРОГО УРОВНЯ

Аннотация. Как известно, роль банковского сектора велика. В современных условиях развития финансового рынка банки являются основным источником финансирования различных секторов экономики, таких как промышленность, торговля, сельское хозяйство и др., а также несут большую значимость в защите страны от финансовых кризисов. Исходя из этого, большое значение приобретает необходимость применения системы учета затрат в таком жизненно важном секторе, чтобы контролировать затраты, измерять стоимость различных процессов и предоставлять необходимые аналитические и подробные данные на основе научных стандартов для принятия обоснованных решений.

В статье рассмотрены роль и значение формирования эффективной системы учета затрат в банках, а также проблемы калькулирования затрат по банковским операциям в Казахстане.

Ключевые слова: учет затрат в банках, калькулирование затрат, банковский учет, прямые и косвенные затраты.

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THE DEVELOPMENT OF REGIONAL EXPORT POTENTIAL

Abstract. The paper presents general characteristics of Pavlodar region export potential and economic estimation of the use of Pavlodar region industrial productions export potential. It proves modern problems for the development of Pavlodar region industrial enterprises export potential. Every indicator is given according to the data from Agency of statistics of the Republic of Kazakhstan. Questions of rise in export potential at regional enterprises, formulation of a set of organizational and economic decisions that lead to the growth of export possibilities of the particular industrial productions using existing advantages, are important and timely. They help to solve an important economic task, such as growth of regional competitiveness and, as a result the whole national economy on world markets contributing to the balanced social development and decreasing social and economic tension in the region that demands an appropriate search of scientific approaches. Export potential in basic industries becomes an important stabilizing factor in conditions of economic development in regions, and it is also a basic source of foreign exchange into a regional budget. It is concluded that low level of innovative activity on industrial enterprises directly affects the level of export potential use both now and in the nearest future.

Keywords: potential, export potential, production potential, region, resource and raw material potential.

Introduction

Development trend of modern economy taking into account economic globalization does not leave an opportunity for isolated development of any state structure. All states are connected to each other with many economic links, and to some extant, are interrelated. National economic growth is considerably determined by region export possibilities of the country and it is currently based on the export of resources with low value added.

Development of export potential has received special attention in the State strategic programs "Kazakhstan – 2030", "Kazakhstan – 2050" and "Export – 2020".

The term "potential" from the side of world science and practice represents a common set of all available options to reach any goal. The potential of modern economic systems is supported by both domestic and external factors.

The creation and development of an export potential is a difficult process that includes domestic and foreign economic components at all stages of regional functioning as a difficult economic system.

The processes of export activities spreading to a regional level require the development of a relevant regional policy. In the theory and practice, departure from the practice of strong vertical management of regional export potential development towards liberalization of an export activity and an effective economic independence of economic entities was observed in the evolution of a state foreign trade policy during the transition period. In these conditions necessity to develop a regional strategy for long-term economic growth, scientific and technological development, and international economic and trade relations are formed.

Performance management of the creation and development of an regional export potential represents multilevel system of functions for macro, meso and micro-environment aimed at achieving the best possible working results in foreign markets.

Accordingly, regional export potential is a complex of possibilities in regional organizational and economic systems to achieve the goals through the export of productions and goods. Pavlodar region is a major industrial center in Kazakhstan. It is a multisectoral industrial complex focused on the production of electrical energy, alumina, refined oil products, mechanical engineering, food industry and construction materials. Given that the Republic of Kazakhstan's economy maintains its raw materials status, basic basis for the formation and development of the regional export potential is a resource and raw materials potential. The major part of the region is within the south of West Siberian plain. The region occupies one of the leading positions in the mineral and raw materials complex in the Republic of Kazakhstan.

The total value of the balance reserves in Pavlodar region solid minerals is estimated at 460 billion dollars. They are: coal, metals, including gold, construction materials [1].

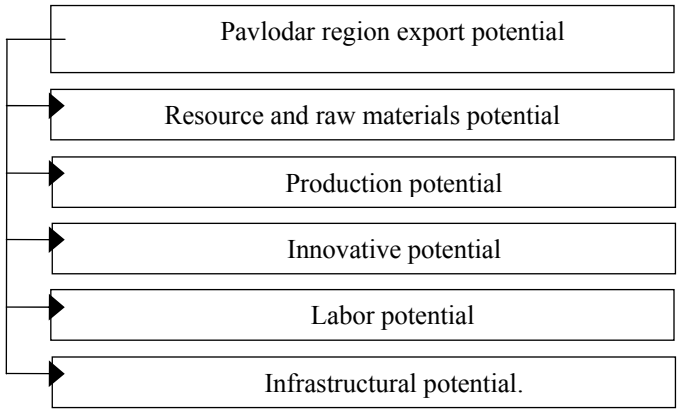

Figure 1 – Enlarged elements of Pavlodar region export potential

Note – this was developed by the author

Part of the deposits has been successfully developed for a long time, additional geological prospecting works are curried out at the other deposits, real volumes of natural resources and conditions for their mining are specified.

Pavlodar region export potential according to figure 1 is worth to consider on the following directions: resource and raw materials potential; production potential; innovative potential; labor potential and infrastructural potential.

Leading sectors of Pavlodar region economy are presented in figure 2.

The leading sector in the region which supports more than 70% of the manufacturing industry volume is metal industry and processing of metals. Metal industry includes ferrous and non-ferrous metallurgy.

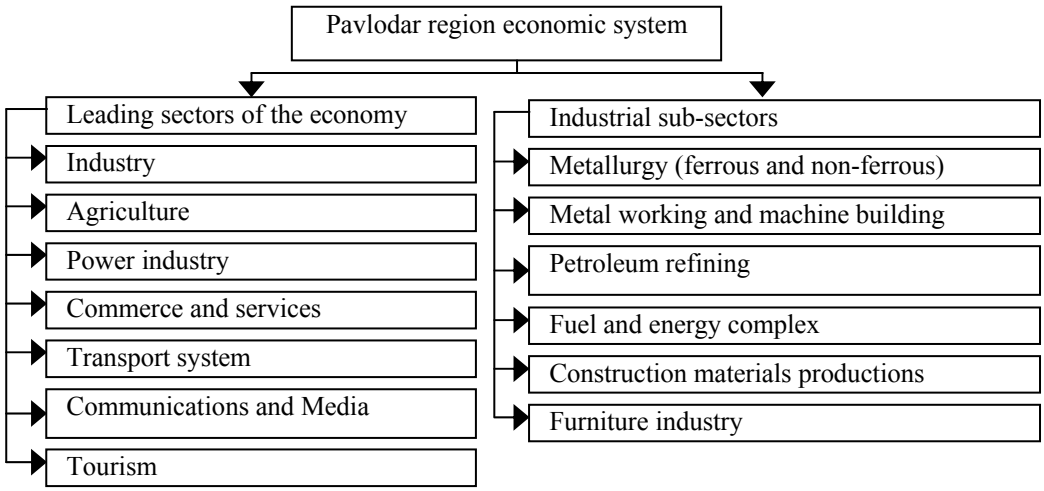

Figure 2 - Main leading sectors of Pavlodar region economy that form production potential

Note – this was developed by the author

Pavlodar region export and production potential is presented in table 1 in complex and systematized form.

Table 1 – Pavlodar region export and production potential

Enterprise name, sector	Products	Main directions in export
«TNC Kazchrome» JSC	Ferrochrome, ferrosilicon, ferrosilicomanganese, ferrosilicochrome	CIS Countries (Russia, Ukraine, Belarus, Georgia, Uzbekistan). Non-CIS countries (Luxembourg, Japan, Germany, Austria, Sweden, Bulgaria, Romania)
«Aluminium of Kazakhstan» JSC «Kazakhstan Aluminium smeller» JSC	Alumina, primary aluminium Gallium (rare metal)	Russia, China Japan, Germany, the USA
«Maikain Gold» JST	Ore, gold, silver, copper, zinc	Ural enterprises (Russia)
«Pavlodar Oil Chemistry Refinery» LLP TOO	Gasoline and oil products	Russia and countries of Central Asia
Fuel and energy complex (FEC)	Coal of all types Electric power	Ural, West Sibiria (Russia) Border territories (Russia)
Agriculture	Milk, meat Grain	Russia Iran, China

According to table 2 in the last five years in Pavlodar region, there has been the cyclical growth of industrial production volume, whose share varied from 79,1% to 69,4% in the total growth regional product.

Table 2 - Dynamics indicators on industrial production development in Pavlodar region

Indicator name	Годы				
	2012	2013	2014	2015	2016
Industrial products production volume, mln. tenge	1 202 392	1 334 756	1 110 598	1 044 224	1 370 386
Industrial products share in the gross regional product, %	79,1	75,9	63,6	60,1	69,4
Mining industry and quarrying, mln. tenge	100 471	104 756	113 235	119 248	202 726
Manufacturing industry, mln. tenge	821 890	959 350	708 149	677 761	913 893
Electricity and water supply, mln. tenge	280 031	270 650	289 214	247 216	253 767
Number of industrial enterprises and productions, units	995	1 005	813	789	804

Research and engineering divisions function at the base of leading industrial enterprises to develop export-oriented productions, to increase products quality and their competitiveness in Pavlodar region industrial sector [2].

Work is being done in the region to organize and develop functioning of the Special Economic Zone "Pavlodar" in order to develop high-technology enterprises and productions of high-value added products. Main targets in Special Economic Zones functioning are presented in figure 3.

At the current stage in the region two science and technology parks have been established to activate research activity on industrial enterprises.:

- «Irtish» science and technology park at S.Toraighyrov Pavlodar State University;
- science and technology park of «Innovative University of Eurasia».

Regional labour potential is characterized by base quantitative indicator, such as total population. This indicator as at 2016, according to the table 3, reached 757 thousand people, including urban population 582,8 thousand people. Rates of economic activity and unemployment rate were respectively 55,7% and 4,8%

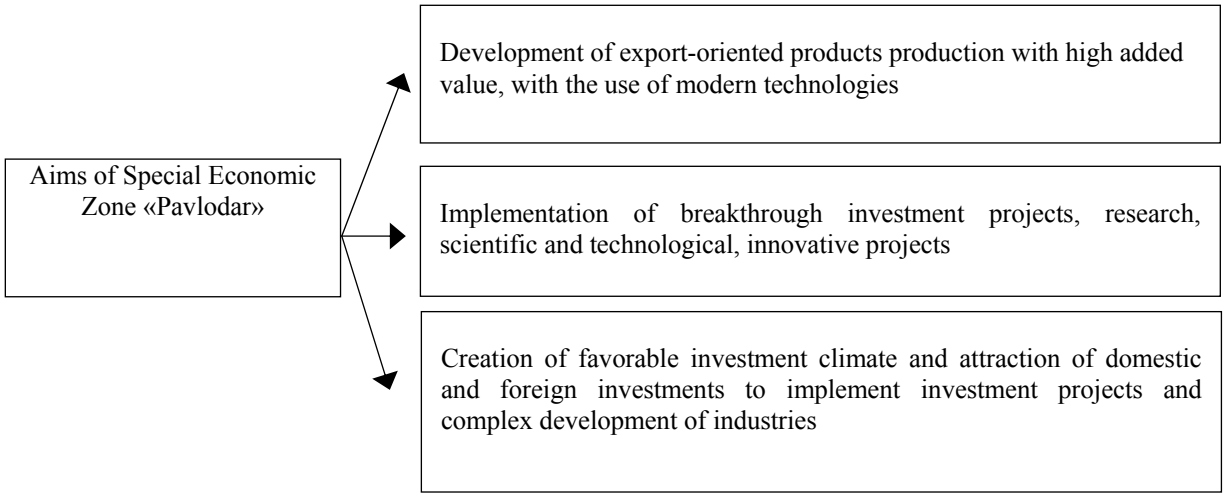

Figure 3 - Targetsin functioning of Special Economic zone «Pavlodar»

Note – this was developed by the author

Researches show that Pavlodar region economy has a sufficient potential to develop modern export-oriented productions. The large number of industrial productions functions in the region, and at the same time their main work is concentrated on the manufacturing industry sector that directs existing productions to produce products with high value-added. In the region there is also scientific potential and innovatively-oriented infrastructure, which covers science and technology parks and special economic zone. There is the whole necessary spectrum of material and raw materials resources including economically active population for multiplier development of export-oriented productions in the region [3].

Table 3 - Main indicators on population of the region and on the level of human resource economic activity

Indicator name	Years				
	2012	2013	2014	2015	2016
Population, persons	749 201	752 914	755 793	758 594	757 014
Urban population, persons	560 120	566 764	574 114	579 553	582 841
Economically active population, persons	439200	440000	441300	439600	421400
Economic activity rate, %	58,6	58,4	58,4	57,9	55,7
Working population, persons	417 500	418 000	420 300	418 600	401 100
Unemployed population, persons	21 700	22 000	21 000	21 000	20 300
Unemployment rate, %	4,9	5,0	4,8	4,8	4,8

In the sphere of export potential on industrial enterprises Pavlodar region, according to table 4, occupies the leading positions. Proportion of products export from enterprises in the republic scale is 16,1%. In terms of export volume the region is on the third place after Karaganda region and Almaty.

As at 2016, volume of export operations was 634,6 mln. tenge and volume of import operations was 536,5 mln. tenge.

Positive aspect of export potential use is an access of Pavlodar region industry to positive external trade balance. Calculation of external trade balance is shown in table 5.

Volume of export productions development is vulnerable to a slight decline. As at 2016, the volume of export deliveries from the rate of 2015 is 85,5% [4-6].

In modern market conditions export dynamic has been subjected to a number of external economic factors that caused slight drop in sales. In particular, in the world practice there are following tendencies: reduced demand for ferrous and non-ferrous metals, decline in the prices of energy that is connected with certain trends of science and technology progress (production of composite materials, transition to the modern green technologies, such as electromobiles, environmentally friendly electrostations which use alternative fuel and energy sources).

Table 4 - Positioning of Pavlodar region in export potential at the republic level

Region name (oblast)	Export volume, mln. US Dollars	Import volume, mln. US Dollars	Export regional structure,%	Import regional structure, %
Akmola	88,6	263,9	2,3	2,7
Aktobe	364,8	490,4	9,3	5,0
Almaty	138,6	431,2	3,5	4,4
Atyrau	25,5	185,5	0,6	1,9
West Kazakhstan	84,6	392,0	2,2	4,0
Jambyl	46,4	104,4	1,2	1,1
Karaganda	728,3	671,0	18,5	6,8
Kostanay	434,3	413,3	11,1	4,2
Kyzylorda	23,1	31,7	0,6	0,3
Mangystau	4,8	151,2	0,1	1,5
South Kazakhstan	300,5	332,4	7,6	3,4
Pavlodar	634,6	536,5	16,1	5,4
North Kazakhstan	41,8	273,3	1,1	2,8
East Kazakhstan	241,5	970,2	6,1	9,8
Astana	125,3	1 268,7	3,2	12,9
Almaty	647,5	3 347,8	16,5	33,9
Total	3 930,2	9 863,5	100	100

Table 5 - Calculation of external trade balance as at 2016
mln. US Dollars

Indicator name	Value
Export operations value	634,6
Import operations value	536,5
External trade balance	98,1

Researching aspects in economic estimation of Pavlodar region export potential it should be noted that the largest export volumes relate to large-scale enterprises 97%, that is shown in table 6.

Table 6 - Structure and volumes of export in terms of enterprises according to their size

Enterprise name according to its size	Export operations volume, mln. US Dollars	Structure, %
Small-sized enterprises	17,5	2,68
Medium-sized enterprises	2,0	0,32
Large-sized enterprises	614,8	97
Total	634,6	100

Export potential of small-sized enterprises does not exceed 3%, and middle-sized enterprises is almost zero value.Structure and value of export on types of product sales are presented in table 7.

Table 7 - Structure and value of export on types of product sales

Export product name	Export operation volume, mln. US Dollars	Structure, %
Metallurgical industry products	450,2	71
Coal and lignite	96,9	15
Wholesale trade goods	7,2	1
Other nomenclature items	80,3	13
Total	634,6	100

In accordance with table 7 maximum export operations volumes were for metallurgical industry products. Coal, lignite and other items deliveries to foreign countries do not have big proportion in export structure. Taken together, this economic evaluation of enterprises export potential in Pavlodar region shows that the level of export potential is at a satisfactory level. Export possibilities are more likely concentrated on the large industrial enterprises of the region through the sale of limited range products and with low level of value added. With a high level of Pavlodar region export potential and with all other things being equal the degree of its economic use is still relatively low that requires to detail and identify

problems of causality. While investigating export potential it is necessary to consider all external and internal factors in a systematic manner, which influence regional economy in positive and negative way. Significant attention upon detection of problems of export potential development is necessary to be emphasized at global economy trends, competitiveness and scientific and technical progress.

Within economic evaluation of export potential use at regional industrial enterprises problems of its use, which are presented in figure 4, have been identified.

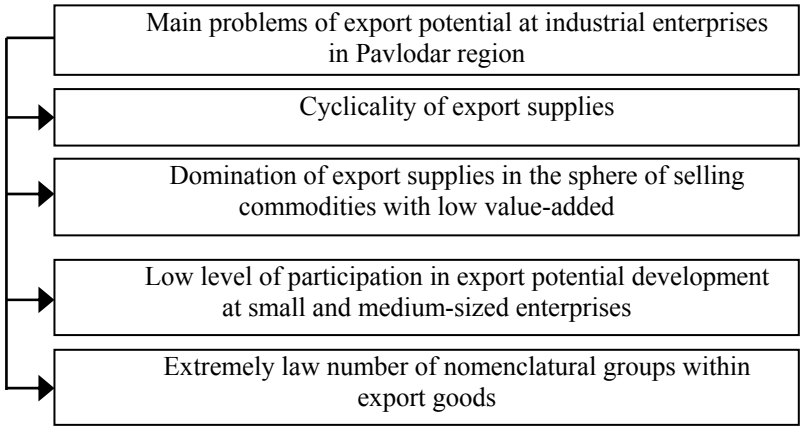

Figure 4 - Main problems of export potential at Pavlodar region industrial enterprises

Meanwhile, in view of dynamic quantity growth of enterprises themselves a total number of enterprises without innovations is also increased. Main result of regional innovative potential use is a production of innovative products.

Table 8 - Economic indicators on the level of innovative activity at enterprises in all sectors in Pavlodar region

Indicator name	Years				
	2012	2013	2014	2015	2016
Total number of enterprises for all types of economy sectors	515	1 085	1 118	1 142	1 354
Number of enterprises holding and useing innovations	28	45	95	79	65
Enterprises without innovations	487	1 040	1 023	1 063	1 289

Maximum production volumes of innovative products in the region accounted for 2013 - 2015. In 2016 production volume of innovative products was minimum, no more than 4 bln. tenge that is shown in table 9.

Table 9 - Economic indicators that characterize sale volumes of innovative products at enterprises in Pavlodar region

Indicator name	Years				
	2012	2013	2014	2015	2016
Sales volume of innovative products, mln. tenge	73 279,0	97 379,0	84 062,5	86 629,0	3 910,1
Proportion of innovative products in total output of industrial productions, %	6,1	7,3	7,6	8,3	0,3
New or significantly strengthened goods (services), which are new for the market of goods, mln. tenge	-	-	67 236,8	73 097,0	2 584,0
New or significantly strengthened goods (services), which are new for organization, mln. tenge	-	-	16 825,8	13 532,0	1 326,1
Products that are newly implemented or significantly technologically changed, mln. tenge	72 749,4	97 379,0	-	-	-
Improved products, mln. tenge	258,3	-	-	-	-
Other innovative products, mln. tenge	271,2	-	-	-	-
Innovative character provided services, mln. tenge	801,3	371,5	-	-	-

Conclusion

Two aspects, which are main reasons connected to maximization of innovative output during this period, are:

- start-up of the new productions on innovative output in 2012 - 2015;
- achievement of productional power by new enterprises and maximization productive supply of innovative products that created a necessity to reduce production output in 2016.

In Pavlodar region since 2012 to 2016 the following innovative productions with high value-added were started:

- high-tech manufacturing on petroleum coke annealing and anode production for electrolysis plant ("UPNK" LLP);
- high-tech enterprise on agro-chemical production ("AgroChimprogress" LLP);
- production of railway axles and train wheels ("R.W.S. Wheelset" LL., "Prommashkomplekt" LLP);
- production of alloyed aluminium and alloyed disks for cars ("Giessenhause" LLP)
- production of high-octain automobile fuel Euro -4, 5 ("Pavlodar Oil Chemistry Refinery" LLP);
- entry into service of high-technological innovative greenhouse complex ("Greenhouse KZ" LLP) [7-8].

Equally with tendencies of innovative products production, one of the leading qualitative indicators on effectiveness of innovative potential use in the region is a level of innovative activity at enterprises. Studies show that innovative activity at regional enterprises is a cyclical process. Maximum level of innovative activity at Pavlodar region enterprises was in 2014. As at 2016 average level of innovative activity was 4,8%. As a result, in our opinion, it is worth to mention that low level of innovative activity at industrial enterprises directly has an impact on the level of export potential use both now and in the nearest future.

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АЙМАҚТЫҢ ЭКСПОРТТЫҚ ӘЛЕУЕТІН ДАМЫТУ

Аннотация. Мақалада Павлодар облысының экспорттық әлеуетінің жалпы сипаттамасы келтірілген; Павлодар облысының өнеркәсіптік өндірісінің экспорттық әлеуетін пайдалануды экономикалық бағалау жүргізілді; Павлодар облысының өнеркәсіптік кәсіпорындарының экспорттық әлеуетін дамытудың заманауи мәселелері негізделген. Әрбір көрсеткіш Қазақстан Республикасы статистика агенттігінің деректеріне сәйкес ұсынылады. Аймақтың кәсіпорындарының экспорттық әлеуетін жоғарылату, объективті артықшылықтарды пайдалана отырып, нақты өндірістік өндірістің экспорттық әлеуетін арттыруға ықпал ететін ұйымдық және экономикалық шешімдер жиынтығын қалыптастыру мәселесі маңызды ұлттық экономикалық тапсырманы шешуге жәрдемдеседі - аймақтың бәсекеге қабілеттілігін арттыру және соның салдарынан тұтас ұлттық экономиканың жаһандық нарықтар, баланстық әлеуметтік дамуды ынталандыру және азайту аймақтағы әлеуметтік-экономикалық шиеленістер, ғылыми ізденістерді іздестіруді талап етеді. Негізгі салалардың экспорттық әлеуеті аймақтық экономиканы дамытуда маңызды тұрақтандырушы фактор рөлін атқарады, сондай-ақ облыстық бюджетке валюта түсімінің негізгі көзі болып табылады. Өндірістік кәсіпорындардың инновациялық белсенділігінің төмен деңгейі қазіргі және болашақта экспорттық потенциалды пайдалану деңгейіне тікелей әсер етеді деп тұжырымдалды.

Түйін сөздер: әлеует, экспорттық әлеует, өндірістік әлеует, аймақ, ресурстық-шикізат әлеует.

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РАЗВИТИЕ ЭКСПОРТНОГО ПОТЕНЦИАЛА РЕГИОНА

Аннотация. В статье представлена общая характеристика экспортного потенциала Павлодарской области; дана экономическая оценка использования экспортного потенциала промышленных производств Павлодарской области; обоснованы современные проблемы развития экспортного потенциала промышленных предприятий Павлодарской области. Каждый показатель представлен в соответствии с данными Агентства по статистике Республики Казахстан. Вопросы повышения экспортного потенциала предприятий региона, формулирование набора организационно-экономических решений, способствующих наращиванию экспортных возможностей конкретных промышленных производств с использованием объективно существующих преимуществ, являются актуальными и своевременными, способствующими решению важной народнохозяйственной задачи – роста конкурентоспособности региона и, как следствие, всей национальной экономики на мировых рынках, способствуя сбалансированному общественному развитию и снижению социально-экономической напряженности в регионе, что требует соответствующего поиска научных подходов. Экспортный потенциал базовых отраслей промышленности приобретает роль важнейшего стабилизирующего фактора в условиях развития экономики регионов, а также выступает практически основным источником валютных поступлений в региональный бюджет. Сделан вывод, что низкий уровень инновационной активности промышленных предприятий напрямую оказывает воздействие на уровень использования экспортного потенциала как в настоящем времени, так и в обозримом будущем.

Ключевые слова: потенциал, экспортный потенциал, производственный потенциал, регион, ресурсно-сырьевой потенциал.

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MARKET MANAGEMENT OF LIVESTOCK PRODUCTS ON THE EXAMPLE OF RK (ON THE EXAMPLE OF EKO)

Abstract. Livestock makes an important contribution to the food supply in rural and urban areas and promotes family nutrition by providing animals with protein. As household income grows, protein intake, mainly of animal origin, increases, which makes it possible to replace vegetable protein with animals. In addition to milk, eggs and meat used as a source of food, other livestock products, such as hides, skins and horns, are used for home consumption and local sale.

Livestock is closely related to crop production. The use of livestock and manure offal is important in crop production. Livestock is a source of energy that provides animal cravings, while manure improves soil structure and fertility, and retains moisture. Both uses are environmentally friendly, improving the circulation of energy and nutrients.

Keywords: management, market, agriculture, agriculture, economics, modernization, technology.

Livestock plays a very important economic and socio-cultural role for the well-being of rural households, such as food supply, source of income, asset preservation, source of employment, soil fertility, livelihoods, transportation, thirst for agriculture, agricultural diversification and sustainable farming.

2018 was a turning point in livestock production in Kazakhstan: it was possible to find new markets for meat products. Relevant international memorandums and cooperation agreements were signed and supported by financial means. From now on, Kazakhstani beef will be served at tables in Asia, Europe, the USA and China.

However, the East Kazakhstan livestock breeders were not ready to export beef in such volumes that foreign partners offered.

“Wholesale companies came to the Kazakhstan market, which are ready to sign contracts for the supply of at least 10 thousand tons of cattle meat to them. In order to fulfill this condition of the contract, our livestock farms would have to put half of all the available livestock under the knife. What is unacceptable. In other words, there is not enough cattle in the East Kazakhstan region to work for export with foreign firms, ”the head of the department of agricultural manufacturers of Semey region outlined the problem on January 30 during a seminar-meeting on the implementation of the concept of the regional agribusiness development program until 2022. Agriculture EKR

According to Askar Zhakupbayev, despite subsidies and concessional lending, breeders did not rush to increase herds of cattle. For the period from 2012 to 2017, the annual growth of the cattle population in the East Kazakhstan region did not exceed 5-6%. Over five years, only 4,600 cattle were brought to the region. For comparison, only in a few months of 2018, when it was decided to intensively increase the number of cattle breeds, 3,200 heads were imported to Eastern Kazakhstan from Europe and Russia, 1,500 of which are still in Russia - undergoing quarantine.

The development of a special program to increase the livestock of pedigree cattle was needed in the East of Kazakhstan in order to create conditions for the regular supply of meat for export. While East Kazakhstan livestock breeders are not ready to sign contracts for the export of meat, even for a minimum amount of 10 thousand tons of beef per year....

For the period from 2012 to 2017, the annual growth of the cattle population in the East Kazakhstan region did not exceed 5-6%. Over five years, only 4,600 cattle were brought to the region. For comparison, only in a few months of 2018, when it was decided to intensively increase the number of cattle breeds, 3,200 heads were imported to Eastern Kazakhstan from Europe and Russia, 1,500 of which are still in Russia - undergoing quarantine ....

Family livestock farms will take an active part in the implementation of the regional program. Thus, with the plan for the importation of 1,100 cattle for 2019, as early as January, applications for the acquisition of 1,154 heads of purebred, pedigree and pedigree cattle were collected.

In order not to repeat the mistakes of previous years, it was decided to subordinate the work of all farms engaged in cattle breeding to a clearly developed plan for increasing the number of animals.

Table 1 - Production of livestock products by agricultural enterprises

Livestock products	agricultural enterprises		
	2018 y.	2017 y.	2018 y. in % to 2017 y.
Slaughtered on the farm or sold for the slaughter of all types of livestock and poultry in slaughter weight, tons	48 151,1	45 614,9	105,6
including cattle	1 524,6	1 051,5	145,0
sheeps	225,6	229,7	98,2
goats	0,8	4,5	17,9
pigs	715,4	507,3	141,0
horses	146,5	98,0	149,4
bird	45 518,8	43 707,8	104,1
camels	3,7	6,8	55,3
deer	1,4	1,3	103,8
other animals	14,3	9,4	152,4

Livestock production in the East Kazakhstan region increased by growing farms by 49.4%, cattle by 45% and pigs by 41%.

Table 2 - Production of livestock products by individual entrepreneurs and peasant or farms

Livestock products	individual entrepreneurs and peasant or farm enterprises		
	2018 y.	2017 y.	2018 y. in % to 2017 y.
Slaughtered on the farm or sold for the slaughter of all types of livestock and poultry in carcass weight, tons	50 116,8	46 748,0	107,2
including cattle	24 582,8	21 920,8	112,1
sheeps	10 651,6	12 676,3	84,0
goats	991,0	1 081,4	91,6
pigs	1 675,7	1 762,5	95,1
horses	12 174,3	9 284,2	131,1
bird	18,8	10,1	186,8
camels	17,6	12,1	145,1
deer	5,0	18,6	27,0
other animals	-	0,5	-

The largest increase in livestock production, represented by individual entrepreneurs and peasant or farm enterprises, was 86.8% poultry meat, then camels 45.1%, and horsemeat 31.1% followed in the top three-product growth.

Table 3 - Production of livestock products of households

Livestock products	households		
	2018 y.	2017 y.	2018 y. in % to 2017 y.
Slaughtered on the farm or sold for the slaughter of all types of livestock and poultry in slaughter weight, tons	68 259,7	67 327,6	101,4
including cattle	42 570,8	40 975,7	103,9
sheeps	9 596,5	10 707,3	89,6
goats	1 978,4	2 280,1	86,8
pigs	3 455,5	3 657,4	94,5
horses	9 562,7	8 613,8	111,0
bird	1 059,3	1 073,2	98,7
camels	1,9	0,2	9 times
deer	-	-	-
other animals	34,7	20,0	173,7

Livestock production of households has a clear leader in the production of camels, as the increase was 9 times higher, the growth of horses was 11% and the number of cattle was 3.9%.

However, who exactly brings the greatest contribution to the production of livestock products, we find out in Figure 2.

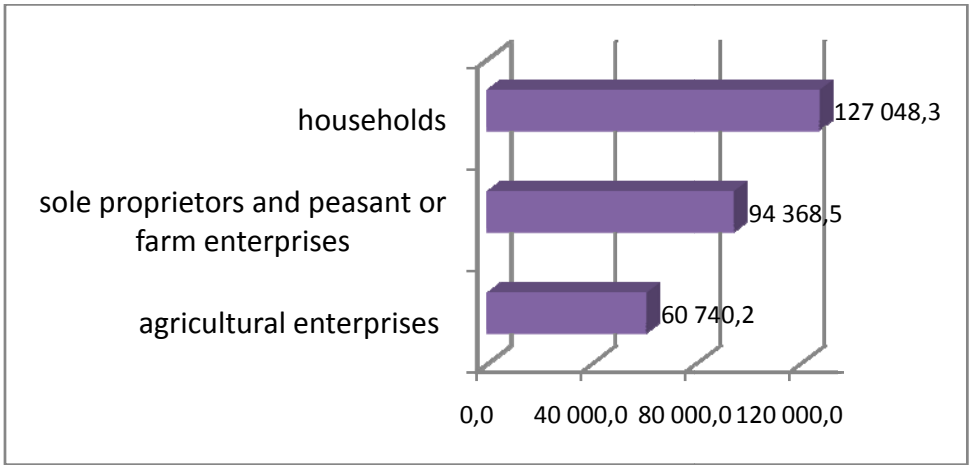

Figure 2 - Production of livestock products in WKOZ 2018

Livestock production mainly falls on households, which is not very effective and has been proven by countries leading in the development of livestock products.

With all the growth dynamics, there are problems:

Small-scale production, the concentration of livestock production in personal subsidiary farms;

Insufficiently developed production infrastructure;

Low availability of credit resources of small entities, lack of fixed and current assets of the majority of agricultural producers;

Incomplete utilization of the production capacities of processing enterprises and reduction in sales of products due to the availability of similar imported products on the market at low prices;

Insufficient level of technical equipment of the machine-tractor park;

Weak introduction of new advanced technologies in production;

Outflow of the rural population, including qualified personnel to the city, lack of qualified personnel in the village.

It is necessary to improve the organization and management of agricultural production, because the success of our efforts largely depends on the correct solution of this problem. Scientific character, the ability to correctly determine the prospect and sequence of tasks to be performed, the focus on increasing the achievements of science and technology on best practices, flexibility, the ability to quickly and

accurately respond to changing conditions - this is the essence of modern management requirements. Livestock is an extensive and complex industry, where the main means of production are animals and birds that are not directly associated with the land. Livestock products can be produced in enterprises where the land serves as a territorial base for the livestock complex.

Now the central players in the region's market will become large feeding grounds, where they will grow not only their own breeding bulls, but also animals of smaller peasant farms. Already in 2019, the first feeding platform with a production capacity of 1000 heads in the Semey region will be built in the Irtysh rural district based on the Nur farm. The project, worth 185 million tenge, will be implemented at the expense of own and borrowed funds.

In 2021, it is planned to build two more feed platforms in the region: on the basis of the farm "Barshatas" for 1000 heads and LLP "Agrofirm" Prirechnoye "for 1500 heads. The cost of projects is estimated at 150 million tenge each. To build fattening farms intend to own funds.

The advantages of centralized delivery of livestock to the region are that heads of small farms do not need to spend time and money on trips abroad in order to conclude a deal to acquire livestock. The animals will be delivered to the region, where he will undergo compulsory quarantine and will grow on plots or on pastures of peasant farms.

"Small farms make no sense to buy expensive pedigree cattle. It is more profitable to buy mongrel breeding stock at a price of 170 to 250 thousand tenge per head and rent it free for several months from the feed platform of the manufacturing bull. In addition, already for the received offspring, which will fall into the category of pedigree cattle, receive from the state subsidies for 25% of the value of the animal.

If in 2018 the livestock of pedigree cattle in the East Kazakhstan region was 7,600 animals, then by 2022 its number is planned to be increased to 14,600 heads, both due to the development of small and medium-sized peasant farms, and due to the import of breed cattle...

For the implementation of the program will need funds. Moreover, the state is ready to provide long-term and cheap loans to animal breeders of the East Kazakhstan region in various programs and areas. In 2018, 31 financial organizations of the East Kazakhstan region were identified, which will work on loans aimed at the development of agriculture in the region. The state is ready to subsidize up to 10% of the loan rate for the replenishment of fixed assets and up to 5% for the replenishment of working capital. The loan term is up to 15 years when purchasing cattle and up to 10 years is MRC.

In addition, in East Kazakhstan region, the amount of subsidized interest rates on loans was increased from 1.5 billion tenge in 2018 to 3.2 billion in 2019. In beef cattle breeding in 2019, subsidies will be paid in 4 main areas: breeding work, purchasing breeding bulls and breeding stock of domestic and foreign breeding, putting gobies to feedlots and feeding livestock.

An important reserve for reducing the cost of meat entering the consumer market is the creation of an efficient distribution system. Where the sale of meat will be carried out either through organized dealers or directly to the distribution network. This will provide an opportunity to reduce distribution costs by 25-30%, and hence the consumer price for meat.

Stable growth in the supply of cheap meat in Kazakhstan is also possible due to an increase in the production of lamb, as well as beef received from beef cattle. After all, transhumance livestock has always had an advantage over the stall.

Pig farming is one of the most dynamic branches of animal husbandry. Almost half of the world livestock of pigs is in Asia, primarily in China, the world's largest producer and consumer of this meat. Whereas in Muslim countries, pig breeding is practically absent for religious reasons. In the global pork production market, China is the driving force.

The average annual production, trade and consumption of poultry meat in the world is growing rapidly. The largest share in the volume of world production accounts for broiler meat (about 63%). A number of factors determines the rapid growth of poultry meat production in the world: intensive production methods, centralization and vertical integration of industrial production, profitability, ever-growing consumer demand, etc. Poultry products are popular in all continents of the world, and religious or ritual barriers and meat do not prevent their consumption. Poultry is the most affordable among other meat products.

Now, to ensure the stability of the food market, a number of the following tasks come to the fore, requiring coordinated work of central and local bodies: First, it is the implementation of strict monitoring

of the situation in the domestic food market, prevention of price speculation or illegal export, which is extremely important in conditions of instability neighboring markets. Secondly, this is the completion of the purchase of the planned volumes of grain and forage into stabilization and fodder funds, compliance with the terms of the signed memorandums to maintain the stability of the prices of bread and bakery products. Thirdly, it is a set of measures for the successful wintering of livestock, the preservation of breeding stock, the provision of epizootic well-being and the safety of livestock products.

Livestock is an aspect of agricultural production. Agriculture is simply defined as the art and science of plant growing, animal husbandry and the production of fiber for human consumption. As a branch of agriculture, livestock is engaged in the production of domesticated animals, except domestic and game animals.

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УПРАВЛЕНИЕ РЫНКАМИ ЖИВОТНОВОДЧЕСКОЙ ПРОДУКЦИИ НА ПРИМЕРЕ РК (НА ПРИМЕРЕ ВКО)

Аннотация. Животноводство вносит важный вклад в обеспечение продовольствием сельских и городских районов и способствует питанию семьи, обеспечивая животных белком. По мере роста доходов домохозяйств увеличивается потребление белка, главным образом животного происхождения, что позволяет заменить растительный белок животным. Помимо молока, яиц и мяса, используемых в качестве источника пищи, для домашнего потребления и местной продажи используются другие продукты животноводства, такие как шкуры, шкуры и рога.

Животноводство тесно связано с растениеводством. Использование домашнего скота и навоза его субпродуктов имеет важное значение в растениеводстве. Животноводство является источником энергии, обеспечивающей тягу животных, в то время как навоз улучшает структуру почвы и плодородие, а также задерживает влагу. Оба вида использования являются экологически чистыми, улучшая круговорот энергии и питательных веществ.

Ключевые слова: управление, рынок, агропромышленный комплекс, сельское хозяйство, экономика, модернизация, технологии

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ҚР МЫСАЛДАҒЫ ӨМІРЛІК ӨНІМДЕРІН НАРЫҚТЫҚ БАСҚАРУ (ЭКО ҮЛГІСІ БОЙЫНША)

Аннотация. Мал шаруашылығы ауылдық және қалалық жерлерде азық-түлікпен қамтамасыз етуге маңызды үлес қосады және жануарларды ақуызбен қамтамасыз ету арқылы отбасылық тамақтануды дамытады. Үй шаруашылықтарының табысы өсетіндіктен, өсімдік ақуызын жануарлармен алмастыруға мүмкіндік беретін протеин тұтыну, негізінен жануардан көбейтіледі. Азық-түлік көзі ретінде пайдаланылатын сүт, жұмыртқа және етге қоса, тері, терілер және мүйіз сияқты басқа да мал шаруашылығы өнімдері үйде және жергілікті сатылымда қолданылады.

Мал шаруашылығы өсімдік шаруашылығымен тығыз байланысты. Өсімдік шаруашылығында мал мен көңді пайдалану маңызды. Мал шаруашылығы - бұл жануардың қажеттілігін қамтамасыз ететін энергия көзі,

ал көңді топырақ құрылымын және құнарлылығын жақсартады, сондай-ақ ылғалды сақтайды. Екі пайдалану да экологиялық таза, энергия мен қоректік заттардың айналымын жақсартады.

Түйін сөздер: менеджмент, нарық, ауыл шаруашылығы, ауыл шаруашылығы, экономика, жаңғырту, технологиялар.

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INNOVATION IN ECONOMICS AND FINANCE

Abstract. It is shown that, despite a significant increase in innovation activity in the financial sector of the economy, a large number of developments in this area, some gaps remain related to the practical application, introduction of financial innovations, the use of innovative tools in the field of financial technologies in the Russian economy, the definition of the role and places of financial innovation in the overall structure of the financial sector of the economy. Studied the main trends in the development of the digital economy. It is convenient for people to exchange money in the process of communication without using any separate applications. Therefore, other companies have followed the example: options for sending money in the chat now offer, in addition to the aforementioned Apple, Facebook, Google, Vk.

Keywords: innovation, finance, economics, virtual business environment, securities, management.

Financial innovations are not planned by any centralized bodies, but result from the actions of individual entrepreneurs and firms. The main economic motives that stimulate the emergence of innovations in the financial sphere, in essence, are no different from those operating in any other areas of human activity. As Adam Smith noted, “Every individual seeks to use his capital in such a way that it brings the greatest profit. As a rule, his intentions do not include serving the public interest, and he usually does not even know how much he contributes to their satisfaction. He is only concerned with his own security and profit. But an individual seeking exclusively for his own benefit is directed by an invisible hand to a result that was not part of his intentions. Following his own interests, he often contributes to Theological Society is much more effective than if he really wanted to do it. "

The main role in the financial markets is played by the US economy, much will depend on the rate increase by the Federal Reserve. Recent investor surveys estimate the rate hike in the United States at 68%. In such circumstances, the dollar will grow, the flow of money from peripheral countries to the United States will increase. The economies of three or four of the most developed countries in the world are in recession. Over the past 6 years, the economies of China, Brazil, Russia (even despite falling oil prices and the use of Western sanctions), India looks better than other developing countries.

To illustrate this situation, compare the situation in which a college graduate found himself, going to travel abroad in 1965 (the year when the college graduated from the authors of this book), with what questions the modern young man has to solve. A few decades ago, a traveler abroad constantly had to worry about the fact that money can run out exactly where no one speaks your language. In this case, you had to telegraph home and try to organize a telegraph transfer from a bank in your country to a local one. There is no need to explain how long and costly this process was. Preliminary agreements with foreign banks on opening credit lines were available only to the richest travelers.

Nowadays, almost any purchase abroad can be paid with a credit card. Cards such as VISA, MasterCard and American Express are accepted almost anywhere in the world. To pay, for example, a hotel room, you simply give the clerk your card and he inserts it into a special device connected to the telephone line. In a matter of seconds, your creditworthiness is checked (i.e. the fact that the bank that issued you this card guarantees payment). After that, you just have to sign the receipt and go travel further.

Moreover, with this system, you can not worry about the fact that money is lost or stolen. If you cannot find your credit card, then simply go to any nearby bank connected to the bank that issued the lost card. The bank cancels it (so that someone else could not use it) and issues a new one. In many banks in this case, you can even get a loan.

The fact that thanks to the introduction of credit cards, international travel has become much more convenient and cheaper, no one doubts. Their invention and distribution have benefited millions of people and contributed to the "democratization" of finance.

But how did this happen? We suggest that you consider the main factors influencing the development of financial innovations by the example of credit cards.

The most important factor is technology. The use of credit cards became possible only as a result of the creation of telephone and computer networks, as well as other, more complex telecommunication systems, technical equipment and software for information processing. However, in order for credit cards to become an important part of the modern financial system, firms offering financial services and are constantly looking for new opportunities to make a profit should be ready to use this advanced technology. Households and firms had to be ready to purchase these cards.

In the history of innovation (both financial and in any other areas) it often happens that a company, which is a pioneer in the development of any potentially economically viable idea, does not receive the greatest benefits from this. This is also true for credit cards. The first company that offered to use credit cards for international travel was Diners Club, founded immediately after the end of the Second World War. The success of this company has prompted two other companies, American Express and Carte Blanche, to offer similar credit card programs.

Firms offering credit card services make a profit in the form of commissions, which retailers pay for them, selling goods using cards (as a rule, a certain percentage of the purchase price), and also in the form of interest paid for the use of credit by the owners of these cards (on account balance). The greatest costs of such firms are the costs of operations, losses due to card theft and the inability of their owners to repay their obligations.

When commercial banks first tried to work with credit cards in the 1950s, it turned out that they could not compete with companies providing such services due to their high operating costs. However, in the late 60s, these costs were significantly reduced due to the development of computer technology and banks could already compete with such firms. Nowadays, two large banking systems are leaders in the market of services using credit cards: VISA and Master Card, while the share of Diners Club and Carte Blanche firms has declined significantly.

Thus, due to competition among the largest credit card issuer firms, the costs of customer service are relatively small. For most people who travel today, using credit cards is not only more convenient, but also more profitable than travelers checks.

The first example of innovation in finance is Bitcoin. The first and most popular cryptocurrency is more expensive than ever. Gradually, the state and business are moving towards recognizing bitcoins as a means of payment, and a whole new mining industry has formed around their production. Bitcoin itself is not important, but the technology behind it - the blockchain. The possibility of decentralized, anonymous, encrypted transactions between system participants. This technology can change not only finances. She will be able to keep the correct data forever. They can not be hacked or changed. There will be no need for an intermediary who often violates privacy and is vulnerable to hacker attacks.

Block-chain can be used instead of a notary, to check the quality of products, anonymous voting and hundreds of other things. His supporters are not tired of claiming that block-chain today is like the early Internet.

Attracting shareholders' funds through an IPO is highly bureaucratic and occurs too late in the life cycle of companies. This method does not allow attracting funds for the development of a startup.

This led to the emergence of ICO - raising funds in the cryptocurrency to develop a startup in the very first stages. Thanks to block-chain technology, all investors receive their guaranteed share in case of success of the company. Over the past month, a new method has allowed companies to attract hundreds of millions of dollars.

Block-chain is not the only problem for banks. Previously, a start-up group in Silicon Valley, which is not interested in anyone in the field of financial technologies, suddenly flew up to the skies. Both in terms of universal attention and expectations, and in terms of funding. Not one promising market over the past 2 years has shown such a fantastic investment growth as fin-tech. For the period 2010 to 2015, venture capital investments grew 10-fold to $ 19 billion a year. Around the world, thousands of FINTECH startups and several dozen "unicorns" have appeared. Only 0.2% of Americans pay for goods using a mobile phone

instead of cash or a credit card. But experts predict that this method of payment is the future, because it is more profitable, and everyone always has smartphones with them. 2 billion people still do not have access to banks and the ability to use a smartphone for financial transactions helps them get out of poverty.

So in Kazakhstan, the share of the population with skills of using a personal computer, smartphone, tablet, laptop and standard programs averages almost 70%.

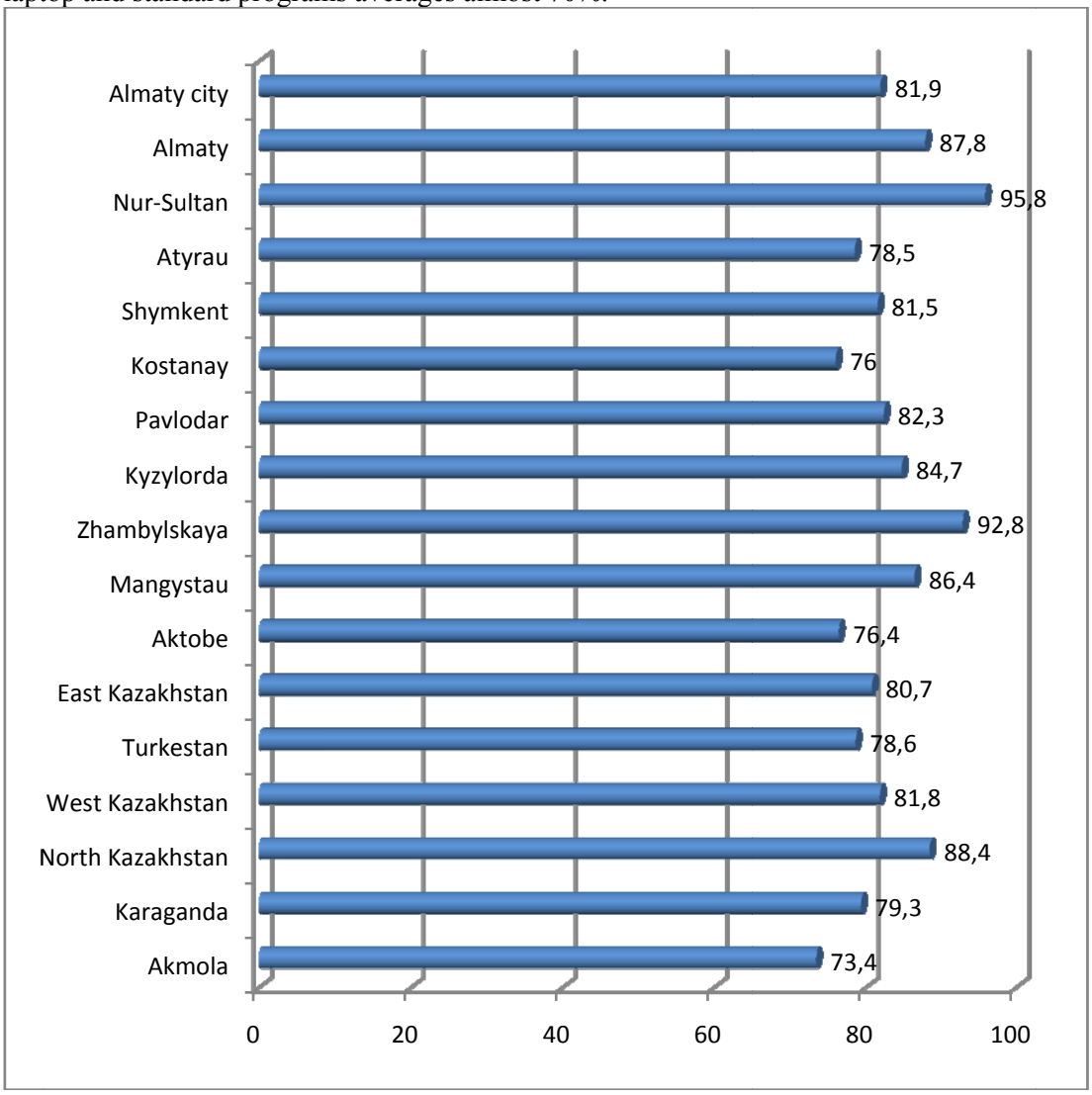

Figure 1 - Share of the population with the skills of using a personal computer, smartphone, tablet, laptop in the Republic of Kazakhstan for 2018

Thus, the Republic of Kazakhstan introduces amendments to 19 resolutions of the Board of the National Bank of Kazakhstan on issues of payments and payment systems. The changes relate to the opening, maintenance and closure of customers' bank accounts, the use of stamps, and the procedure for making cashless payments, the provision of electronic banking services and other issues. A Memo must accompany a bank loan agreement concluded with an individual borrower, in addition to the loan repayment schedule, for the borrower in an approved form.

Mobile banking applications that allow payments and transfers without visiting bank branches, including transfers only by phone number. Contactless payment cards, stimulating the growth of the use of non-cash payments. Biometric customer identification accelerates customer service and reduces fraud risks. Card delivery services or quick card issuance service in bank branches.

Another expected innovation was payments by phone number. Between the clients of the same bank, this opportunity already existed among several players and earlier, in the same year, a system of low-cost

instantaneous interbank transfers was launched using the Sunqar mobile phone number. So far, only three banks are connected to it, however, the tariffs between them differ from zero tenge to several percent.

In general, today's banks' strategy is an improvement from the point of view of the user experience of mobile versions of remote banking services, since customers began to perform most transactions on smartphones, and not in desktop versions.

According to experts, these solutions have significantly simplified customer service - in order to make payments or send money, it is enough to have a smartphone and a bankcard attached to it at hand. With it, you can pay and order a home purchase on the couch. Thus, in Kazakhstan, players create services that enable them to obtain banking services faster, more conveniently and with higher quality.

We have underfunded the sphere of applied innovations aimed at making profit at the expense of the current solutions that the market needs. At the same time, fundamental science, long-term research and old research institutes that do not work, regularly finance. At the same time, a whole pleiad of people who do not live “thanks” but “contrary to” matured, and they manage to do something. This is how e-commerce, mobile solutions and payments appeared. Depending on the industry, the process of creating innovations from basic science to product launch on the market takes from seven to 10 years, sometimes 12, while in niches related to IT, for half a year, you can roughly put 40 versions of a mobile application and market one sought-after product. $ 50 million would be enough to finance about 1.5 thousand startups, providing teams with salaries and offices for the year of operation and stretching that amount for 3-5 years. For the year, IT professionals and coders would test several business models and launch a large number of mobile applications or some innovative solutions on the market. About 10% of them would have taken root. According to statistics, 90% of investments are unprofitable. The remaining projects are a priori innovative and popular projects. This procedure must be done annually. This scheme will be effective with the participation of professional venture investors who understand what will be in demand in the market, and not government employees, employees of development institutions, and especially not scientists.

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ЭКОНОМИКА ЖӘНЕ ҚАРЖЫЛАНДЫРУДАҒЫ ИННОВАЦИЯ

Аннотация. Экономиканың қаржы секторындағы инновациялық белсенділіктің айтарлықтай өсуіне қарамастан, осы саладағы көптеген жаңалықтарға қарамастан, Ресейде экономикадағы қаржы технологиялары саласындағы инновациялық құралдарды қолдану, практикалық қолдану, қаржылық инновацияларды енгізу, рөлді және экономиканың қаржы секторының жалпы құрылымында қаржылық инновациялар орындары. Цифрлық экономиканы дамытудың негізгі бағыттарын зерттеді. Адамдар ешбір жеке өтініштерді пайдаланбай, байланыс процесінде ақша алмасуға ыңғайлы. Осылайша, басқа компаниялар мысалды бақылап отырады: жоғарыда аталған Apple, Facebook, Google, Vk-ға қоса, чатқа ақша жіберу нұсқалары ұсынылуда.

Түйін сөздер: инновация, қаржы, экономика, виртуалды бизнес ортасы, бағалы қағаздар, басқару.

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ИННОВАЦИИ В ЭКОНОМИКЕ И ФИНАНСАХ

Аннотация. Показано, что, несмотря на значительный рост инновационной активности в области финансового сектора экономики, большое количество наработок в данной области, сохраняются некоторые пробелы, связанные с практическим применением, внедрением финансовых инноваций, использованием инновационных инструментов в области финансовых технологий в российской экономике, определением роли и места финансовых инноваций в общей структуре финансового сектора экономики. Изучены основные тенденции развития цифровой экономики. людям удобно обмениваться деньгами в процессе общения, не

используя при этом никакие отдельные приложения. Поэтому другие компании последовали примеру: варианты отправки денег в чате сейчас предлагают, кроме вышеупомянутой Apple, Facebook, Google, Vk.

Ключевые слова: инновации, финансы, экономика, виртуальная бизнес-среда, ценные бумаги, управление.

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EXPERIENCE OF FOREIGN COUNTRIES IN PUBLIC DEBT MANAGEMENT

Abstract. In recent decades, the problem of public debt is an urgent problem in most countries of the world. Despite the implementation of a number of measures and initiatives aimed at curbing the growth of global debt, its size continues to grow. At the same time, the increase in debt volumes is observed not only in developing countries experiencing a lack of their own resources, but also in a number of developed countries that have significant domestic savings, such as the United States, Japan, and the United Kingdom. Therefore, the effective management of public debt and its direct reduction are among the main priorities of the public policy of any country. Government debt does not always symbolize problems in the economy, but it can be judged on its vulnerability to external influence. What is described in detail by the authors of the article as a result of this research, in particular, effective management of public debt in foreign countries.

Keywords: public debt, mechanism, innovation, budget, development, finance.

INTRODUCTION

Certain successes of individual countries in improving the public debt service system through its commercialization are noted. For this, in particular, a debt management agency can be used. The agency conducts operations as if from the standpoint of an investment bank, the salary of its employees depends on the results of debt management activities. At the same time, it is necessary to take into account the warnings regarding the spread orientation on commercialization and entrepreneurial behavior of the state, since the actions of the latter must be not only effective, but also politically responsible.

MAIN PART

In the October issue of the Budget Herald of the International Monetary Fund (hereinafter ¾ IMF), 2016, for the first time, an indicator of the size of the debt was presented, covering almost the entire world. World debt is at a record high of 152 trillion US dollars, or 225% of world GDP (Figure 1). Nearly 100 trillion, or about two-thirds of this amount, are liabilities of non-financial firms and households — private debt. The remaining part falls on public debt [1].

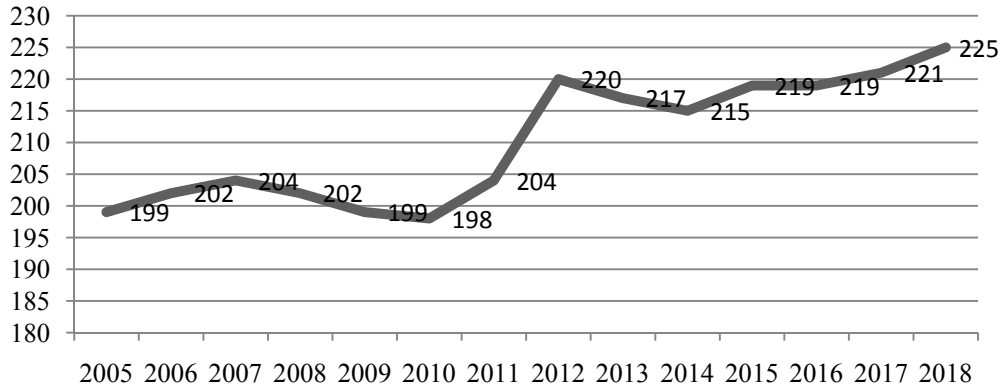

Figure 1- World Debt Indicators ¾ at record high levels

When considering public debt, as a rule, the counter-claims of this state to others are not taken into account, that is, the debt of other states or individuals and legal entities is not considered to this state. The obligations of the state in the field of social and pension benefits are also not taken into account. The size of public debt is expressed in national currency or its equivalent in any other currency. For a more objective comparison, government debt is indicated as a percentage of GDP, and it is for him to say whether a certain country will be able to repay its debt without extra loans in foreign markets. Thus, the lower the debt-to-GDP ratio, the better for the country. However, the state cannot infinitely increase its debt, since when a certain level is reached, investors and creditors begin to doubt the solvency of the state (low credit). The assessment of solvency, in turn, depends on the refinancing rate and the rate of economic growth of the country. That is, if the refinancing rate is significantly lower than the GDP growth rate, then long-term state borrowing is possible. For countries with a high level of public debt, with new borrowing, not only interest rates on loans rise, but also the number of investors themselves who are ready to provide their capital decreases. So, consider the values of public debt of some countries of the world (without the counterclaims of other states) in relation to GDP in Figure 2.

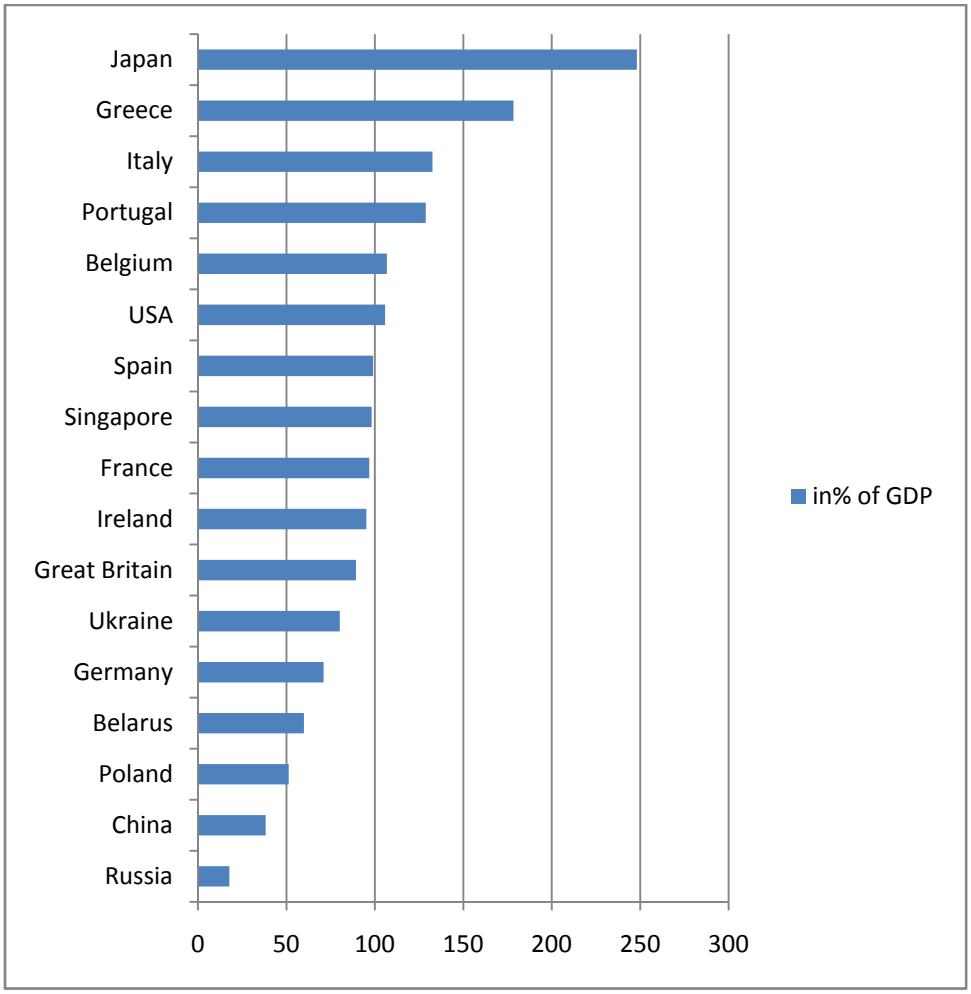

Figure 2 - Public debt of the countries of the world in% of GDP for 2018

Based on the data shown in Figure 2, you can see that the size of public debt in some countries exceeds the level of GDP, and therefore is a significant problem for such a country. Therefore, the most important task of the economic policy of states is the search for an effective system of public debt management to minimize potential costs and risks. D.L. Golovachev describes the management process as "the formation of one of the directions of the state's economic policy related to its activities as a borrower". This concerns the formation of a policy in this sphere, as well as the establishment of the limits

of public debt and the expediency of attracting additional resources. In a narrower sense, public debt management is the implementation of measures for the placement of debt obligations and debt service [2].

Many countries seek to effectively manage their debt. Most countries of the Organization for Economic Cooperation and Development (hereinafter OECD) call cost minimization and risk accounting as the main goal. In particular, the UK seeks to maintain the annual level of purchase and sale of government bonds with regard to risks. And the Danish government, while lowering the cost of loans in the long term, is trying to maintain an acceptable level of risk. The debt management recommendations prepared in March 2001 by a group of IMF and World Bank staff contain the following wording about the public debt management goal: to ensure that the government's financing needs are met and its payment obligations are met at the lowest cost in the medium and long term with a reasonable degree risk. Table 1 shows the objectives of public debt management in different countries.

Table 1- Goals of public debt management in different countries

Country	Public debt management goal
Australia	"To attract loans, manage debt and service it with the lowest long-term costs and acceptable risk."
Denmark	"The overall goal of government debt policy is to reduce, as far as possible, the cost of loans in the long term."
Ireland	"Refinance repayable debt and finance the country's need for borrowed funds in such a way as to ensure long-term liquidity and restrain the growth of debt servicing costs."
New Zealand	"To maximize long-term economic income on financial assets and government debt in the context of fiscal strategy and the government's unwillingness to take risks."
Portugal	"To attract loans and make other financial transactions so as to meet the country's need for borrowing funds on a stable basis and minimize the cost of servicing the debt, taking into account the developed risk strategies."
Sweden	"To minimize in the long run the cost of loans with due regard for the risks associated with debt management. Management must always comply with the requirements imposed by monetary policy and the instructions of the cabinet of ministers. "
Great Britain	"Maintain the annual volume set by ministers of the treasury for the purchase and sale of government bonds, with an emphasis on minimizing long-term costs and taking into account the risk"

Public debt management is carried out directly by the state. It achieves its goals and implements its strategy through market operations. Organization of public debt management, as a rule, carry out certain institutional structures. In world practice, there are several institutional forms of public debt management. In particular, in Denmark, Iceland and China, external public debt is regulated by central banks. Among countries where government debt management is carried out by the Ministry of Finance: Canada, the Czech Republic, Israel, Japan, Korea, Mexico, Norway, Poland, Spain, Switzerland, etc. In Austria, Sweden, Hungary, Slovakia, Portugal and a number of other countries there are agencies for public debt management (Table 2). Thus, in the world practice of public debt management there is no unified approach to the choice of the legal status of a debt agency. In a number of countries, these functions are performed by companies - debt agents, in other countries - by structures under government bodies. At the same time, the positive arguments in favor of the first approach are reduced mainly to the independence of the agency from various structures lobbying their interests. The main argument in favor of the second model is the critical importance of coordinating external debt management policies with fiscal and monetary policies. However, the decision-making process within a multi-level bureaucratic structure is often too long in time and may not keep pace with changes in the financial market. An integrated approach is possible, in which the functions of setting strategic benchmarks in the formation of the debt portfolio will be transferred to a state organization. Other functions related to accounting, custody, technical work on debt management can be transferred to an independent link. In addition, even if the public debt management body is separate, it is always accountable to the Council of Ministers or the Ministry of Finance, which determine the debt management strategy and evaluate the work of the agency [3].

It is impossible to say which institutional structure more effectively manages public debt, however, the least effective is the model in which the public debt management function is carried out simultaneously by different institutions - the ministry of finance, the treasury, the central bank and the agency. Decentralization, as a rule, negatively affects the solution of tasks related to the management of internal and external debt, state budget funds, assets or unforeseen obligations, or the function of state

regulation. Also in this case, it is important to note the fact that the concentration of key managerial and operational functions in one structure, for example, in a government debt management agency, is currently a requirement of international financial institutions such as the IMF, the World Bank, and the OECD.

Table 2 - Institutional structures of public debt management

Institutional structures	Countries
Government Debt Management Agencies	Austria, Germany, Hungary, Ireland, Portugal, Sweden, Slovakia, United Kingdom
Treasury	Australia, Belgium, Finland, France, Luxembourg, Holland, USA, Turkey, Brazil, Latvia, Malta, Papua New Guinea
Ministry of Finance	Canada, Chile, Czech Republic, Israel, Japan, Korea, Mexico, New Zealand, Norway, Russia, Poland, Slovenia, Spain, Switzerland, Afghanistan, Argentina, Bulgaria, Croatia, Cyprus, Egypt, Estonia, Georgia, Hong Kong, India, Indonesia , Kenya, Lithuania, Macedonia, Maldives, Moldova, Morocco, Pakistan, Philippines, Romania, Serbia, Singapore, Solomon Islands, Sri Lanka, Thailand, Tunisia, UAE, Vietnam, Uruguay and others
Central banks	Denmark, Iceland, Angola, Barbados, China, Jordan, Lebanon, Malawi, Uganda, Zambia, Zimbabwe

The fact that the agency operates on the basis of the parent organization (ministry of finance, central bank) or in a separate building or city, by and large does not have a special meaning. For participants in the global market, the status of independence of the institution for managing public debt is quite significant. This contributes to greater investor confidence in the increase in the efficiency and transparency of state policy in this area. In four countries — Ireland, Sweden, Germany, and Hungary — public debt management organizations are institutionally independent. In the first two countries, these institutions are represented as government agencies, and in the other two as open joint-stock companies [2].

For effective management of public debt, solving the problem of reducing the debt burden and the risk of non-fulfillment of government debt obligations, as mentioned earlier, use a variety of methods. One of the most common is the refinancing method, as well as the restructuring method. The latter was used in Russian practice: the debt to the London Club of creditors was restructured in eurobonds. An example is the Brussels proposal of Greece's creditors to write off 50% of the debt. Also on September 22, 2015, the Ukrainian government decided to suspend all external debt payments as part of an agreement with creditors on restructuring. The most rarely used method of cancellation of public debt. One of the examples of countries that used the method of debt cancellation is Iraq: due to the difficult financial situation and the coming to power of the new government, 53 countries, at the suggestion of the United States, agreed in 2007 to write off 80 to 100% of Iraq's foreign debt, including Saudi Arabia wrote off 80% of the debt to Iraq, which is about $ 15 billion.

In international practice, redemption or repurchase of debt is often used, carried out by the debtor, as a rule, only in agreement with creditors. Thus, the right to repurchase the debt was granted to the creditors of Poland as one of the measures in the framework of a special program to facilitate debt service (1988–1994). As a result, Poland bought out 2.4 billion US dollars of foreign debt at a price of 38–41 cents per $ 1. Redemption of debt at a discount, with financial support from the IMF and the World Bank, was offered in the "debt restructuring menu" among other debt relief measures to many developing countries. For example, the Philippines repurchased part of its debt to Western banks, paying 52 cents per dollar, Albania - 26, Bulgaria - 25, Bolivia - 16, Nicaragua - 8 cents.

It should be noted that the unauthorized creditors redemption of their own debt is considered unacceptable to the global financial community and may irrevocably undermine the debtor's reputation, blocking the possibility of new borrowing and debt restructuring. Straight-line buying up of debts can also cause a rise in prices in the debt market, which will negate the economic effect of this operation. At the same time, a fairly massive purchase of debt with a well-thought out and flexible strategy in this direction is possible. This confirms the experience of US investment funds, which took advantage of the favorable situation on the debt market, buying up in 1998–1999. from 15 to 25% of all debts of Russia to commercial banks.

In a number of countries, such as Ireland, Denmark, Sweden, New Zealand, non-ordinary, sophisticated public debt management methods are used, which are similar to securities portfolio management practices. To do this, a theoretical base model of the debt portfolio is built, then the country's capabilities are evaluated in the corresponding situation on the world market to use certain debt instruments and deviations from the base model are determined. The desire for similar approaches to debt management is also observed in Belgium, Portugal, Italy, Australia, Colombia, Argentina.

One of the new aspects of foreign experience in servicing the public debt is its linkage with privatization; two aspects of this linkage can be pointed out. On the one hand, privatization revenues are often used to reduce public debt. In other cases, privatization provides for the issuance of government convertible bonds.

The experience of managing public debt in Mexico is considered useful for other countries. Successful was the choice and alternation of forms of borrowing, which included short-term emissions with a floating interest rate, medium-term and long-term bonds with a fixed interest. To avoid failure, the government should have the rule to come up with such volumes of bond issues that were significantly lower than expected demand for them, and also not to set too high prices on their bonds [4].

CONCLUSION

Thus, an unequivocal way to solve the debt problem does not exist. Using a variety of debt management techniques that are used in world practice, it allows debtor countries, on the one hand, to significantly ease their debt burden to international financial organizations, and on the other hand, they have opportunities to get new loans. The choice of a particular technique or model depends primarily on the characteristics of the country and the level of the economic situation in it. A necessary prerequisite for ensuring the most favorable conditions for the settlement of public debt is the creation of a convincing action program aimed at continuing and accelerating market reforms in the state, improving the investment climate, and strengthening democratic institutions. And also a well-built control system, which contributes to improving the management of public debt and, as a result, improving the economic indicators in the country.

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ШЕТЕЛ МЕМЛЕКЕТТЕРІНЕ МЕМЛЕКЕТТІК БАСҚАРУ БАСШЫЛЫҒЫНДАҒЫ ТӘЖІРИБЕСІ

Андатпа. Соңғы онжылдықтарда мемлекеттік қарыз мәселесі әлемнің көптеген елдерінде өзекті мәселе болып табылады. Әлемдік борыштың өсуін тоқтатуға бағытталған бірқатар шаралар мен бастамаларды жүзеге асыруға қарамастан, оның мөлшері өсуде. Сонымен қатар қарыздың көлемін ұлғайту дамушы елдерде ғана емес, өз ресурстарының жетіспеушілігін бастан кешіріп қана қоймай, сондай-ақ АҚШ, Жапония және Біріккен Корольдік сияқты елеулі ішкі жинақтары бар бірқатар дамыған елдерде байқалады. Сондықтан, мемлекеттік қарызды тиімді басқару және оны тікелей қысқарту кез келген мемлекеттің мемлекеттік саясатының негізгі басымдықтарының бірі болып табылады. Мемлекеттік борыш үнемі экономикадағы проблемаларды символға айналдырмайды, бірақ ол оның сыртқы әсеріне осалдығын бағалауға болады. Осы зерттеудің нәтижесі ретінде мақаланың авторлары, атап айтқанда, шет елдерде мемлекеттік қарызды тиімді басқару туралы нені сипаттаған.

Түйінді сөздер: мемлекеттік қарыз, механизм, инновация, бюджет, даму, қаржы

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ОПЫТ ЗАРУБЕЖНЫХ СТРАН В УПРАВЛЕНИИ ГОСУДАРСТВЕННЫМ ДОЛГОМ

Аннотация. В последние десятилетия проблема государственного долга является актуальной проблемой большинства стран мира. Несмотря на реализацию ряда мер и инициатив, направленных на сдерживание роста мирового долга, его размеры продолжают расти. При этом увеличение объемов долга наблюдается не только в развивающихся странах, испытывающих недостаток собственных ресурсов, но и в ряде развитых стран, имеющих

значительные внутренние сбережения, таких как США, Япония, Великобритания. Поэтому эффективное управление государственным долгом и непосредственное его уменьшение являются одними из главных, приоритетных задач государственной политики любой страны. Не всегда государственный долг символизирует проблемы в экономике, однако по нему можно судить о ее уязвимости для внешнего воздействия. О чем подробно изложено авторами статьи в результате данного исследования, в частности, эффективное управления госдолгом в зарубежных странах.

Ключевые слова: государственный долг, механизм, инновации, бюджет, развитие, финансы.

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CREATING A HIGHLY EFFICIENT PROJECT TEAM AS A PLEDGE OF SUCCESS

Abstract. In the conditions of existing competition in the market of innovative products, the requirements for personnel entrusted with the development of a new product or other type of activity are increasing. The need to have effective workers is dictated by the need to first bring a new product to the market, whereby the team working on a specific task must work efficiently, without loss of time. As a result, the question arises, how can a highly efficient team be formed? The article discusses the methods for determining the team interaction model, which in turn is the foundation for building an effective work of the project team. The authors considered the algorithm of using tools and methods of development of the project team, depending on the scale of the projects, which can contribute to the effective interaction of team members. Correct and competent formation of the team relationship with the definition of areas of responsibility contributes to the creation of an effective system of motivation and incentives for company employees - this is, to a greater extent, the key to successful implementation of any project ..

Keywords: teamwork, high-performance team, project, team.

Introduction

Today, in an era of strong global competition and the emergence and rise of new technologies, it is teamwork that plays a leading role in achieving tangible organizational results, supporting the competitive advantages of companies and their effectiveness. Modern organizations need employees who work on the terms of organizational change. In addition, in the modernen vironment of Kazakhstan business there are limited resources, budget cuts and the use of temporary assistance. Crisis periods and organizational success. It is under these conditions that a high performance team is created.

Despite the popularity and effectiveness of project management methods, according to statistics, more than 40% of projects turn into failure or do not complete at all. The reasons for the failures are less industrial-economic or technical in nature, and more so are associated with the culture of entrepreneurship in the formation of the project team. In many ways, the success of the project by 20% depends on coherence and focus, organizational culture, working conditions and coordination of the project team. Thus, the actual issue today is the effective management of the project team.

Certainly, the brightest dream of each project manager is to create a perfect project team, however, it is rather unattainable, at least if already involved team members are the only potentialparticipants of a group. In any case, the project manager will be limited by the lack of time and current resources. At the same time, it should be remembered that the project team is essentially a temporary organization with the main task to work on a specific goal, that is, the implementation of this project.

That is why the formation of a highly efficient team is considered as a strategically important achievement of the project manager and his highest priority when implementing a product. Effectively developed working model of teaminteraction is the result of a successful motivation system and staff, and thus achieving the strategic goals of the company, its growth and development.

Mainpart

The main functional roles in the ideal group of the project include coordinator, technical expert, consulting analyst and performer. Participants of a highly efficient project team should:

– aspire to reach a common goal;

- make decisions and develop solutions;
- have a confidence in success of the project;
- take responsibility;
- perform several roles in the project;
- analyze emerging issues;
- focus on a result and a process of work;
- be complementary[1].

When implementing a common project, it is wrong to separate the work of the customer group and the contractor's group. After all, both of them were created for the sake of the common goal - the completion of the project with maximum success and minimum costs. If problems arise both during the implementation process and after implementation, when the query management system is already functioning, experts from the executor should act as consultants and develop several optimal solutions, and the client, after analyzing all the proposals, should choose the most optimal option for him.

Preventing possible conflicts based on a preliminary risk assessment, tireless monitoring and control, as well as regular discussions on the situation of the persons responsible for the project help to achieve the best balance in the efficiency, the experience of the participants and the project changes to achieve a result that suits both interested parties.

Teams have existed for thousands years, revered in many countries and cultures, and are the subject of many books. Most people are confident that they know how teams work and what benefits they have. Many worked in teams themselves –periodically achieving results, and sometimes wasting time. But in the study of this phenomenon, it became obvious that the potential impact of individual teams, as well as the cumulative impact of many teams on the effectiveness of large organizations, remain absolutely unexplored subjects, despite the rapidly growing need for teamwork. Awareness of the paradox and its study helped us to draw a number of key conclusions about team effectiveness.

The team has common features with the group (history, future, etc.). However, the team has staff that are more permanent, a clearer distribution of roles, a clearer and more formalized aim. Team members have common norms with common goals; they say "we," perceiving themselves as a whole unit.

The defining role of the team in ensuring the success of the project is noted by all authors of modern publications devoted to the disclosure of issues of project management, for example, R.M. Belbin, V.V. Bogdanov, M. Razu, I. Adizis and others.

There are a lot of definitions given by various researchers; we will examine the essence of the team from different positions (Table 1). The concept of a project team changes depending on the approach, but this does not make it clearer for practical use. In modern organizations, the following issues become more relevant: how to plan and take into account the resources used in the project, first of all - the workforce staff; it is crucial to define effective employees and ineffective ones [2].

Table 1 - Understanding the essence of the project team from the perspective of different approaches

Approach	The essence of the project team (PT)
System	PT – subject of management in relation to the processes and objects of management (subject-object relations) with all its tasks and functions
Project	PT – cross-cutting evolving technology element of the project
Psychological	PT – self-directed and self-developing subject
Personnelmanagementapproach	PT – a specific group requiring highly trained employees (unique professional competences, teamwork skills, working conditions stress, etc.)
Approach in terms of labor management resources	PT – autonomous structural entity with a finite cycle of work

Unfortunately, in the modern literature devoted to project management, there are terminological inconsistencies in the concept of "project team" even among the leading authors (Table 2). Due to the fact that the authors understand the essence of the project team so differently, methodological inconsistencies arise concerning almost all stages of a project team's existence, ranging from team formation and management to evaluation of the team's work and its contribution to obtaining project results. In our

opinion, the work of the project team requires special study and development of fundamentally different approaches both in the training of specialists and in the development of management methods and evaluation of the team's activities.

Table 2 - The definition of "project team" by various authors

Definition	Author
Project Team – all project team members, including the project management team, the project manager and, in some cases, the project sponsor. Project Management Team - members of a project team who are directly involved in managing its operations. In small projects, a project management team can include almost all project team members.	International standard PMBOOK
The project team is a cohesive effective unit capable of creatively and dynamically working to achieve goals in a rapidly changing external environment.	H. Webster
The project team is a group of employees who are directly involved in the implementation of the project and are subordinate to the head of the latter; the main element of its structure, since it is the team that ensures the implementation of its design. This group created for the period of the project and after its completion is dissolved.	I. Mazur V. Shapiro N. Olderogge
The project team is a phenomenon; self-directed and self-developing subject; end-to-end developing element of project implementation technology As part of project management, the team must self-develop, self-orient and self-motivate.	V. Mikheev

The main criterion for assigning a group to a team is the type of relationship between its members. In order to create a team, in addition to knowing its common features, the manager needs to be able to distinguish between types and forms of teams.

Teams can be divided according to the type:

– functional teams;
– cross-functional teams;
– business process teams;
– administrative teams;
– project teams;
– self-directing teams;
– efficiency teams;
– integrativeteamsandetc. [3].

Effective management implies the team leader needs to understand the roles that team members can perform. The first and most obvious of them is the professional role. It is based on the professional skills and practical experience that employees use when implementing a project or solving a problem.

Another rolefrequently overlooked in a teamis based on personal data. Meredit Belbin explored the difference between these two roles and their implications for team and teamwork in 1981-1983. The results of his research for several years were tested in a number of enterprises, in particular in the British branch of IBM (IBM's Hursley Park Development Laboratory) near Winchester. It was found that 5-10% of people are unable to work effectively in a team, and other workers have to play at least one, two, and maybe even three or four team roles, which, however, are natural to them. Sometimes it happens that employees take on roles that are unusual for them, in which they feel uncomfortable and sometimes helpless [4].

After the conflict is resolved, the team's effective functioning begins. In an effective team, the leadership structure and ways of action are related to the goal.

M. Belbin identifies nine team roles (detailed characteristics are given in the table below). Equally important for effective teamwork, they can be considered only if they are applied at the right time and in the best possible way. For example, in the period when a team is just starting to consider a problem or to develop a project, innovative ideas are usually required (i.e., a "plant" is needed). Then it becomes necessary to assess how these ideas can be translated into practically achievable tasks (that is, a "implementer" is needed). Success is achieved on the condition that the team has a good coordinator ("coordinator") whose task is to ensure the full impact of the team members at the right time. The team gains the driving force and stimulus in the face of an energetic "shaper". The qualities possessed by the

"resource investigator" are most important, when the need to conduct complex negotiations with other groups arises. In order to restrain excessive manifestations of enthusiasm that distract from the main goal, the team needs the "monitor evaluator" (i.e., an "expert"). All sorts of friction and misunderstandings between team members are eliminated by the efforts of the "teamworker". The team has rarely encountered skills and knowledge that are occasionally necessary due to the presence of a "specialist". The role of the "completer finisher" is not to overlook even the smallest details of the implementation of all the plans [5].

Table 2 - Types of team roles in projects

Types of team roles	Crucial personal qualities and contribution to the team	Acceptable weaknesses
Plant (idea producer)	Creativity, rich imagination, originality of thinking. The pursuit of innovation. Source of original ideas for the team.	The lack of experience in interpersonal communication. Psychological instability. May linger for a long time on the consideration of "interesting ideas."
Implementer	Implements ideas into action. Turns solutions into easy-to-do tasks. Keeps order in all the activities of the team.	Lack of flexibility. Dislike fantastic ideas. Dislike frequent changes to plans.
Completer finisher	Diligence and integrity. Ensures that tasks are fully completed. Tracks the deadline of assignments.	Excessive concern about the state of affairs. Tendency to inner experiences. Reluctance to transfer their duties. The rejection of the non-serious attitude towards his duties on the part of others.
Monitor evaluator	Performs an impartial critical analysis of the situation. Strategic approach and insight in assessments. The accuracy of judgments, the desire to consider all possible solutions.	Underestimation of the factors of stimulation and enthusiasm. Lack of inspiration and creative imagination. Theabilitytoknockdownothers, suppressingtheirinitiative.
Resource investigator	Mastering the art of negotiation, a variety of contacts. The talent of the improviser is exploring opportunities. Enthusiasm, sociability.	Loses interest as the extinction of enthusiasm. Jumps from one task to another. Needsincreasedexternalpressure.
Shaper	Constant focus on solving the problem; stimulates the work of the whole team. Promotes the implementation of decisions; encourages employees to work harder. Full of energy, strives for excellence and works with full dedication.	Easily becomes irritable. Impulsiveness and impatience. Intolerance to vague wording. Frequently indecisive behavior. Desires for the result - at any cost.
Teamworker	Contribution to the harmonization of relations in the team and the elimination of differences. Listens carefully to the interlocutor; relies on the opinions of others. Sensitivity, lackofoverconfidence.	Indecisive in crisis situations. The desire to avoid exacerbation of situations. May prevent the commission of actions at a crucial moment.
Coordinator	Clearly formulates goals; performs well as a moderator during discussions. Promotes effective decision making. Has good communication skills; social leader.	May produce the impression of a person inclined to manipulation. The tendency to transpose their responsibilities to others. May ascribe to himself the merits of the whole team.
Specialist	Possesses rarely encountered skills and knowledge. Purposefulness and ability to concentrate efforts. Initiativeandabilitytofullydevotetowork.	Works well only in a narrow professional field. Often weak communication skills. Sometimes, figuratively speaking, "does not see the forest for the trees."

In order for the team to derive maximum benefit from the whole variety of team roles, each of its members must be aware of the peculiarities of the team roles of its colleagues. Only in this case, the team will be able to establish whether the number of nine roles includes those that do not belong to the natural strengths of the personality of each of the team members. If such a situation takes place, then those employees for whom the missing natural team roles are secondary will have to try to fill this gap. Obviously, it is easier to do this in an atmosphere of openness and trust, which is usually present in well-organized and manageable teams. Unfortunately, in teams with insufficiently high levels of mutual trust

and openness, there are people who can speak frankly about everything that relates to their functional role, but show particular shyness when it comes to their personal qualities. In such situations, the competent team leader should try to tactfully resolve the problem.

IchakAdizesaffirms that a team can only be effective if it is complementary. It is under this condition that the team members are in their places, performing different roles in type and character. [6].

Hehighlightsthefollowingrolesofteammembers:

- P – Producer, focusedontheresult, works in short term;
- A –Administrator, effective in a short term work;
- E - Entrepreneur, works effectively in a long term;
- I –Integrator, long term oriented worker.

Adizessaysthatitisnecessary to consider the possibility of conflicts between representatives of different roles:

Forexample, “P” and “A” causeconflictof result and efficiency while interacting.

Cooperative work of the “P” producer of the results and the “I” integrator can lead to the manufacturer's unequivocal results in decision making and, therefore, it is impossible for the integrator to weigh all the pros and cons, as well as hear the opinions of others.

As for the productive work of the “E” entrepreneur and the “A” administrator, for sure, the question of priorities will arise. An entrepreneur demanding change will face a power administrator. Depending on the hierarchy, there will be a feverish race for innovations and the solution of short-term tasks, or stagnation due to the impossibility of making quick and effective decisions by the administrator.

“E” entrepreneur and “I” integrator will collide with each other in the issue of speed and cardinal decisions. If an entrepreneur needs to take risks or sacrifices to achieve the goal, he will do it. The integrator, in turn, will be indecisive, weighing each step and analyzing the possible consequences.

“A” administrator and “I” integrator will not be able to work effectively due to different focusesin work. While the administrator performs the tasks accurately, taking the employees as tools in the work, the integrator will try to find an approach to each person.

Whenformingateamitiscrucialtorealizethe importance of all the roles in the team and presence of each one of them.

The unique style of work of every employee is another necessary thing to take into consideration. You cannot give preference to individuals performing one role ("P000", "0A00", "00E0", "000I"). Due to the difference in beliefs and priorities, the team consisting of such employees will always be on the verge of conflict or in its process.

An effective complementary team formula: “Paei” + “pAei” + “paEi” + “paeI”. In each style, all roles are present to a greater or lesser extent. In this case, each department / employee of the company will be heard.

Another version of the successful team "PaEi" + "pAeI". Both styles have a "balance" of long-term and short-term work perspective.

When forming a team, it’s useful to strive to balance the roles and styles, as well as properly distribute the long-term and short-term, subordination and form of subordination.

There are a number of problems in managing a project team, such as:

- formedprogramsforupgradingtheprojectteam;
- coherence and focus, lack of plans to encourage the team;
- conditions for effective work.

These problems can be avoided by solving the issue of continuous development of the project team.

According to the Project Management Body of Knowledge (PMBOK), the management of the project team includes the following organization processes aimed at the most efficient use of personnel [7]:

– Human resources planning.

– Recruitment of the project team.

– Development of the project team.

– The project team management.

The main task of the project manager is to develop such a development plan for the team, which would allow as soon as possible to enter the stage of operation [8]. There are traditional methods and

approaches to the formation of an effective team: systematic approach in which any system (object) is considered as a set of interrelated elements (components) that have an outlet (goal), input (resources), communication with the external environment and feedback. The essence of the method of analogies lies in the fact that the structure of an enterprise is created on the basis of direct or indirect analogies of this institution considered by a group of experts. According to the experimental-analytical approach, the team can be formed experimentally. This involves making changes and analyzing a formed team until its effectiveness improves. The parametric approach defines the parameters and characteristics that should correspond to the members of the group. Only after this team member can be selected. With the block approach, small groups are first created, which can be called "blocks", and due to their combination the team is formed. The simulation method involves the formation of a team, based on the existing scientific economic model. The method of goalsstructuring determines the goals and objectives, based on which the teams can be formed. The experimental approach has many similarities with the experimental-analytical method - the only difference is that the assessment is given not by a group of experts, but by the head, based on the results of the activity. Thus, each approach has its own advantages and disadvantages. The main one of the latter is that the above approaches do not take into account the development of the project team and its individual members in the implementation of project activities. The development of a project team is one of the most important human resource management processes (see table). It is worth mentioning that not every project requires the use of all the listed approaches. When choosing an approach to business, the main benchmarks should be efficiency and results, and not just the desire to become a team. The most powerful engine for teams is a clear and inspiring task. Without focusing on efficiency there won't be a result. Just trying to "become a team," that is, consciously or unknowingly pursue it as an end in itself, the most difficult way to achieve team efficiency. Teams are created primarily by discipline rather than unity[9].

In the course of research, the author developed an algorithm for using the tools and methods of team development depending on the scale of the project (Fig. 1)

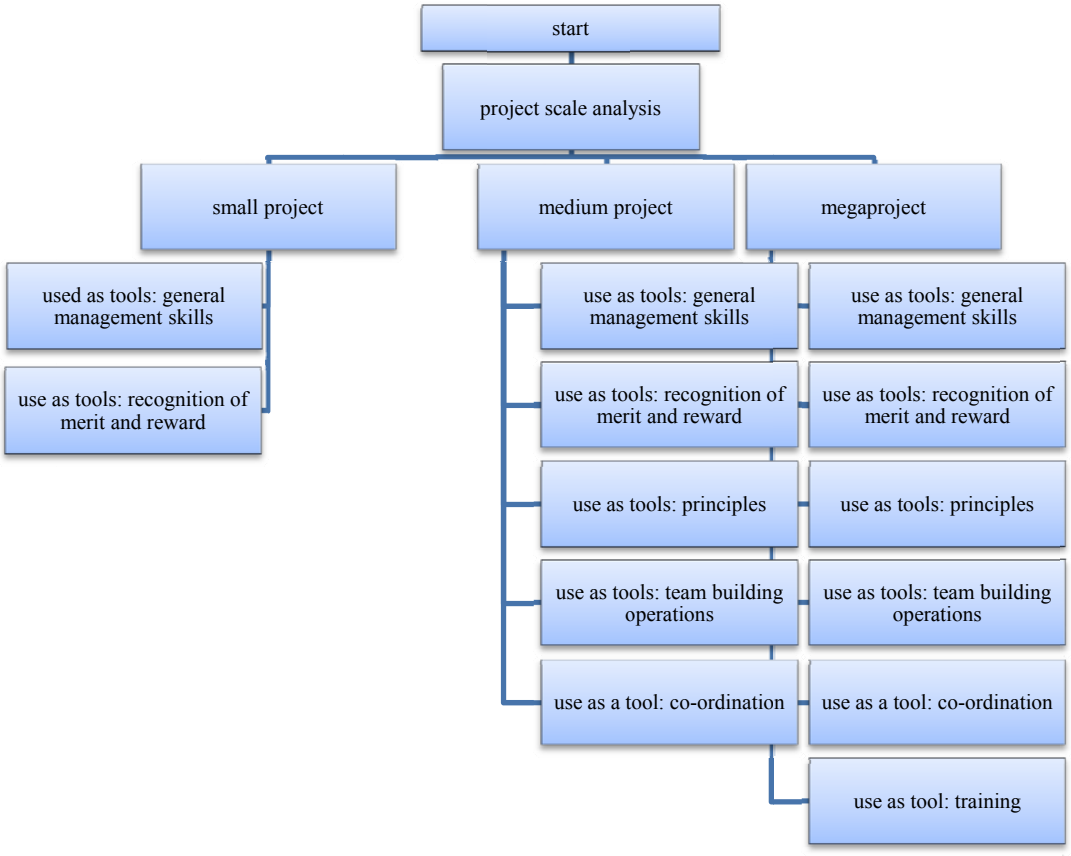

Figure 1 - Algorithm of using tools and methods of project team development

According to John Katzenbach and Douglas Smith, the 6 “basic elements of the team” determine the rules required to achieve team efficiency. These six elements remain unchanged. Only small groups (usually less than 12 people) are able to work effectively as a team. No team can succeed without additional knowledge. The team should have a common mission, a common set of specific goals and a coherent approach to business. Finally, team members must feel collective responsibility for the results. Other aspects of teamwork (such as openness and communication) are certainly important, but none of them are as important and manageable as these six basic elements [10].

A real team must develop an appropriate set of skills, i.e. all the complementary skills necessary to perform the work. Theycanbedividedintothreecategories:

– Professional or operational skills.

– Problem solving and decision making skills.

– Personal interaction skills.

The team will not be able to function effectively in the absence of at least a minimum set of skills, especially professional and functional ones. And no team will be able to complete the task assigned to it without developing all the necessary skills. Therefore, the formation of teams solely on the basis of personal compatibility of people or their formal position in the organization will be ineffective.

The obtained results (conclusions)

In the future, teams will be the main structural elements in the organizations of the future. However, their formation will not be the main goal. Rather, existing efficiency ethics in companies (focusing on high results that balance the interests of clients, employees, shareholders and other stakeholders) will create tasks and conditions conducive to the birth of these highly effective teams. And they, in turn, will provide results capable of maintaining and developing corporate ethics of efficiency. It is this mutually reinforcing cycle of efficiency and teams that will be characteristic of tomorrow's winners.

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СОЗДАНИЕ ВЫСОКОЭФФЕКТИВНОЙ КОМАНДЫ ПРОЕКТА КАК ЗАЛОГ УСПЕХА

Аннотация. В условиях существующей конкуренции на рынке инновационных товаров требования к персоналу, которому доверяется разработка нового продукта или иной вид деятельности, повышаются. Необходимость иметь эффективных работников диктуется необходимостью первым вывести на рынок новый товар, в соответствии с чем, команда, работающая над определенным заданием должна работать эффективно, без потерь времени. Вследствие чего возникает вопрос, как можно сформировать высокоэффективную команду? В статье рассматриваются методы определения модели командного взаимодействия, которая всвою очередь является фундаментом для построения эффективной работы проектной команды. Авторами рассмотреналгоритм использования инструментов и методов развития команды проекта в зависимости от масштабов проектов, которые могут способствовать эффективному взаимодействию членов команды. Правильное и грамотное формирование командной взаимосвязи с определением зонответственности способствует созданию эффективной системы мотивации и стимулирования сотрудников компании – это и есть, в большей степени, залог успешной реализации любого проекта..

Ключевые слова: командное взаимодействие, высокоэффективная команда, проект, команда.

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ESSENCE, CONTENT AND ROLE OF STATE AUDIT IN THE SYSTEM OF STATE FINANCIAL CONTROL

Abstract. State financial control as a complex category is, in the opinion of most scholars, an integral part of the concept of "governance", which, in turn, derives from the essence of power and the state. Like any element of these categories, control has its place in public administration. The control allows to ensure the competence and concreteness of the management, i.e., management based on reliable information, having which you can timely notice the errors and obstacles to the goal, overcome them, adjusting the management, bringing it in line with objective changes, develop the most appropriate solutions to various general and special issues of public life. If we talk about financial control, it should be noted that financial control can be viewed as a function of management activities, but then in this understanding, control should be made at the end of the execution of a management decision in order to establish the correspondence between the decision made and its executed version.

Keywords: compliance audit, methodological approaches, taxes, state audit.

INTRODUCTION

Important, in our opinion and in the opinion of most scholars involved in financial control, a feature of state financial control is the fact that it is exercised by state authorities possessing authority with respect to objects of control, and, accordingly, all entities carrying out operations with controlled objects within the scope of state financial control are liable to assist in its control bodies within

carrying out control measures against them.

With the help of control, management bodies receive information on the real state of affairs and, accordingly, have the opportunity to make timely adjustments in work in order to prevent financial losses and violations of financial legislation.

Thus, it can be concluded that control is one of the important and necessary legal means to ensure strict observance of legality in the activities of the state apparatus.

MAIN PART

From the foregoing, the following conclusion should be made that state financial control is a special type of financial activity carried out by state authorities and other authorized entities with authority to conduct control measures in respect of entities conducting operations with centralized funds state, using state property, in order to identify violations of financial legislation.

Reliability refers to the degree of accuracy of the financial (accounting) statements data, which allows the user of the financial statements to draw correct conclusions about the results of operations, financial and property position of the audited persons based on their data, and make informed decisions based on these findings.

Financial audit is designed to answer the question: whether the funds were used in accordance with the set goals, performance audit should answer the question: whether the funds were used efficiently, and the strategic audit should answer the question: whether the funds were used in accordance with the goals of socio-economic development.

Based on the analysis of the rules (standards) of auditing activities, which were discussed above, we can conclude and briefly describe the main directions of each of the above types of public audit.

Financial audit is used for the purpose of documentary checks of the reliability of financial operations, budget accounting, budget reporting, and targeted use of public resources. Performance audit is used to determine the effectiveness of the use of public resources. Audit activity has a certain institutional setting, it should be considered taking into account the influence of various social, legal, political, economic and other institutions. In theoretical terms, these institutions are a set of rules and regulations, formal (laws, regulations) and informal (voluntarily adopted ethical codes, standards, agreements), which determine the basic restrictions and forms of social activity.

There is also an opinion that the state financial audit includes:

- state financial audit of budgetary institutions;
- State financial audit of business entities of state and municipal ownership forms;
- audit of budget programs;
- audit of local budget execution

The development of Kazakhstani society and the obligations arising to the state apparatus require the functioning of the system of state administration of a new format. Turning to the experience of foreign countries, it can be noted that the leading form of independent control in countries with developed economies is auditing. In any economic structure, an institution is needed that will give an objective assessment of the existing system of public financial management and determine the directions for its further effective functioning. At this stage of development of our country's economy, new tasks are being set in the field of financial resources management and their use, which requires new approaches to the functioning of all elements of the financial system, in particular, the tax and budget systems. In this regard, modern approaches to fiscal policy are being developed, which has an impact on the direction of state audit.

In international practice, such a role is performed by the state audit. State audit allows:

• improve financial discipline, increase the transparency and efficiency of public financial resources management and state assets in the public interest;

• to promote the further increase of the economic potential of the state through quality control in accordance with international auditing standards and national legislation.

In the Message of the President of the Republic of Kazakhstan N.Nazarbayev to the people of Kazakhstan "Strategy" Kazakhstan-2050 ": a new political course of the established state" noted: "We need to create a comprehensive system of state audit based on the most advanced international experience" [1].

In accordance with this Message, the Government of the Republic of Kazakhstan dated June 18, 2013 No. 609 “The Concept of Implementing a State Audit in the Republic of Kazakhstan” was developed and approved. This Concept defines the vision and the main approaches to the phased reform of state financial control and the introduction of state audit, with further expansion of its functional areas [2]. In the course of implementing the priority areas of the Concept, on November 12, 2015, the Law “On State Audit and Financial Control” was adopted. At the same time, the law clearly distinguishes between the concepts of state audit and financial control. State audit is a holistic and independent assessment of the effectiveness of state audit objects, covering not only financial issues, but also all areas of their activities, with the presentation of effective recommendations based on the identified deficiencies and proposals for risk management [3].

As can be seen from the definition, the main purpose of the state audit, according to the law, is to contribute to the successful implementation of the economic policy, the effective use of the productive potential of the country, regions, industries, fields of activity, while the state financial control should be aimed at responding to the identified during the audit of violations - the initiation of administrative proceedings, the adoption of measures to repair damage, bringing to disciplinary responsibility, transfer of materials to law enforcement agencies for making procedural decisions, etc. [4].

In general, the state audit for Kazakhstan is seen as a holistic and independent assessment of the performance of audited entities, covering not only financial issues, but also all areas of their activities. At the same time, based on the identified deficiencies and risk management proposals, effective recommendations are presented.

Currently, the system of state audit and financial control in the Republic of Kazakhstan is represented by the Accounts Committee, audit committees at the local level and the authorized body for internal state audit. A modern system of state audit and financial control should provide the President, the legislative and executive authorities of the Republic of Kazakhstan, as well as the public, with objective and reliable information on the use of allocated budgetary funds and state assets in accordance with the principles of legality, effectiveness and efficiency, as well as the effectiveness of state bodies. At the same time, the Accounts Committee for Control over the Execution of the Republican Budget performs an external state audit on the expenditure of funds from the republican budget and the National Fund. Along with this, the Accounts Committee, in terms of improving the efficiency of state assets management, ensures control over the completeness and timeliness of revenues to the republican budget and strengthening financial discipline.

The Accounts Committee, as the highest body of state audit and financial control, within the scope of its activities, conducted auditing activities in the ministries of education and science, health and social development, defense, internal affairs of the Republic of Kazakhstan, as well as in 14 subordinate enterprises and organizations of these ministries to determine effectiveness state asset management. The Accounts Committee on the results of the audit activities in the above organizations revealed violations of budget and other legislation totaling 4.3 billion tenge, as well as inefficient use of funds from the republican budget and state assets in the amount of 10.9 billion tenge. At the same time, as a result of the check, 1.4 billion tenge was reimbursed to the republican budget, 1.3 billion tenge was restored, and accordingly three officials were brought to disciplinary responsibility [5].

At present, increased attention is paid to the education system: global targets are set and appropriate funding is allocated. The head of state N. Nazarbayev in his annual Address to the people of Kazakhstan focuses on the issues of expanding opportunities for young people, including for obtaining high-quality higher education. In this regard, the goal of the industrialization program was to form the material and technical base of ten higher educational institutions, on the basis of which science will be connected with economic sectors and training, sending up to 10 billion tenge for these purposes until 2017 [6].

It should be noted that adequate funding for higher education is not the only criterion for solving problems of ensuring targeted and efficient use of budget funds, since the systemic problems in the industry remain unresolved. First of all, this is due to the absence at the legislative level of the Republic of Kazakhstan of the norms for ensuring the employment of graduates of higher educational institutions. [five]. These data indicate an incomplete observance of the principles of effectiveness and efficiency of the use of budgetary funds to achieve the desired results in accordance with the goals and objectives set.

It should be noted that the Budget Code of the Republic of Kazakhstan provides for the responsibility of the first heads of state institutions for non-development of budget funds, resulting in failure to achieve results of the budget program, as well as for failure to achieve results of the budget program with full utilization of budget funds. budget investments through the state's participation in their share capital, It refers to the feasibility study, including the full development of the allocated budget. [6]

Therefore, according to the results of the audit, the Accounts Committee provided relevant recommendations to the Government of the Republic of Kazakhstan. Accordingly, the Ministry of Education and Science has been instructed to take measures to eliminate the identified shortcomings, causes and conditions conducive to them, to prosecute officials who committed violations of current legislation, as well as a number of other instructions [7].

Thus, according to the reporting data of the Accounts Committee, it can be seen that a number of problems are noted in the budget sphere of Kazakhstan, which create obstacles to its innovative and

investment development, the main of which are inappropriate and inefficient use of budget funds. Solving these problems requires increasing the efficiency of the state audit system. One of the mechanisms to achieve this goal is the creation of an internal audit service in the state bodies of the Republic of Kazakhstan.

Internal state audit is considered as an integral part of the overall management system, defined as an independent assessment of activities carried out within the organization. In this regard, the full implementation of the state audit becomes one of the important directions in improving the control of budgetary funds.

Consequently, according to the results of the audit conducted by the Accounts Committee, the internal audit service of the Ministry of Education and Science in accordance with the Law on State Audit and Financial Control should exercise internal control over the implementation of measures to eliminate the identified deficiencies in the work of the department. In turn, the Ministry of Finance, as the authorized body for internal state audit, will develop response measures within its authority.

At the same time, due to the insufficiently well-functioning functioning of an integral system of state audit and financial control, the tendency to increase the level of financial discipline and effectively organize activities for managing state funds and state assets in the country requires further development.

In this regard, the Accounts Committee plans to develop more than 50 regulatory legal acts, most of which have already been implemented. For example, common standards of state audit and financial control, procedural standards for individual audit activities and types of state audit and others [8] have been developed and implemented.

Appeal to the experience of foreign countries shows that the emergence of a new state audit format required certain transformations. Thus, the formation of the highest state audit body of Germany was accompanied by a change in its status, the expansion of its powers, as well as the introduction of new audit technologies. The status of the highest state audit body of Germany and its members, as well as its main functions are guaranteed by the country's constitution. The experience of Great Britain and Latvia in the functioning of the state audit and financial control system indicates the concentration of the activities of the internal state audit bodies within the specific state body where the internal audit service is established, as well as the organizations subordinate to and accountable to it. The superstructure existing above them in the form of a centralized body for internal state audit provides their coordination and methodological support exclusively. In this regard, the centralized body for internal state audit is small, has no branched territorial offices and is stationary [9].

The introduction of internal audit in state bodies is one of the large-scale innovations of world practice in the field of public audit and financial control.

CONCLUSION

Based on the study, it can be concluded that currently in the Republic of Kazakhstan a system of state audit and financial control has been formed, consisting of external and internal state audit. At the same time, the external audit is represented by the Accounts Committee for Control over the execution of the republican budget and the internal state audit is represented by the Ministry of Finance of the Republic of Kazakhstan. Internal auditing helps an organization achieve its goals using a systematic and consistent approach to assessing and increasing the effectiveness of risk management, control and corporate governance processes. At the same time, for the effective functioning of an integral system of state audit and financial control in the Republic of Kazakhstan, it is necessary to adapt positive international experience to Kazakhstani practice. This will make it possible to create a more effective control tool to provide the state and society with high-quality, independent information necessary to increase the efficiency of public administration and make critical economic decisions at all levels of government.

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МЕМЛЕКЕТТІҢ ҚАРЖЫЛЫҚ БАҚЫЛАУ ЖҮЙЕСІНДЕГІ МЕМЛЕКЕТТІК АУДИТТІҢ МӘНІ, МАЗМҰНЫ ЖӘНЕ РОЛІ

Аннотация. Мемлекеттік қаржылық бақылау кешенді санат ретінде, көптеген ғалымдардың пікірі бойынша, «басқару» тұжырымдамасының ажырамас бөлігі болып табылады, бұл өз кезегінде билік пен мемлекеттің мәні болып табылады. Осы санаттардың кез-келген элементі сияқты басқару мемлекеттік басқаруда өз орнын алады. Бақылау менеджменттің құзыреттілігі мен нақтылығын, яғни сенімді ақпаратқа негізделген басқаруды қамтамасыз етуге мүмкіндік береді, оның мақсаты сіз қателіктер мен кедергілерді уақытында байқай аласыз, оларды жеңуге, басқаруды түзетуге, оны объективті өзгерістерге сәйкес келтіруге мүмкіндік береді қоғамдық өмірдің жалпы және арнайы мәселелері. Қаржылық бақылау туралы айтатын болсақ, қаржылық бақылауды басқару қызметінің функциясы ретінде қарастыруға болады, бірақ содан кейін бұл түсініктікпен қабылданған шешімді және оның орындалатын нұсқасы арасындағы сәйкестікті белгілеу үшін басқарушылық шешімнің орындалуын бақылау аяқталуы керек.

Түйін сөздер: сәйкестікті тексеру, әдістемелік тәсілдер, салықтар, мемлекеттік аудит.

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СУЩНОСТЬ, СОДЕРЖАНИЕ И РОЛЬ ГОСУДАРСТВЕННОГО АУДИТА В СИСТЕМЕ ГОСУДАРСТВЕННОГО ФИНАНСОВОГО КОНТРОЛЯ

Аннотация. Государственный финансовый контроль как сложная категория является, по мнению большинства ученых, составной частью понятия «управление», которое, в свою очередь, вытекает из сущности власти и государства. Как и всякий элемент этих категорий, контроль имеет свое место в государственном управлении. Контроль позволяет обеспечить компетентность и конкретность руководства, т. е. управление на основе достоверной информации, располагая которой можно своевременно заметить ошибки и препятствия на пути к цели, преодолеть их, скорректировав управление, приведя его в соответствие с объективными изменениями, выработать наиболее целесообразные решения различных общих и специальных вопросов государственной жизни. Если говорить о финансовом контроле, то следует отметить, что финансовый контроль можно рассматривать как функцию управленческой деятельности, но тогда в данном понимании контроль должен производиться по окончанию исполнения управленческого решения в целях установления соответствия между принятым решением и его исполненным вариантом.

Ключевые слова: аудит соответствия, методологические подходы, налоги, государственный аудит.

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FAMILY LEGAL RELATIONS AND ALIMENT OBLIGATIONS

Abstract. Family is a social phenomenon. The content of the family relationship form the subjective rights and obligations of its subjects. The scope of rights and obligations of family members (as well as the grounds for their occurrence, change and termination) is specified in separate institutions of family law. The article analyzes the problem of the application of legislation in the field of family law, arising from the implementation of maintenance obligations. Currently in the Republic of Kazakhstan, a significant part of civil cases are disputes arising from family relationships. This category also includes cases of collecting alimony, changing the amount of alimony, terminating their recovery, or adding or reducing arrears of alimony. If there is no alimony agreement or agreement between the parents, then the order of payment and the amount determined by the court, taking into account the financial situation of both parents.

Keywords: family relationships, alimony obligations, protection of civil rights, the agreement on the payment of alimony, the recovery of alimony, the maintenance of minor children, the responsibility of parents.

INTRODUCTION

Family legal relations are volitional personal (non-property) or property relations defined by family law and regulated by family law norms, the participants of which are legally bound by rights and duties.

The family acts as an independent subject of law. Family is primarily a social phenomenon. In the sociological sense, a family is a small social group of people united by blood-related and other equal relations, as well as mutual rights and obligations. The current legislation does not contain a legal definition of a family, but if we analyze the family legislation, we can conclude: a family is an association of, as a rule, cohabitants associated with mutual rights and responsibilities arising from marriage, kinship, adoption or other forms of child organization on raising a family.

Family law does not indicate the age at which full family capacity arises, since it is not always important for the emergence of a family relationship. Most often, this age coincides with the moment when legal capacity arises (for example, the opportunity to marry arises simultaneously with the achievement of a marriageable age by a citizen).

MAIN PART

The concept of maintenance obligations represents the obligation to maintain the maintenance and property support of the relevant persons associated with the payer family-legal relations in accordance with applicable law. Such relationships are personal property-value and gratuitous in nature. The very nature of their implies the transfer of funds from the payer to the recipient if there are appropriate grounds.

Maintenance relationships consist of certain elements:

- subjects (parties);
- object of obligations;
- direct content.

The parties to such an obligation are the recipient and payer of funds. The recipient is the individual (including the minor), who is in a family relationship with the alimony payer and has a reason to receive money from him for living.

MAIN PART

Minor children have the right to child support, and in some cases disabled adults in need of family members.

One of the main duties of parents is to provide maintenance to minor children, as well as disabled children in need of adult children (clause 1. article 138, article 143 of the Code of the Republic of Kazakhstan “On Marriage (Matrimony) and Family” [1].

This duty, as a rule, is performed without any coercion, and the parents themselves determine the size, type and procedure for providing the content to the children.

The meaning of the term "alimony" is to provide material content from one person to another. Such provision can occur for various reasons, primarily socio-economic.

If parents do not voluntarily provide funds for the maintenance of their children, then alimony obligations arise, the performance of which is possible on the basis of an agreement on the payment of alimony, or by a court decision.

An agreement on the payment of alimony (the amount, conditions and procedure for the payment of alimony) is between the person obliged to pay alimony and the recipient of alimony - between the legal representatives of these persons [2]. Not fully capable persons conclude an agreement on the payment of alimony with the consent of their legal representatives.

Alimony paid for the maintenance of minor children are one of the child’s livelihoods;

- have a strictly intended purpose - the maintenance of a minor;
- paid monthly;
- represent the responsibility of each of the parents, regardless of their economic well-being;
- are purely personal;
- are paid from the moment the child is born until he reaches the age of majority (this should take into account the time he applied for alimony and full legal capacity until the age of majority);
- paid for each minor, regardless of his security and where he is (in another family or children's institution);
- retained with the deprivation of parental rights and restrictions in parental rights;
- are a family-legal obligation, the failure of which entails the application of family-legal responsibility, and malicious evasion from the payment of alimony - criminal liability [3].

Children left without parental care are determined because of the death of parents, deprivation of parental rights or restriction of parental rights, recognition of incapacitated court, illness of parents, long absence of parents, evasion of parents from raising children or protecting their rights and interests, including when parents refuse to take their children from educational institutions, medical institutions, social protection institutions and other similar institutions, does not release their parents from the obligation to pay Alimony, and the protection of the rights and interests of children is entrusted to the guardianship authorities. Alimony for children without parental care is paid by their parents to the guardian (caregiver) of the children, their foster parents, or transferred to educational institutions.

According to Article 139 of the Code of the Republic of Kazakhstan “On Marriage (Matrimony) and Family,” in the absence of an agreement on alimony, alimony for minor children is collected by the court from their parents monthly in the amount per one child — one quarter, two children — one third and more than half of the earnings and other income of parents.

The size of these shares may be reduced or increased by the court, taking into account the material or marital status of the parties and other circumstances worthy of attention.

Family law provides for two ways of collecting alimony for minor children in court:

- in the form of monthly payments in proportion to the earnings or other income of parents;
- in the case when the recovery of alimony in the proportion of the earnings or other income of the parents is impossible, it is difficult or substantially violates the interests of one of the parties, the court has the right to determine the amount of alimony collected monthly in a fixed amount of money or simultaneously in shares and in a fixed amount of money [four].

Such cases include the recovery of alimony from parents who have irregular, changing wages and (or) other income in whole or in part in kind.

A novelty in family law of the Code of the Republic of Kazakhstan is to collect maintenance for children enrolled in the system of general secondary technical and vocational [5] post-secondary education in the higher education system for full-time education under the age of twenty-one, in the absence of an agreement on the payment of alimony order in a solid sum of money.

The size of the fixed sum of money is determined by the court on the basis of the size of the monthly calculation index (MCI) in the amount of the maximum possible preservation of the child’s previous level

of security, taking into account the material and marital status of the parties and other noteworthy circumstances.

If at each of the parents there are children, the amount of alimony from one of the parents in favor of the other, less secure is determined in a fixed sum of money, collected monthly and determined by the court [6].

A partial method of collecting alimony is provided in case of a person obliged to pay alimony to a foreign country for permanent residence: if an agreement is not reached, the interested person has the right to go to court with a request to determine the amount of alimony in a fixed sum of money and a lump sum of alimony, or to provide a certain amount property in the expense of alimony in another way, for example, by providing the property (simultaneously or periodically) during the agreed periods

For the court to recover alimony in a solid sum of money, one of the above grounds is sufficient. Moreover, the court has the right to determine the amount of alimony in a fixed sum of money, both on its own initiative and at the request of any of the parties [7].

It should be noted that the recovery of alimony in a fixed sum of money is precisely the right, and not the court's responsibility, in contrast to the recovery of alimony by equity or the enforcement of an agreement on the payment of alimony. The court may not agree with the motives of the applicant, insisting on receiving alimony in a fixed amount.

Family law establishes the principle of the maximum possible preservation of the child's previous level of material security [8]. His goal is to create psychological comfort and material well-being for children in new living conditions. It is also significant that the previous level of provision of the child is purely individual and the court is in no way bound by any average statistical boundaries defined in other alimony disputes. The level of security itself is not a fixed value and breaks down into a number of property components (funds for food, funds for clothing, funds for education, funds for leisure, etc.). Therefore, there is no need to fix in the law any approximate register of expenses for the maintenance of a minor. The task of the court is to evaluate all these elements and determine the total amount of content that most closely provides the child with the previous volume of material benefits. At the same time, the court must not only evaluate the evidence of the costs associated with maintaining a minor in the family, but also other special issues. In particular, in deciding on the recovery of alimony in a fixed amount, the nature of the payer's professional activity, his lifestyle, inclinations and habits should be taken into account. Nor should the idea of preserving a minor's previous level of income be absolutized. On the one hand, in some cases, the court may appoint a child with a higher level of maintenance payments as compared with the funds received earlier.

This is possible when the alimony person directed his income to other goals for the family (gambling, buying expensive personal belongings, etc.). On the other hand, it is unwise to blindly focus on the amount of expenses for a child in an extremely high income family. The fixed amount of money determined by the court must preserve the minor's available volume (quantity and quality) of material benefits necessary for its development. The latter do not include luxury items or things that go beyond the rational needs that actually existed in the payer's family. Therefore, when determining the amount of alimony in a solid amount, the court, as in the case of a share collection of alimony in a solid amount, should turn to the study of the material and family status of the parties to the alimony obligation, as well as other relevant circumstances. Their assessment is made according to the same criteria as with a decrease (increase) in the amount of alimony, charged in shares.

According to Article 99 of the Code "On Marriage (Matrimony) and the Family," agreements on alimony may be entered into between the person obliged to pay the alimony and their recipient. Based on this, it can be concluded that only those family members who are entitled to receive alimony by family law norms, and only with persons who are alimony required by law, are entitled to conclude a maintenance agreement. The question arises whether the agreement on the gratuitous, periodic provision of funds for maintenance with a person who, according to the norms of family law, is not entitled to receive alimony will be valid. In this case, it is necessary to distinguish two categories of persons. The first category includes family members who have the right to collect alimony only in the presence of certain circumstances. The question is whether they can enter into an agreement on the payment of maintenance in the absence of these circumstances. For example, a spouse has the right to recover alimony through the courts only if he needs and is disabled. Will the agreement on the payment of maintenance for an able-bodied spouse be valid? The second category includes persons who are generally not entitled to

receive legal support, for example, actual spouses, guardians and trustees, persons connected by distant degrees of kinship. In our opinion, family members in the first category, of course, have the right to conclude a maintenance agreement, since the conditions for the provision of maintenance by agreement are determined by the contracting parties themselves and, therefore, they have the right to provide for the right to receive alimony in the absence of conditions provided by law (for example, need or disability). With regard to the second category of persons, the situation is somewhat more complicated. The answer to this question depends on the recognition or non-recognition of family law as an independent branch of law and on the assignment of maintenance agreements to the category of civil law contracts.

The amount of alimony is determined by agreement of the parties. If the recipient of the alimony is legally capable, the parties are free to establish any amount of alimony. When determining the amount of alimony for the maintenance of a minor or legally capable adult, the same restriction applies as with respect to the conditions of their granting. The amount of alimony can be arbitrarily higher than that for which the recipient of alimony could claim by law. However, the ability to reduce it is limited. With regard to agreements concluded by a parent paying alimony for minor children, there is a direct indication of the law (paragraph 2 of Article 161 of the Code of the Republic of Kazakhstan "On Marriage (Marriage) and Family" that the amount of alimony cannot be less than what the children received if the alimony were collected in court. When determining the amount of alimony for other incapacitated adult or minor family members, the parties also cannot agree that it will be significantly lower than what the incapacitated person could receive When compulsory alimony. If the amount of maintenance would be extremely low, the agreement may be invalidated on the basis of Article 160 of the Code of RK "On Marriage (Matrimony) and Family" as significantly violating the interests of minors or incapacitated persons.

When paying alimony in a solid sum of money in conditions of high inflation inevitably raises the question of their indexation. Parties have the opportunity to provide for any method of indexing alimony in accordance with their wishes. However, if the agreement does not contain provisions on indexation, it is made in accordance with the procedure established by Article 173 of the Code of the Republic of Kazakhstan "On Marriage (Matrimony) and Family", which provides for the indexation of maintenance payments charged by a court.

CONCLUSION

The agreement on the payment of alimony is in writing and is subject to notarization. Failure to comply with the notarial form entails the recognition of the alimony agreement void. The notarial form is necessary for the alimony agreement, because this agreement is lasting and affects the very essential interests of the parties. In connection with these, it must be made in a form that excludes any inaccuracies and doubts. The notary form makes it possible to enforce under this agreement without additional procedural difficulties. A notarized agreement has the power of a writ of execution. This means that for the enforcement of such an agreement, it is sufficient to send a notarized copy of it to the bailiff or directly to the administration of the enterprise, institution or organization in which the debtor works, who produce the enforced collection of alimony in the manner in which the enforced collection of alimony is executed issued on the basis of a court decision.

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ОТБАСЫЛЫҚ ЗАҢДЫ ҚАРЫМ-ҚАТЫНАСТАР ЖӘНЕ МІНДЕТТЕМЕЛЕР

Аннотация. Отбасы - бұл әлеуметтік құбылыс. Отбасылық қарым-қатынастың мазмұны субъектілердің субъективті құқықтары мен міндеттерін құрайды. Отбасы мүшелерінің құқықтары мен міндеттері (олардың пайда болу себептері, оларды өзгерту және тоқтату себептері) отбасылық құқықтың жекелеген институттарында көрсетіледі. Мақалада отбасылық құқық саласындағы міндеттерді орындаудан туындайтын заңнаманы қолдану мәселесі талданады. Қазіргі уақытта Қазақстан Республикасында азаматтық істердің маңызды бөлігі отбасылық қатынастардан туындайтын даулар болып табылады. Бұл санаттағы алименттерді жинау, алимент мөлшерін өзгерту, оларды қалпына келтіруді тоқтату немесе алиментті өтеу бойынша берешекті қосу немесе азайту туралы істерді қамтиды. Егер ата-аналар арасындағы алимент туралы келісім немесе келісім болмаса, онда төлемнің тәртібі мен ата-аналардың қаржылық жағдайын ескере отырып, сот анықтайтын сома.

Түйін сөздер: отбасы қатынастары, алименттік міндеттемелер, азаматтық құқықтарды қорғау, алимент төлеу туралы келісім, алименттерді қалпына келтіру, кәмелетке толмаған балаларды қолдау, ата-аналардың жауапкершілігі.

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СЕМЕЙНОЕ ПРАВООТНОШЕНИЕ И АЛИМЕНТНЫЕ ОБЯЗАТЕЛЬСТВА

Аннотация. Семья – явление, прежде всего социальное. Содержание семейного правоотношения образуют субъективные права и обязанности его субъектов. Объем прав и обязанностей членов семьи (а также основания их возникновения, изменения и прекращения) конкретизируется в отдельных институтах семейного права. В статье анализируется проблема применения законодательства в сфере семейного права, возникающих при осуществлении алиментных обязательств. В настоящее время в Республике Казахстан, значительную часть гражданских дел составляют споры, возникающие из семейных правоотношений. К данной категории относятся и дела о взыскании алиментов, изменении размера алиментов, о прекращении их взыскания, о сложении или уменьшении задолженности по алиментам. Если же не имеется алиментное соглашение или договоренность между родителями, то порядок оплаты и размеры определяется судом, учитывая при этом материальное положение обоих родителей.

Ключевые слова: семейные правоотношения, алиментные обязательства, защита гражданских прав, соглашение об уплате алиментов, взыскание алиментов, содержание несовершеннолетних детей, ответственность родителей.

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ROLE OF COMMERCIAL BANKS IN INNOVATIVE DEVELOPMENT OF THE ECONOMY

Abstract. The article defines the role and importance of the effective functioning of the banking sector to increase the level of innovation and investment development of the country. The necessity of improving the conditions and parameters of the banking and real sectors to stimulate the innovation and investment development of the Republic of Kazakhstan is substantiated.

In writing the article, general scientific and special methods were used, such as: system analysis method; content analysis method; comparative analysis method; method of analysis and synthesis; method of systematic approach.

The authors analyzed the development of non-primary sectors of the economy in the framework of direct lending, lending to small and medium-sized businesses.

Keywords: innovations, second-tier banks, small business, lending.

Introduction. In modern business conditions, the study of the activities of commercial banks as a source of financing innovation activities in the regions is of particular interest.

In accordance with the dynamically changing operating conditions, any bank as a full-fledged market participant is forced to change itself, becoming the initiator of intra-organizational innovation processes. Naturally, these processes should not proceed spontaneously - they must be implemented systematically within the framework of the developed innovation strategy, which is part of the overall development strategy of the bank. Currently, one of the main factors of successful banking activity is the policy of constant innovations. This statement follows from a number of assumptions that characterize the current state of the economy [1].

Firstly, bank relations with customers are based on the principles of partnership. This, in particular, means that banks show constant concern not only about preserving, but also about increasing the capital of their customers, offering them new services that contribute to expanding financial and economic activities, reducing costs, developing business activity and increasing its profitability.

The second reason for the emergence of new types of banking services is the competition between banking institutions in the context of market relations. In order to survive in the market conditions, multivariate and non-standard business decisions, originality of business operations, innovation in all areas of the bank's activity are necessary [2].

The third reason is the development of new expensive banking technologies. It is precisely scientific and technical progress, which is recognized worldwide as the most important factor of economic development, more and more often now associated with the concept of the innovation process. However, innovations in the banking business include not only technical or technological developments, but also the introduction of new forms of business, new methods of working in the market, new products and services, new financial instruments. They are characterized by a higher technological level, higher qualities of a product or service as compared with the previous product [3].

Innovations are the most important factor in the stability of the functioning of banks and ensure their economic growth. The choice of any strategy, as well as innovation, always implies the construction of an individual organizational and economic mechanism ensuring its implementation. Its orientation, features

of functioning and structure of construction largely depend on the specifics of innovative processes, determined by the typology of innovations that prevail in the process of innovative activity of the bank. In order to specify the goals and results of innovation, as well as systematize the approach to the set of its possible manifestations, a sufficiently complete classification of innovations is necessary. The development of such a classification provides a more complete and holistic understanding of the subject of research and allows to identify problematic relationships and relationships between different groups and types of banking innovations. In addition, the introduction of a structured typification of innovations makes it possible to determine not only the choice of a specific strategy or method of building an economic, organizational and managerial mechanism, but also the form of marketing and promotion of banking products.

The European Bank for Reconstruction and Development (EBRD) and the Government of the Republic of Kazakhstan continue to work together to modernize and diversify the national economy.

The European Bank for Reconstruction and Development will help to strengthen the private sector, develop interregional relations, expand access to finance and build a green economy [4].

Methods. Methods used are general scientific and special, such as: system analysis method; content analysis method; comparative analysis method; method of analysis and synthesis; method of systematic approach.

Results. The EBRD Board of Directors has approved a new strategy for Kazakhstan. It outlines the main areas of investment activity of the Bank and its interaction with the country's leadership for the next four years.

The strategy is based on the successful and active work of the EBRD in Kazakhstan, thanks to which the country was able to become one of the largest markets for the EBRD: the total investment here has already exceeded $ 8 billion.

As part of the new strategy, the EBRD will focus on the following priorities:

Balanced development of public and private sectors. The EBRD will continue to support the growth of private companies, which are still lagging behind the public sector. With its investments in private business, including small and medium-sized enterprises (SMEs), the agro-industrial complex and the non-oil and gas sector, the Bank expects to increase the country's economic competitiveness. He still intends to support the privatization program announced by the government. At the same time, the EBRD will provide further support for public sector reform and efforts to commercialize Kazakhstan’s state-owned enterprises [5].

Expanding access to finance, strengthening the banking system and developing capital markets in Kazakhstan. Many enterprises still have difficulty attracting financing. The EBRD will work to improve the sustainability of Kazakhstan’s financial sector, which in turn will help alleviate the situation of businesses, especially SMEs and enterprises in the non-oil and gas sector.

Interregional relations and international integration. An important part of the EBRD’s activities are investments in Kazakhstan’s infrastructure. Supporting projects for the construction of interregional and cross-border railways and highways, the Bank contributes to the expansion of the communications network and the more active involvement of remote regions in the country's economy.

The transition to a "green economy". The EBRD, as the largest investor in financing the development of environmentally sustainable energy in Kazakhstan - including renewable energy sources and introducing energy efficient technologies - will continue to combine investment with political dialogue, providing the country with further assistance in creating a regulatory framework for efficient energy and water use and resource conservation . The reduction of atmospheric emissions is of key importance for the environmentally sustainable development of all sectors of the national economy, primarily agriculture, energy and industry [6].

The EBRD is not only an active supporter of renewable energy (the Bank allocated 200 million euros for its development in Kazakhstan), but in general the largest institutional investor who invests in other sectors of the Kazakhstan economy besides oil and gas.

In recent years, he has been investing ever more significant amounts in the most important utilities and in supporting small businesses in almost all regions of Kazakhstan.

Projects implemented by the EBRD in the water and sanitation sector already provide about 267 million cubic meters of drinking water annually and help to provide almost one million people with centralized water supply. Improving wastewater systems has improved the lives of more than 1.3 million people in different parts of the country [7].

An example of EBRD cooperation with small business is the popular program "Women Entrepreneurs", through which about 12 thousand loans in national currency (tenge) for the total amount equivalent to 41 million US dollars have been granted to date - mainly to borrowers, living outside such major cities as Almaty and Astana.

An important focus of the EBRD's work was support for economic inclusion: for example, the new program, which includes projects in the energy and extractive industries totaling $ 1 billion, is aimed to support technical education and create jobs for young people and women in the field.

The EBRD is the largest institutional investor in Kazakhstan. The bank has invested more than 7.3 billion euros in various sectors of the country's economy, with a focus on diversification and support of the private sector.

The European Bank for Reconstruction and Development (EBRD) and KazTransGas JSC signed an agreement on financing Kazakhstan's gas industry projects. Thus, the largest international financial institution allocates € 294 million for the implementation of two KazTransGas projects. This is, first of all, the reconstruction of the Bozoy underground gas storage and modernization, reconstruction, and the commissioning of new gas distribution networks of settlements in Mangystau and Aktobe regions, which will be taken over by the subsidiary KazTransGaz-Aymak.

Regarding the first project, it will contribute to the creation of an energy reserve for newly opened export routes. In addition, this reserve will help in supply the Beineu-Bozoi-Shymkent gas pipeline.

The second project for the reconstruction of worn out and the commissioning of new gas distribution networks should increase the number of natural gas consumers by 12,000.

The gas transmission system of Kazakhstan is the longest system in the region of Central Asia. Therefore, these new projects will be primarily focused on ensuring energy security and quality use of the transit potential of our republic. Last year we have already carried out two large-scale projects - this is the commissioning of the third line of the Kazakhstan-China gas pipeline and the Beineu-Bozoi-Shymkent gas pipeline.

Last 2015, about 800 million dollars were invested in Kazakhstan. Investments mainly affected those segments of the economy that do not belong to the oil and gas sector. This year it is planned to achieve at least the same volume of investments.

In addition to KazTransGas JSC and KazTransGaz Aimak JSC, whose projects were financed by the bank, the European Bank also invested in expanding the largest dairy company in Kazakhstan, FoodMaster, as well as upgrading water supply and district heating systems in the cities of Kostanay and Ust-Kamenogorsk. In total, the amount of all loan funds issued by the EBRD to Kazakhstan under these projects exceeded 380 million euros.

The EBRD for 2017 invested 586 million euros in Kazakhstan, what is 2 times less compared to 2016.

The Asian Development Bank (ADB) presented a new country partnership strategy for Kazakhstan for 2017–2021 [8].

In the next 5 years, it is planned to invest more than 3 billion dollars, which will be a significant increase compared with previous volumes of cooperation over the past 5 years. As part of the previous cooperation strategy, a total of $ 2.4 billion was invested, of which $ 1 billion was used to support the Government's counter-cyclical development as a reaction to the 2014 external shocks. In addition to this, 1.4 billion dollars are presented in the form of investments, more than 9 million dollars as technical assistance, grants for assistance, the introduction of new technologies, international best practices, and the provision of a large amount of knowledge.

The new partnership development strategy covers three main areas:

- economic diversification (improving access to finance and promoting private sector development);
- inclusiveness (elimination of constraints in infrastructure, etc.);
- sustainable growth (promoting energy efficiency and renewable energy).

To use the allocated funds, ADB will create a municipal infrastructure fund that will address the financing of infrastructure projects. In addition, an applied knowledge center will be created, one of the directions of which will be the development of integrated water resources management [9].

In the framework of the previous strategy, the main cooperation of Kazakhstan and ADB was carried out through the attraction of government borrowing, government guarantees and gratuitous financial assistance (analytical studies).

The new strategy provides mixed financing with the active attraction of private sector investment. Accordingly, these projects will not affect the increase in public debt. Also within the framework of the Strategy, tenge borrowing is envisaged.

The goal of the ADB's Country Partnership Strategy (CPS) for 2017–2021 is to assist Kazakhstan in achieving its medium-term development goals and fulfilling its obligations within the framework of the Sustainable Development Goals (SDGs). The relatively limited interaction of ADB with the country does not yet reflect its potential in promoting innovative development and financing solutions aimed at meeting the growing needs of Kazakhstan, as a country with income levels above average. Reflecting an increasingly flexible approach, ADB support will continue to be demand-driven, focused and selective, but at the same time adapted to changing circumstances. The CSP has three main tasks [10].

In order to reduce dependence on commodity exports, the strategy will, first, support economic diversification by promoting private sector development and improving access to finance. Secondly, in order to help reduce inequalities, ADB will assist Kazakhstan in building quality infrastructure and improving the quality of government and social services. Third, in order to reduce climate change related vulnerability, ADB will support achieving sustainable growth in line with the country's greenhouse gas mitigation goals and commitments to improve resilience to climate change.

ADB operations under the CSP will also help in the following:

1. improving governance and institutions
2. promoting regional cooperation and integration,
3. improving macroeconomic sustainability,
4. support of project financing and public-private partnerships,
5. assistance in promoting gender equality.

ADB operations will have a positive economic impact through job creation and knowledge-based support. Investment and private sector development, knowledge transfer, innovation support, and capacity building will contribute to a diversification program, complement public sector investment projects, and help create an inclusive and sustainable infrastructure. ADB will facilitate closer coordination between development partners and the expansion of regional public goods to neighboring countries through knowledge assistance. The Central Asian Regional Economic Cooperation (CAREC) program and other initiatives for regional cooperation and integration will maximize the benefits from country projects that use ADB international experience.

The lending market for the manufacturing industry and infrastructure in the Republic of Kazakhstan is carried out by such international financial institutions as the Eurasian Development Bank (EDB), the European Bank for Reconstruction and Development (EBRD), the Asian Development Bank (ADB), the Islamic Development Bank (IDB), The European Investment Bank (EIB) and the World Bank Group, namely: the International Finance Corporation (IFC), the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA).

According to the EDB, in 2017, international financial institutions in Kazakhstan approved loans for 21 projects for a total of $ 1,417.4 million (462.2 billion tenge at an average annual rate of 326.10 tenge per $ 1), including The number of EBRD - 787.6 million US dollars (9 projects), IDB - 328.5 million US dollars (1 project), EIB - 118.0 million US dollars (1 project), EDB - 87.6 million US dollars (3 projects), IBRD / IDA - 67.0 million dollars (1 project), IFC - 25.0 million US dollars (1 project) and ADB - 3.7 million US dollars (5 projects) [11-13].

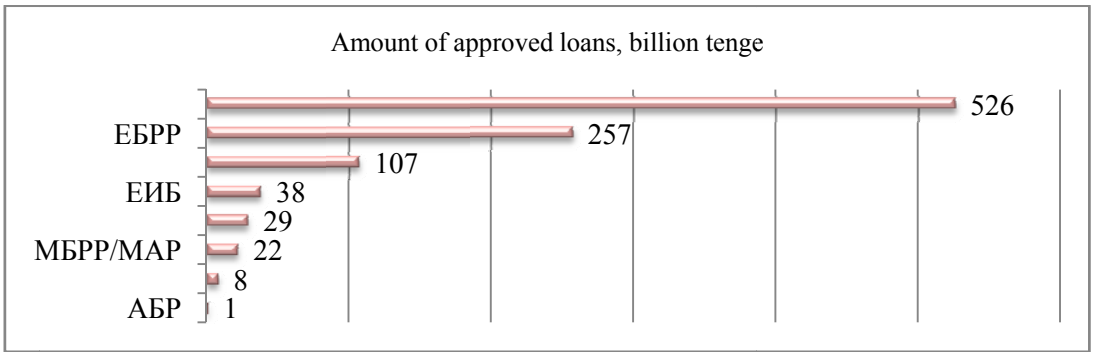

Figure 1 - Amount of approved loans

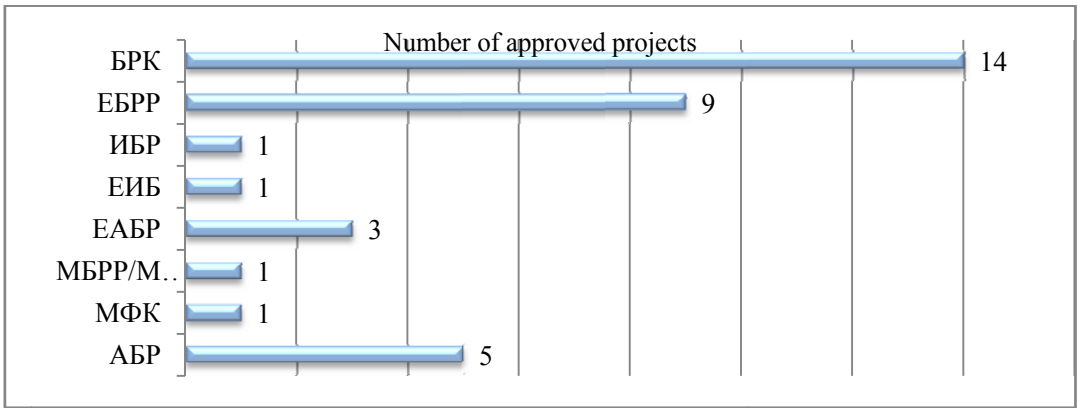

Figure 2 - Number of approved projects

It should be noted that in the sectoral structure of the approved investment projects of the EBRD, which occupies a significant share of the lending market among international financial institutions, the largest share in monetary terms falls on projects in the field of natural resources and the mining industry (62.2%) of the agro-industrial complex (22.9%) and energy (10.6%).

At the end of 2017, taking into account applications from previous years, the Development Bank approved 14 projects for financing totaling KZT 526 billion. The industry structure of approved applications for 86.1% is represented by manufacturing industry projects, with the largest share accounted for oil refining projects (61.9%) and other industrial production (24.2%).

According to official data of the National Bank of the Republic of Kazakhstan, in 2017 the total amount of loans issued by commercial banks amounted to 10.8 trillion. tenge, of which 4.7 trillion tenge or 43.4% of all loans are long-term loans over one year. It is worth to note that compared to last year, the indicator for the total volume of loans issued increased by 10.2%. At the same time, 541.9 billion tenge was directed to long-term lending to non-commodity sectors of the economy: manufacturing, energy, transport and communications, second-tier banks [14].

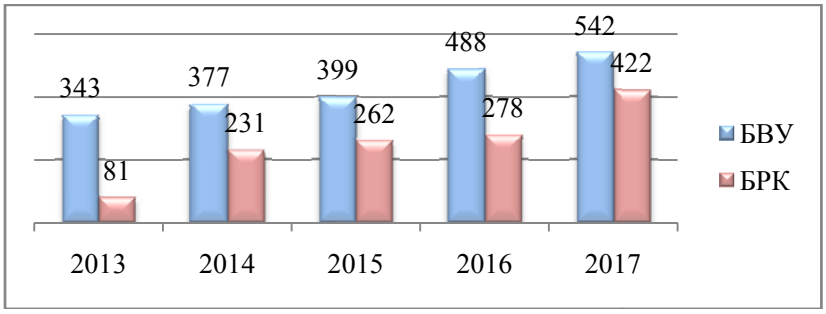

Figure 3 - Development Bank's contribution to the annual long-term lending to non-primary sectors of the economy

During this period, within the framework of direct lending by the Development Bank, enterprises of non-primary industries were financed in the amount of KZT 422.1 billion or 78% compared with the volume of long-term loans issued by second-tier banks for lending to enterprises of non-primary sectors of the economy.

In 2017, for the implementation of the projects of the processing industry by the Development Bank, KZT 339.8 billion was issued or 80.5% of the total amount of funds issued by the Development Bank in the framework of direct lending and compared to last year, the total volume of loans issued increased by 10.2% . At the same time, 541.9 billion tenge was directed to second-tier banks for long-term lending to non-resource industries: manufacturing, energy, transport and communications. commodity sectors of the economy, which also accounts for 118.7% of the volume of loans issued by second-tier banks to the manufacturing sector.

As of December 31, 2017, the volume of the loan portfolio of the Development Bank in the framework of direct lending amounted to KZT 1,493 billion or 81% compared to the total actual debt of second-tier banks directed to long-term lending of non-commodity sectors of the economy, according to the National Bank Republic of Kazakhstan.

Development in the framework of direct lending to non-primary sectors of the economy compared to last year, the indicator for the total volume of loans issued increased by 10.2%. At the same time, KZT 541.9 billion was directed to second-tier banks for long-term lending to non-commodity sectors of the economy: manufacturing, energy, transport and communications.

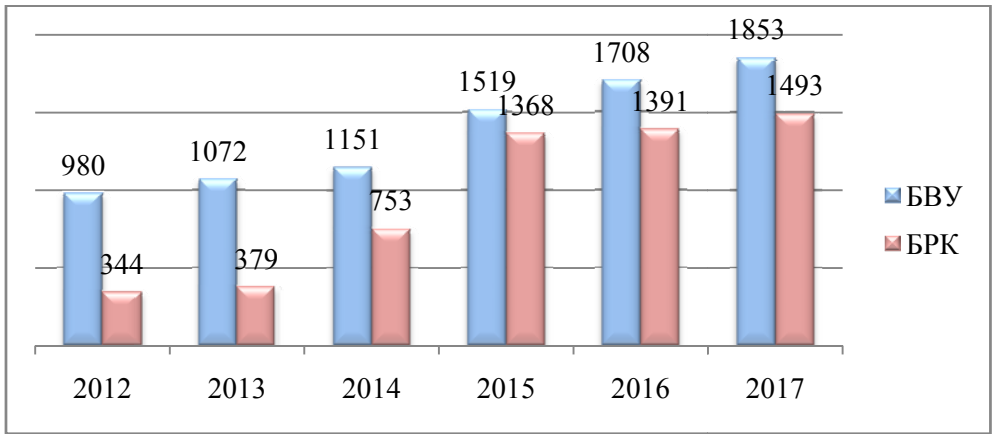

Figure 4 - Share of the loan portfolio of the Development Bank

In its turn, according to the analysis, there is a high share of the Development Bank in long-term lending to manufacturing enterprises - 1,254 billion tenge or 127% compared to the volume of long-term debt of manufacturing enterprises to second-tier banks, according to the National Bank of Kazakhstan.

By the spring, second-tier banks (STB) of Kazakhstan slowed down lending to legal entities: the volume of business loans amounted to 8.01 trillion. tenge is 0.2% less than in January of the current year, and just 4.1% less than a year earlier. The share of loans to legal entities amounted to only 63.8% of the loan portfolio of STB of Kazakhstan. For comparison, in the same period last year, the weight of legal entities in the total volume of loans of the banking sector reached 67.5%.

Lending to small businesses, after rapid growth in past years, also reduces turnover. So, in February 2018, the volume of loans to small businesses amounted to 2.72 trillion. tenge is 2.1% less than a month earlier, and just 9.6% less than a year ago. The share of loans to small business in the loan portfolio of STB of Kazakhstan is only 21.7%, against 24.3% a year earlier.

Tens of the largest in the volume of the loan portfolio of second-tier banks cover 85% of the total credit market. However, from the TOP-10 banks, only 8 banks are ready to support small and medium businesses with loans.

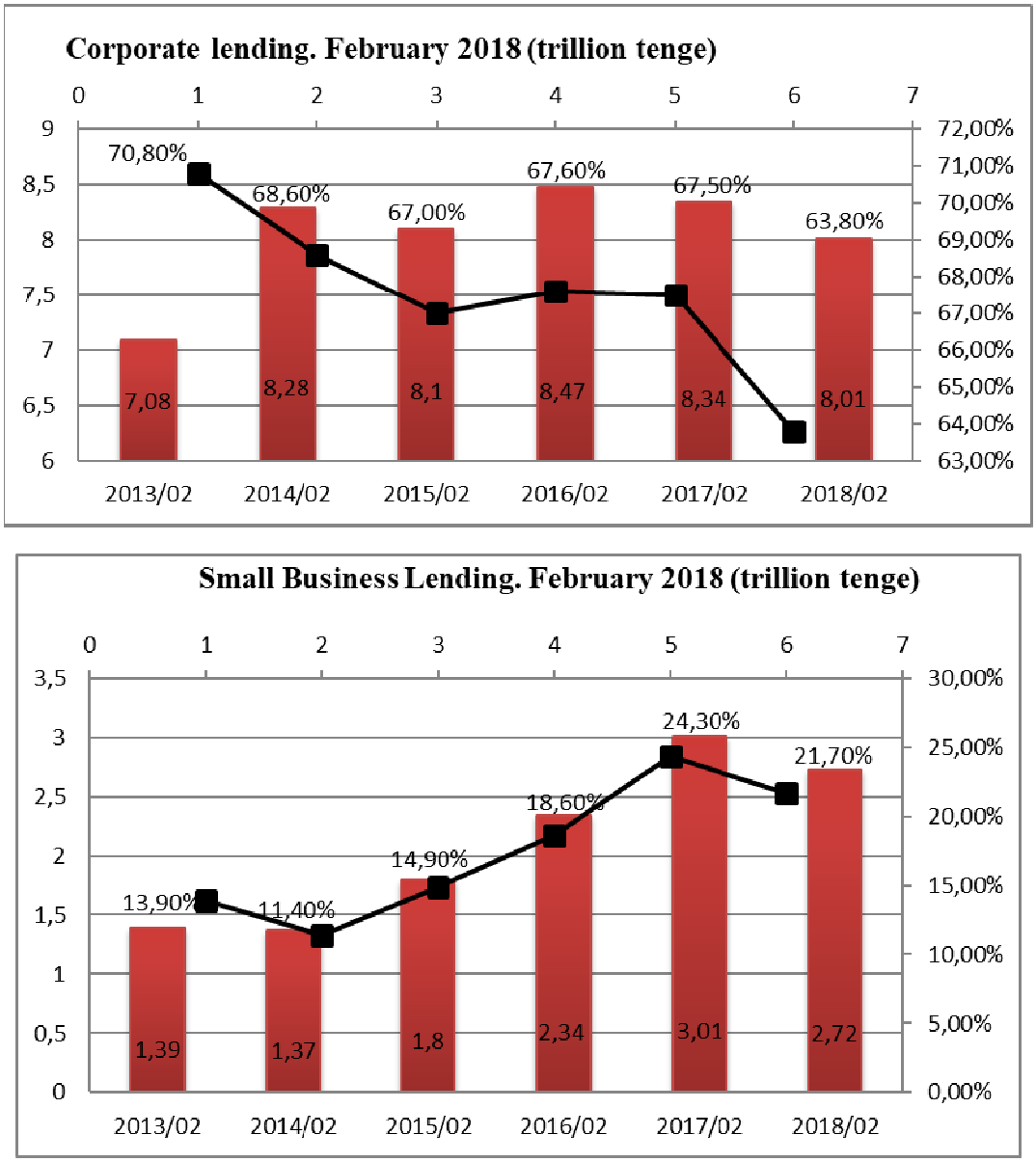

Figure 5 - Small Business Lending

It is most profitable for small and medium businesses to get loans from ATF Bank since they have the lowest annual effective rate on loans to SMEs: 13.2% and higher. Halyk Bank follows next: 13.5% and higher, ForteBank closes the top three lending at 16.3% and higher. The lowest level of the average effective rate in the segment is 17.8%.

The only bank that is ready to provide SMEs with large loans of up to 5 billion tenge is ATF Bank (by Business Standard product). Also in the top three by the maximum amount of the loan, Halyk Bank is up to 3 billion tenge, and Forte Bank is up to 2 billion tenge [15].

Loan term varies from 12 to 120 months. 120 months are offered by Centercredit (BCC) and Tsesnabank. The most popular loan term - up to 84 months - is offered by ATF Bank, Halyk (Narodny), Forte Bank and Sberbank.

Also, for the convenience of customers, some STBs offer accelerated processing times for applications (2–3 days with BCC, ATF Bank and Sberbank).

Moreover, ATF Bank provides an opportunity to receive a preliminary decision on loan applications: the client receives a decision, and only then, if both parties are satisfied, collects a package of documents. This allows you to avoid unnecessary burden on entrepreneurs: the collection of a full package of

documents is a laborious process, and it is desirable to do this with the guarantee of obtaining a loan under suitable conditions.

Table 1 - Offers of the largest banks in terms of loan portfolio

Effective rate (%)		Maximum term (months)		Maximum amount (thousand tenge)	
ATF	13,2%	Tsesnabank	120	ATF	5 000 000
Halyk	13,5%	БЦК	120	Halyk	3 000 000
Halyk	14,2%	ATF	84	Forte Bank	2 000 000
Halyk	14,8%	Sberbank	84	ATF	1 500 000
ATF	15,7%	Halyk	84	Sberbank	350 000
Fotte Bank	16,3%	Forte Bank	84	BCC	210 000
Halyk	18,3%	BCC	84	Halyk	200 000
Tsesnabank	19,2%	ATF	60	Qazkom	150 000
BCC	19,3%	Tsesnabank	60	Forte Bank	100 000
Qazkom	20,7%	Sberbank	60	BCC	50 000
Forte Bank	23,5%	Qazkom	60	BCC	39 000
Qazkom	24,7%	BCC	48	ATF	30 000
		BCC	48	Sberbank	20 000
		Halyk	36	Qazkom	19 000
		BCC	12	Halyk	12 000
				BCC	2 100
				BCC	1 050

At the end of 2016, a statistical observation of innovation activities of 31077 enterprises of the republic was conducted. During the reporting period, 2,879 enterprises had innovations (in 2015, 2,585 enterprises). Compared to 2015, the number of enterprises with innovations increased by 294 enterprises.

The innovation activity of enterprises in grocery, process, organizational and marketing innovations was 9.3%, in grocery and process innovations 5.6%. The highest activity in the field of innovation in all types of innovation was observed among large enterprises and amounted to 30.7% (out of 1,947 large enterprises reporting, 597 carried out innovative activity).

The volume of innovative products produced in 2016 compared to 2015 increased by 18.2% and amounted to 445775.7 million tenge, 451630.4 million tenge of which were sold.The volume of innovative products exported amounted to 70883.5 million tenge.

Table 2 - The level of innovation activity of enterprises for all types of innovations

	2013	**2014**	**2015**	**2016**	**2017**
Republic of Kazakstan	**8,0**	**8,1**	**8,1**	**9,3**	**9,6**
Akmolinskaya	7,1	7,3	6,8	7,0	7,5
Aktyubinskaya	6,5	7,6	7,0	9,3	10,1
Almatinskaya	9,5	9,4	6,9	7,8	8,1
Atyrauskaya	5,1	8,1	8,0	8,5	8,0
Zapadno-Kazakhstanskaya	5,3	6,6	4,1	3,6	5,3
Zhambylskaya	10,2	12,2	10,6	10,8	11,3
Karagandinskaya	7,6	8,4	9,2	10,6	11,1
Kostanaiskaya	11,8	13,6	14,5	11,2	11,3
Kyzylordinskaya	12,0	10,1	11,7	11,2	11,4
Mankystauskaya	2,4	3,4	4,0	4,1	3,5
Pavlodarskaya	8,5	6,9	4,8	6,5	8,7
Severo-Kazakhstanskaya	10,9	11,6	10,6	11,3	11,2
Turkestanskaya	4,2	5,6	5,9	6,6	5,3
Vostochno-Kazakhstanskaya (East Kazakhstan)	5,6	7,6	11,5	14,9	15,1
Astana	11,1	10,7	13,2	13,6	14,4
Almaty	8,0	5,0	4,7	7,6	7,7
Shymkent	8,6	8,1	7,5	6,6	7,2

* Since 2013, a survey on innovation statistics has been carried out in accordance with international recommendations on product, process, organizational and marketing innovations.

During the analyzed period, the cost of product and process innovations increased by 133% compared with the previous year and amounted to 1528645.9 million tenge (in 2015 - 655361.0 million tenge). At the same time, the cost of product and process innovations from the own funds of enterprises amounted to KZT 367777.0 million, which is 24.1% of the total cost of product and process innovations.

According to the survey, the largest number of enterprises that have all four types of innovations are operating in Almaty (20.5%), Astana (18.9%), East Kazakhstan (10.3%), Karaganda (8.3%), Kostanay (5.6%) and South Kazakhstan regions (5.4%).

Discussions. Today, the banking system is facing the need to address both urgent and strategic tasks: to strengthen the institutional and legal regime of banks, increase their openness, transparency, efficiency, competitiveness, overcome the liquidity crisis, increase production lending, and lay the foundation for a fundamentally new banking structure.

It is necessary to form a new type of credit institution, more crisis-resistant, organized in the form of bank holdings, focused on making money by lending to the real sector. In this case, the attractiveness of banks for the population will increase.

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ЭКОНОМИКАНЫҢ ИННОВАЦИЯЛЫҚ ДАМУЫНДА КОММЕРЦИЯЛЫҚ БАНКТЕРДІҢ РӨЛІ

Аннотация. Мақалада елдің инновациялық және инвестициялық даму деңгейін көтеру үшін банк секторының тиімді жұмыс істеуінің рөлі мен маңызы айқындалған. Қазақстан Республикасының инновациялық және инвестициялық дамуын ынталандыру үшін банктік және нақты секторлардың жағдайын және параметрлерін жақсарту қажеттілігі негізделген. Мақала жазу кезінде жалпы ғылыми және арнайы әдістер пайдаланылды, олар: жүйені талдау әдісі; мазмұнды талдау әдісі; салыстырмалы талдау әдісі; талдау және синтез әдісі; жүйелі тәсіл әдісі.

Авторлар тікелей кредиттеу, шағын және орта бизнесті несиелендіру аясында экономиканың шикізаттық емес секторларының дамуын талдады.

Түйін сөздер: инновациялар, екінші деңгейлі банктер, кіші бизнес, несиелеу.

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РОЛЬ КОММЕРЧЕСКИХ БАНКОВ В ИННОВАЦИОННОМ РАЗВИТИИ ЭКОНОМИКИ

Аннотация. В статье определены роль и значение эффективного функционирования банковского сектора для повышения уровня инновационного и инвестиционного развития страны. Обоснована необходимость улучшения условий и параметров работы банковского и реального секторов для стимулирования инновационно-инвестиционного развития Республики Казахстан.

При написании статьи использованы общенаучные и специальные методы такие, как: метод системного анализа; метод контент-анализа; метод сравнительного анализа; метод анализа и синтеза; метод системного подхода.

Авторами проанализировано развитие несырьевых отраслей экономики в рамках прямого кредитования, кредитование малого и среднего бизнеса.

Ключевые слова: инновации, банки второго уровня, малый бизнес, кредитование.

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ASSESSMENT OF THE CONDITION OF THE PROCESSING INDUSTRY IN THE REPUBLIC OF KAZAKHSTAN

Abstract. The manufacturing industry plays the important role in the country's economy, by stimulating innovation and increasing productivity, as well as improving the well-being of the population. Therefore, the creation of an effective structure of the processing industries is a permanent object of the active state-owned industrial Republic of Kazakhstan at the present stage.

The article analyzes the state of development of the most important manufacturing industries in Kazakhstan. It is shown that the level of productivity in the manufacturing industry of Kazakhstan is 2 times lower than the average for the member countries of the Organization for Economic Cooperation and Development. The low level of availability of long-term credit resources, technological backwardness of production, and a shortage of qualified personnel have been identified as factors hindering the development of manufacturing industries. In addition, it was found that, despite the availability of agricultural raw materials, the agricultural raw materials processing sector is not sufficiently developed in Kazakhstan: Kazakhstan is import-dependent by 47% for processed types of food, and domestic enterprises of light industry provide only 20% of domestic consumption. To solve these problems, measures have been proposed to curb commodity exports, by introducing of high fees on the export of products with a low degree of processing and the provision of incentives to stimulate the export of products with high added value.

Keywords: manufacturing industry, value added, manufacturability.

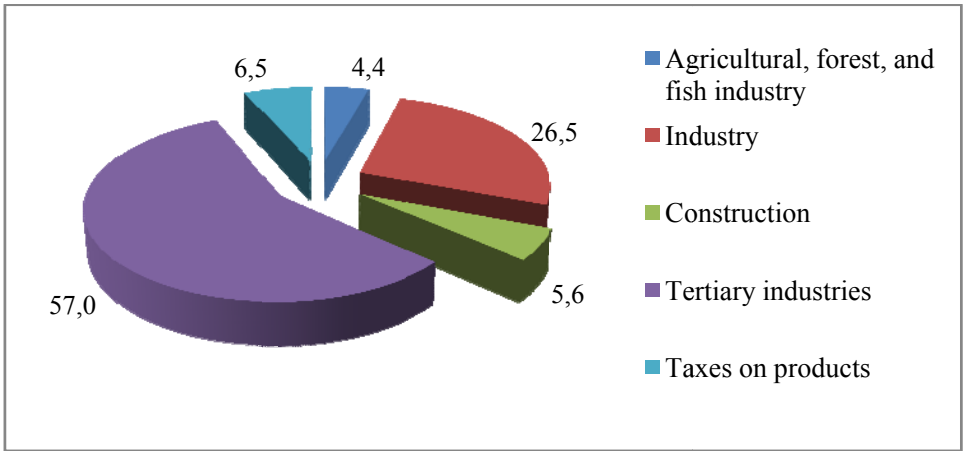
Introduction. The development of industry with high value added is one of the most important conditions of dynamic development of the Republic of Kazakhstan. From the beginning of active industrial policy, the main conditions for the processing industry development were created in the country. The Commercial Code that combined all instruments to support entrepreneurs and specified the functions of the institutes of development was adopted. The establishment of Bayterek Holding and development of specialized institutes of support allowed covering all aspects in the processing industry. In addition, currently the processing industry is supported systematically by development of necessary industrial infrastructure under the State Program on industrial and innovative development – 12 special economic zones were created, 3 of them have complete infrastructure [1].

In the field of the processing industry Kazakhstan has a range of advantages: large-scale, free, inactive manufacture capacity allowing running the production of new types of goods; availability of low-cost labour having quiat high level of qualification; high educational and culture level of population; natural and geographic potential of the country.

Despite the available background for active development of the processing sectors of economy, the processing industry is developed quite slowly. This testifies the availability of serious problems with the national processing industry and actualizes the task of grounding the strategy of its development within which the favorable macroeconomic situation and available competitive advantages can be used.

Methods. The following methods were used as methodological and methodical base for the research: dialectical method of cognition; principle of analogy; methods of systematic and structural analysis, analytical grouping; tabular and graphical means to present statistic data.

Results and discussion. At the moment the industry takes more than fourth part in the structure of Kazakhstan economy, Figure 1. By data of the Committee for Statistics of the Ministry of National Economy of the Republic of Kazakhstan, in 2018 the index of physical volume of industry to the previous year was 104.1% [2].



Note – the Figure was made basing on source [3]

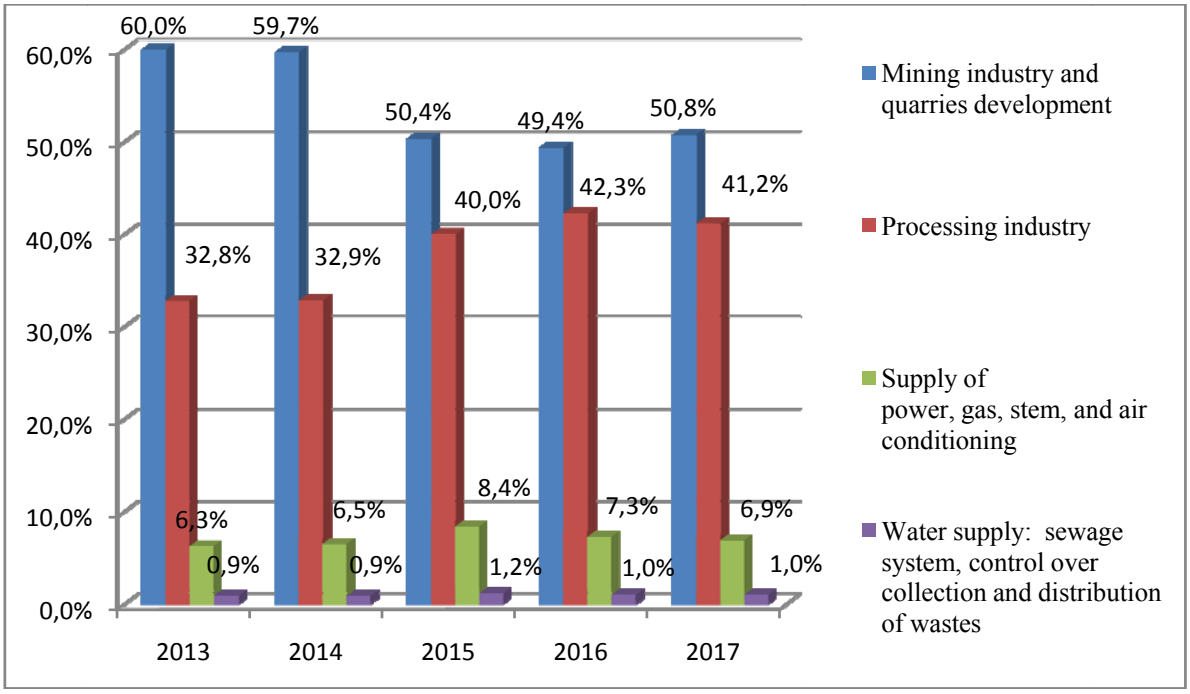
Figure 1 – The structure of economy sectors in GDP for 2017, %

In the structure of industrial production of the Republic of Kazakhstan the processing industry was about 37% from 2013 to 2017.

The leading position in the Republican volume of industrial products belongs to the mining industry (54% at average). In 2017 the output of products for this sector, in terms of money, was 11 568 785 million tenge.

The power supply is ranked third in the share of economic activity of the industrial production volume (7% at average). In 2017, the volume of industrial goods production, in terms of money, was 1 582 299 million tenge.

And the indicator of water supply is about 1% at average for the same period. In 2017 the volume of industrial goods production, in terms of money, was 238 277 million tenge, Figure 2.



Note – the Figure was made basing on source [4]

Figure 2 – Relative share of activity types in the national volume of industrial products, %

According to the long-term priorities of "Kazakhstan-2050" Strategy, and in support of the industry development, the National Program on the industrial and innovative development of the Republic of Kazakhstan was developed for 2015 – 2019.

The Program is aimed at stimulating the diversification and enhancing the competitiveness of the processing industry. The Program pays special attention to satisfaction of internal market demand owing to own production, and then, upon saturation of the internal market, provision of goods for export. Under this approach the task of the national processing industry products development will be solved [5].

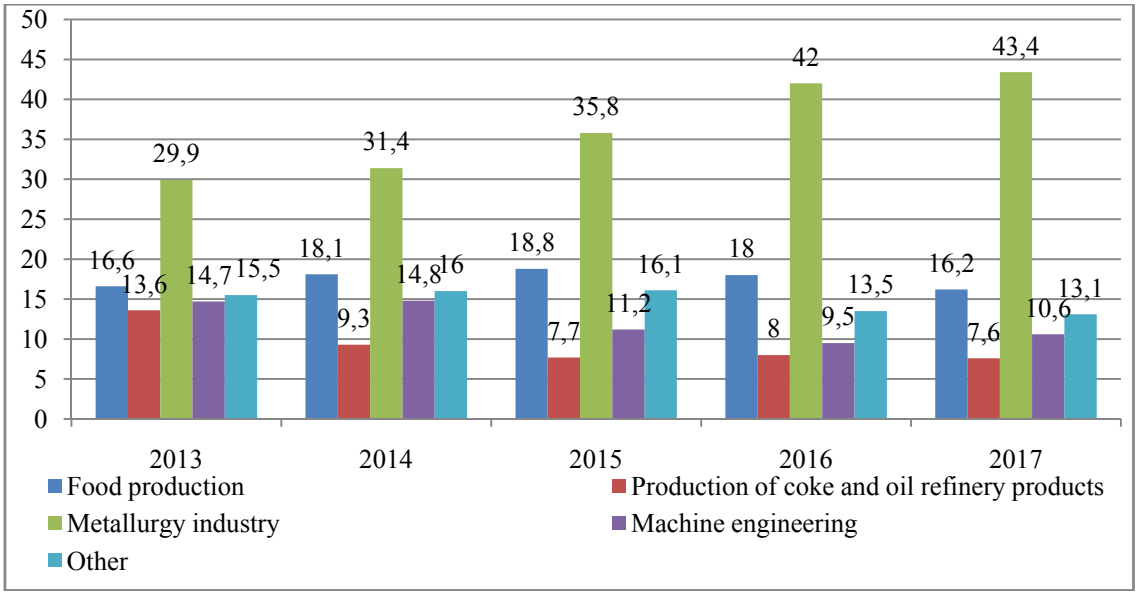
Under the industrialization process the industry focus gradually shifts to the processing industry, although the level of its development remains quite low. The processing industry provides less than 7% of employment, and 11% of gross added value of the country economy. For comparison, the level of output of the processing industry for Kazakhstan is lower twice than, at average, for countries-members of the Organization for Economic Cooperation and Development (OECD).

In 2017, the processing industry output volume, in terms of money, was 9400848 million tenge of the whole volume 22 790 209 million tenge, Table 1.

Table 1 – The volume of processing industry products (goods, services) by types of the economic activity, million tenge

Types of economic activity	2013	2014	2015	2016	2017	Increment volume	
						2017/ 2013	2017/ 2016
Processing industry	5852592	6089645	5978008	8046845	9400848	160,6	116,8
Production of food stuff	970123	1103491	1123041	1448386	1525814	157,3	105,3
Beverage industry	202459	233059	216316	254294	311675	153,9	122,6
Production of tobacco products	111909	104232	93469	105936	106247	94,9	100,3
Production of textiles, clothes, leather goods	64977	63189	71593	82463	98090	151,0	119,0
Production of coke and oil refinery products	797925	565219	462234	640137	716297	89,8	111,9
Chemical industry products	185977	230310	241588	284551	333328	179,2	117,1
Metallurgical industry	1752059	1912427	2140058	3380172	4075747	232,6	120,6
Machine engineering	859201	902541	668265	766781	998176	116,2	130,2
Other	907962	975177	961445	1084125	1235473	136,1	114,0

Note – The table was made basing on source [4]



Note – The Figure was made using source [4]

Figure 3 – The relative share of activity types on the volume of processing industry products, %

The structure of the processing industry is mainly presented by metallurgical industry. At average, from 2013 to 2017, the share of the metallurgic industry was 36.5% in the structure of the processing industry of the Republic.

The production of food stuff is on the second place for a good reason – the Republic of Kazakhstan is agricultural country. The average value of food industry share for the same period is 17.5%.

The share of machine engineering is 23.2%, production of coke and oil refinery products – 9.2%, Figure 3.

The processing of agricultural raw material, and production and qualitative, affordable and competitive food stuff, at the moment, is one of the main priority tasks of the agricultural sector of the Republic.

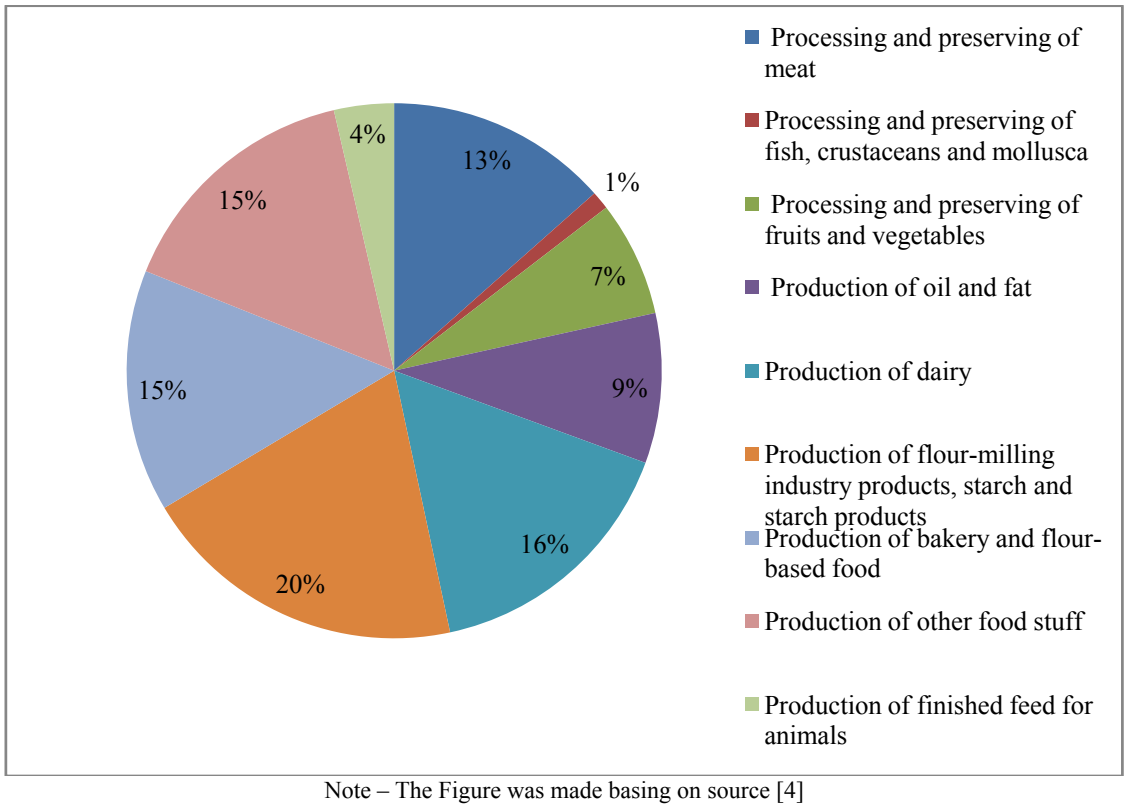
In 2017, the enterprises of the sector produced 6.7% of the Republican volume of industrial production, or 16.2% of the processing industry.

The main share in the structure of food stuff production belongs to cereal-processing industry (20%), dairy (16%), bread and bakery (15%), meat-processing (13%), fat-and-oil (9%), fruits-and-vegetables (7%), other sectors (20%) [4].

Process utilization rate at the enterprises on agriculture products processing was as follows: macaroni – 49.2%, milk – 43.5%, flour – 37.5%, butter – 38.4%, sausage goods – 35.2%, sugar – 76.6%, cheese – 37.3% [4].

In whole, the volume of foods stuff production in 2017 was about 1 525 814 million tenge or 4 676.8 million US dollars. Among them, the products to the amount of 1 241.4 million US dollars was exported. At the same time, the amount of imported foods stuff was 3 012.9 million US dollars. Consequently, the total volume of foods stuff consumption in Kazakhstan is 6448.30 million US dollars [6]. So, the share of import in the total volume of consumption is about 46.7%. Kazakhstan provisions itself only with 53.3% of own agriculture products.

The main volume of import falls on fruit-and-vegetable preserves, dairy products, cheese and quark, poultry meat, confectionary imported mainly from the Customs Union countries and far-abroad countries.



Note – The Figure was made basing on source [4]

Figure 4 – The structure of food stuff production in RK, 2017.

The conducted analysis clearly shows the import dependence of Kazakhstan in the sectors of advanced processing food industry. Despite the relative development of agricultural sector and availability of agricultural raw materials, the raw material processing sector is not developed enough in Kazakhstan. At the moment, Kazakhstan exports corn, vegetables, fruits and other types of agriculture products, and imports confectionary, preserved vegetables etc., i.e. the processed products the cost of which is much higher.

The same situation is for the consumer goods industry. The share of the sector in the industry is not large and is 0.43%, in processing industry – 1%. In 2017, the sector enterprises manufactured the products to the amount of 98 billion tenge or 295 million US dollars [4]. Among them, the product to the amount of 3.8 million US dollars was exported. The amount of imported consumer industry product was 1 161.6 million US dollars that exceed the own volume of production by almost 4 times [6].

Thus, the share of national production in the consumer industry market is about 20%. And this is mainly school uniform, uniform and shoes for arm and force departmental structures. The rest 80% is imported from abroad. Unfortunately, under the availability of significant raw resources, the problems of the sector remain unchangeable. For example, Kazakhstan does not manufacture wool fabric causing the necessity to import faux fur and wool. Despite annual growth of cattle stock, only 14% of them are used in manufacture, and some part of it is exported to China via rogue companies for low prices. In addition, due to low quality of raw cotton, the local enterprises on cotton processing are not loaded to its full extent. Of the total volume of raw cotton grown in Kazakhstan, 90% is exported abroad, and only 2% of cotton is processed to final product [7]. All this causes the increase of import dependence for cotton goods.

At the moment, the government conducts the works on provisioning the textile enterprises with raw cotton, elaborates the issues on determining the limits for thin wool export, temporary prohibition on export of untreated skin. However, the companies of the sector still prefer to be content with government orders and conduct very poor marketing policy. There are several companies that are more or less active in this regard (“Kazakhstan Textiline”, “Kaz SPO-N”, “Semiramida” South Textiline KZ). Along with this, the garment factories purchase the materials and fabric from Russia, Turkey, Uzbekistan, Italy and other. But Kazakhstan almost does not manufacture yarns, fibers, accessories. This causes high net cost of the national final products and makes it uncompetitive in comparison with imported into the country products.

The technical and technological backwardness of the sector should also be noted – wear and tear of the main funds of the national enterprises is 80% [8]. This was the reason of low labor productivity, high labor intensity, production hold-up etc. To solve this problem it is necessary to free of fees and VAT the technological equipment purchased from abroad and to create leasing companies with governmental share to purchase this equipment on favorable terms.

The consumer goods industry is of high public significance in many countries as it ensures high employment. In India, China, Turkey this sector provides employment for almost 20% of population. The governments of these countries arranged large-scale measures to support the consumer industry: free economic zones, preferential taxation and credits, quotes and fees, governmental investments. Particularly, in Turkey the volume of this sector in the GDP is 10%, the sector ensures 40% of income into the country budget [9]. In Kazakhstan, the consumer industry is the only way to decrease unemployment at the regions with excess population and mono-cities tied to manufacture industry only [10].

With regard to the mentioned above, Kazakhstan needs to take urgent measures to stimulate the development of sectors of processing of agriculture raw materials.

To solve the problems of the sector it is necessary to take measures on limiting the raw materials export assuming the introducing of high fees on export of products with low processing level. In addition, it is reasonable to stimulate the export of goods with high added value by franchise application. This method of export stimulation of final product was successfully undertaken by China.

The sector also suffers from shortage of highly qualified specialists. The education program at all universities of the country is based on obsolete methods of manufacture. Considering the appearance of new methods of products manufacture in consumer industry the requirements to employees and specialists also increase.

The first President of the Republic of Kazakhstan noted several times the importance of development of non-resource-based sectors of economy and its diversification, particularly, the Address “Kazakhstan on the way of accelerated economic, social and political modernization” of 2005 sets the task on creating

innovative economy and developing of non-source-based sector, industrialization of agricultural production through implementation of cluster initiatives in the field of manufacture and processing of agriculture raw materials [11].

To provide financial resources to processing industry enterprises the government used different instruments to support the industrial development: interest rate subsidization, reimbursement of expenses and allocation of grants for innovations and adoption of technologies, partial reimbursement of expenses of industrial-innovative activity subjects, credits cover and other.

The key barrier for this is high loan debt of active enterprises of processing industry and lack of free liquid assets at the latter to ensure loan-based funding.

High cost of credit, in particular, long-term credit of Kazakhstan financial institutes remains a serious barrier. In 2018, the average rate of compensation for long-term credits at second-tier banks was 19.2% annual in the national currency [12].

One of the headwinds of labor productivity growth is technological level of processing industry sectors development. At the moment, more than 80% of the processing industry enterprises still use manual labor or have semi-automated production [13], i.e. are still at the transition stage to full automation.

In this regard, it is necessary to stimulate the enterprises to make investments into the modernization through development of financial support instruments including the increase of volumes and affordability of long-term financing; to tough requirements to projects having the governmental support in the part of advanced equipment and technologies application. In addition, it is necessary to continue the implementation of plans on digitization of industry including the increase of technological requirements and standards to enterprises.

Conclusion. The conducted research allows concluding that the growth of processing industry is grounded on the modernization of its sectors. This needs to solve the following key issues of modernization:

1. Ensure the access to technologies. Here, the most effective measure is decrease of taxes on the imported foreign technology, provision of exemptions or complete remission of taxes for enterprises that implement large innovation projects.
2. Ensure the access to finances. It is necessary change gradually the system of direct grants and subsidies as it is not effective sufficiently. For example, the subsidization of poultry farms in Kazakhstan sis not favor the increase of its competitiveness, the prices remain high comparing to the imported poultry meat. The poultry farms owners are not interested in optimizing the expenditures, increase of their own production potential. There is no end of such examples. Instead of such schemes the government can stimulate the investments into these fields providing good conditions for investors and acting as a guarantor.
3. Minimize the barriers facing the national manufacturerson the way to the internal and export sales markets.
4. Decrease the intensity of competitive pressure by stimulating the innovative activity, removing the input barriers, and the educational medium meeting the processing industry requirements.

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ҚАЗАҚСТАН РЕСПУБЛИКАСЫНДАҒЫ ӨҢДЕУ ӨНЕРКӘСІБІНІҢ АХУАЛЫН БАҒАЛАУ

Аннотация. Өңдеу өнеркәсібі инновацияларды ынталандырып, өнеркәсіп өнімділігін жоғарылату және тұрғындардың әл-ауқатын көтеру арқылы ел экономикасында маңызды орын алады. Сондықтан өңдеу өнеркәсібі салаларының тиімді құрылымын жасау қазіргі кезеңде Қазақстан Республикасының белсенді мемлекеттік өнеркәсіптік саясатының тұрақты объектісі болып отыр.

Мақалада Қазақстанның өңдеу өнеркәсібінің анағұрлым маңызды салаларының дамуының ахуалына талдау жүргізілген. Қазақстандағы өңдеу өнеркәсібінің өнімділік деңгейі Экономикалық ынтымақтастық және даму ұйымының мүше-мемлекеттерінің орташа көрсеткішінен 2 есе төмен екендігі көрсетілген. Өңдеу

өнеркәсібі салаларының дамуын тежейтін факторлар ретінде ұзақ мерзімді несиелік ресурстардың қол жетімділігінің төмен деңгейі, өндірістердің технологиялық артта қалушылығы, білікті кадрлардың жеткіліксіздігі көрсетілген. Одан басқа, ауыл шаруашылығы өнімдері бола тұра, Қазақстанда оларды өңдеу салаларының төмен дамығандығы белгіленген: Қазақстан өңделген тамақ өнімдері бойынша 47%-ға импортқа тәуелді болса, ал жеңіл өнеркәсіп саласының отандық кәсіпорындары ішкі тұтыну көлемінің небәрі 20%-ын ғана өндіреді. Көрсетілген мәселелерді шешу үшін өңделу деңгейі төмен өнімдерді сыртқа сатуға жоғары алым салу арқылы шикізат экспортын қысқарту, жоғары қосылған құны бар өнімдер экспортын ынталандыру үшін жеңілдіктер жасау сияқты ұсыныстар жасалған.

Түйін сөздер: өңдеу өнеркәсібі, қосылған құн, технологиялылық.

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ОЦЕНКА СОСТОЯНИЯ ОБРАБАТЫВАЮЩЕЙ ПРОМЫШЛЕННОСТИ В РЕСПУБЛИКЕ КАЗАХСТАН

Аннотация. Обрабатывающая промышленность играет важную роль в экономике страны, стимулируя инновации и повышение производительности, а также рост благосостояния населения. Поэтому создание эффективной структуры обрабатывающих отраслей выступает постоянным объектом активной государственной промышленной Республики Казахстан на современном этапе.

В статье проведен анализ состояния развития наиболее важных отраслей обрабатывающий промышленности Казахстана. Показано, что уровень производительности в обрабатывающей промышленности Казахстана в 2 раза ниже, чем в среднем по странам-членам Организации экономического сотрудничества и развития. В качестве факторов, сдерживающих развитие отраслей обрабатывающей промышленности, определены низкий уровень доступности долгосрочных кредитных ресурсов, технологическая отсталость производств, нехватка квалифицированных кадров. Кроме того, установлено, что несмотря на наличие сельскохозяйственного сырья, в Казахстане не достаточно развита отрасль переработки сельхозсырья: по переработанным видам продуктов питания Казахстан импортозависим на 47%, а отечественные предприятия легкой промышленности обеспечивают всего 20% продукции внутреннего потребления. Для решения указанных проблем предложены меры по сдерживанию сырьевого экспорта, предполагающие введение высоких пошлин на вывоз продукции с низкой степенью обработки, предоставления льгот для стимулирования экспорта изделий с высокой добавленной стоимостью.

Ключевые слова: обрабатывающая промышленность, добавленная стоимость, технологичность.

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PECULIARITIES OF ACCOUNTING AND ASSESSMENT OF BIOLOGICAL ASSETS IN ACCORDANCE OF IFRS 41 AGRICULTURE

Abstract. International Financial Reporting Standard (IAS) 41 Has its own peculiarities of accounting and some difficulties in the assessment of biological assets. Agrarian enterprises are the basic economic resource potential for maintaining food security of the state. The development of market relations and the economy in the agricultural sector of the country predetermines the need to form an effective system of accounting and auditing the activities of agricultural organizations. Obtaining biological resources from uncontrolled sources, such as catching fish from the seas and oceans, harvesting wood by cutting down natural forests are not agricultural activities. The authors presented an example of assessing the changes resulting from biotransformation, such as the calculation of yield, average daily yield, protein / fat / carbohydrate content in the produced products, etc.

Keywords: biological asset, resource, agriculture, system, economy, biotransformation.

INTRODUCTION

Biological assets are animals or plants used for agricultural activities, namely, grown for sale or for the purpose of increasing their quantity in the present and the future for the production of agricultural products. Possible multiple or single use of biological assets for the collection of agricultural products. In the case of a single use, biological assets disappear, transforming into agricultural products.

Agricultural activities include livestock, crops, forestry, cultivation of aquatic biological resources, beekeeping, etc. Agricultural activities are characterized by the following criteria: a) the ability of biological resources to change - biotransformation, b) the possibility and necessity of managing these changes evaluating emerging changes. Managing the biotransformation of biological assets, creating and maintaining favorable conditions for maintaining the ability of assets to biotransformation are the hallmarks of agricultural activity.

MAIN PART

In accordance with IAS 41, biological assets are classified as follows:

- producing biological assets;
- consumable biological assets. Terms of recognition of biological assets

determined in full accordance with the principles of IFRS and do not differ from the conditions of recognition of any other tangible assets of the organization. Biological assets can be recognized in the accounting records of an organization engaged in agricultural activities only if:

1) the organization controls the asset as a result of past events;
2) the organization may receive future economic benefits from the asset;
3) the fair value or cost of an asset can be determined with a certain degree of certainty.

In agricultural activities, proof of control may, in particular, be the ownership of cattle, branding or other marking of livestock at the time of its acquisition, birth or weaning. Future economic benefits, as a rule, are estimated based on the value of the basic physical parameters. The initial recognition of biological assets is at fair value less estimated costs of sale, unless the fair value cannot be reliably measured. Calculations of the fair value imply a mandatory decrease in the market price in the amount of transport and other expenses that must be incurred in order to deliver the goods (biological asset or

agricultural products) to the relevant market. In other words, fair value is the market price minus transportation and other costs for delivering goods to the market.

In cases where the fair value of an asset cannot be reliably established, the asset should be measured at cost, depreciated over the estimated useful life, and subjected to impairment tests annually. In case of impairment, the value of the biological asset should be reduced by the amount of impairment loss of the asset. As soon as it becomes possible to determine the fair value, the organization should proceed to the valuation of the biological asset at fair value.

IAS 41 synthesizes the characteristics of agriculture in a unique characteristic of agricultural activity as the management of the biotransformation of biological assets.

The general characteristics of agricultural activity are:

a) the ability of biological assets to biotransformation - change;

b) manageability. Management assumes the creation of a system of necessary agrobiological, organizational and technological, soil, climatic and other conditions for biotransformation of biological assets;

c) quantitative and qualitative changes caused by the biotransformation of biological assets. These changes are regularly monitored, measured (evaluated) and reflected in accounting operations in the process of agricultural management.

Biological assets may be recognized in the accounting records of an organization if the following conditions are met:

a) the organization controls the biological asset as a result of past events, as evidenced by the relevant title documents;

b) there is a probability that the organization will receive in the future economic benefits from a biological asset (in the form of agricultural products, litter, proceeds from the sale and other income);

c) the organization manages the biological asset and the results of its biotransformation in the process of agricultural activity;

d) the valuation of a biological asset at fair value or cost can be determined with a reasonable degree of reliability and reliability.

Depending on the type of agricultural activity (a subclass of the type of economic activity), the unit of accounting for biological assets may be a centner, a hectare, a head, etc.

At the moment, there are many problems in order to assess the fair value of biological assets. The concept of fair value, biological asset, the procedure for assessing biological assets is considered in IAS 41 “Agriculture”, which is very interesting in connection with the development of the national project “Development of the AIC”. There are fundamental differences between the order of registration of animals and plants in agriculture, their assessment in agriculture to national standards and in accordance with IFRS. So IAS 41 “Agriculture” gives the concept of fair value, introduces the concept of biotransformation and what is a biological asset.

International Financial Reporting Standard (IAS) 41 is not used to account for the processing of collected products, as it is considered as an industrial production that is regulated by other standards, in particular IAS 2 “Inventories”.

IAS 41 requires that a fair value be applied to the valuation of biological assets and the agricultural products derived from them. It refers to the amount by which an asset can be exchanged or in which an obligation can be fulfilled as a result of a transaction between well-informed, independent parties wishing to complete such a transaction. If simplified, fair value is the possible selling price (market price) in the active market for the relevant assets. To determine the fair value of the asset should be based on its location and state at a given time. For example, the fair value of cattle on a farm is its price in the relevant market, minus transportation and other costs of delivering these cattle to the market.

General rule IAS 41 “Agriculture” prescribes the valuation of all biological assets at fair value less costs to sell. When an animal is primarily to perform some work, such as traction horses, sledding or guard dogs, etc., then you do not apply IAS 41, because all these activities do not constitute a biological transformation.

At the present stage, active markets are just beginning to form, and some, such as, for example, an active market for feed products of own production, are hard to find. Today, the active market of Kazakhstan is underdeveloped. It requires the implementation of a competent anti-monopoly policy on the

part of the state, the control of participants in an active market, and there is also a need to develop fair competition. Also, the territorial distribution of agricultural producers in order to limit the active market zones by regions, republics, and territories in our country has a not unimportant role.

Biological assets may be recognized by an organization in accounting for homogeneous groups or subgroups assessed at fair value (for example, animals of a certain breed, of the same age and direction of use, plants by groups and subgroups of crops, agricultural products by homogeneous groups, varieties and quality). Quantitative information on each group of biological assets for its disclosure in the accounting (financial) statements by an organization can be further classified into consumable and fruiting (producing) biological assets with their subdivision into mature and immature. Consumed biological assets are assets that, when collected (received) agricultural products cease to exist (for example, grain crops) or are sold as a biological asset (fattening animals). Fruiting (producing) biological assets are assets that are productively reused (for example, dairy herd of cows, fruit trees).

Unlike the immature, mature biological assets have the ability to regularly bear fruit, to ensure the collection (production) of agricultural products on a regular basis (for example, milk cows, perennial plantings of a fertile age, etc.).

The International Standard does not provide for a clear classification of biological assets, but when disclosing information in the financial statements of an enterprise, a quantitative presentation of each type of biological asset is encouraged, and it is necessary to separately disclose indicators for mature and immature biological assets.

Mature biological assets include:

- Current biological assets that have reached a corresponding state, for example, animals and poultry - when they reach the appropriate weight and fatness;
- Long-term biological assets have the ability to bring agricultural products and other biological assets.

Immature biological assets are not capable of bringing agricultural products and other biological assets. When characterizing biological assets, it is necessary to take into account the fact that biological assets are living organisms that develop according to the laws of nature. The duration of their production process depends on both their biological characteristics and external factors. For a better understanding, as well as to facilitate the assessment, measurement and control of the movement of such assets, there is a fourth classification feature, namely the possibility of repeatedly obtaining products or other biological assets. For this purpose, the consumed biological assets and the fruit-bearing biological assets are separated into separate accounting objects. Some long-term biological assets are in continuous motion.

Thus, the grouping attribute should be an approach to the assessment of biological assets. The main method of valuation of biological assets according to IAS 41 is fair value measurement. In accordance with an alternative option, biological assets, if their fair value cannot be reliably determined, then they can be recorded on the balance sheet at their initial cost or cost. Features of the evaluation of biological assets are shown in table 1.

Table 1 - Features of the evaluation of biological assets

The method of receipt of biological assets in the economy	Cost of biological assets received
1. Acquisition for a fee	Actual expenses incurred on receipt (initial cost)
2. Free receipt	Fair value, taking into account the costs associated with bringing them to the state in which they are suitable for use for the intended purposes
	Fair value at the date of transfer minus expenses for sale
4. Transfer to the long-term from the composition of the current biological assets	The fair value of the asset transferred
5. Exchange for a similar biological asset	The fair value of the asset transferred is increased (decreased) by the amount of cash (or cash equivalents) payable (received) from the exchange transaction
6. Exchange for a dissimilar biological asset	Fair value minus selling expenses

As can be seen in Table 1, biological assets are valued at fair value when they are received for free; with a contribution to the authorized capital; when exchanging for a similar and dissimilar biological asset; when translating current biological assets into long-term assets. The products of agricultural and other biological assets at their initial recognition are likewise subject to fair value less costs to sell. Moreover, agricultural products after their initial recognition are estimated and reflected in accordance with IFRS 2 “Stocks”, that is, they are reflected in accounting and reporting at the lower of two estimates: initial cost or net realizable value.

IAS 41 expressly prescribes the use of quoted prices in an active market for calculating fair values. Fair value is an amount sufficient to acquire an asset or fulfill obligations when making a transaction between well-informed, willing to make such a transaction, parties independent of each other. This definition of fair value is based on the principle of continuing operations and has nothing to do with the amount that one party would have paid to the other when liquidating the enterprise or selling it.

In the process of agricultural production, they repeatedly produce products, make a circuit in such sequential functional forms as production, commodity and money. That is, there is a continuous movement, their transition from one form to another, in the process of which they are reproduced. These are fructifying biological assets that can repeatedly bring agricultural products and other biological assets. Fruit-bearing biological assets in this sense are self-replicating and not primary. Current biological assets produce agricultural products once and, when the final product is received, cease to exist, as a result, the production process is interrupted. These are consumable biological assets that end their existence after receiving agricultural products from them.

CONCLUSION

Thus, the Standard specifically states that it "establishes the procedure for recording, presenting financial statements and disclosing information on agricultural activities in the part that is not considered by other International Financial Reporting Standards" of IAS 41.

This area of agricultural activity is the ownership and management of the so-called biological assets, that is, biologically active objects of property ("living" property) - animals and plants, as well as the accounting of agricultural products at the time of their collection. Separately, the Standard deals with the accounting of government subsidies related to the agricultural activities of economic entities. In addition to the separation of biological assets and agricultural products, IAS 41 draws the line between agricultural products and products resulting from their processing after harvest.

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ОСОБЕННОСТИ УЧЕТА И ОЦЕНКИ БИОЛОГИЧЕСКИХ АКТИВОВ В СООТВЕТСТВИИ МСФО 41 «СЕЛЬСКОЕ ХОЗЯЙСТВО»

Аннотация. Международный стандарт финансовой отчетности (IAS) 41 имеет свои особенности учета и некоторые сложности в оценке биологических активов. Аграрные предприятия являются базовым народнохозяйственным ресурсным потенциалом поддержания продовольственной безопасности государства. Развитие рыночных отношений и экономики в аграрном секторе страны предопределяет необходимость формирования эффективной системы бухгалтерского учета и аудита деятельности сельскохозяйственных организаций. Получение биологических ресурсов из неуправляемых источников, например вылов рыбы из морей и океанов, заготовка древесины путем вырубки естественных лесов не являются сельскохозяйственной деятельностью. Авторами представлен пример оценки возникающих в результате биотрансформации изменений служит расчет таких показателей, как урожайность, среднесуточный приплод, содержание белков/жиров/углеводов в произведенной продукции и т. д.

Ключевые слова: биологический актив, ресурс, сельское хозяйство, система, экономика, биотрансформации.

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41 «АУЫЛШАРУАШЫЛЫҒЫ» ХҚЕС-КЕ СӘЙКЕС БИОЛОГИЯЛЫҚ АКТИВТЕРДІ ЕСЕПКЕ АЛУ ЖӘНЕ БАҒАЛАУ ЕРЕКШЕЛІКТЕРІ»

Аннотация. Халықаралық қаржы есептілігінің стандарты (IAS) 41 Биологиялық активтерді есепке алудың өзіндік ерекшеліктері және кейбір қиындықтар бар. Аграрлық кәсіпорындар - мемлекеттің азық-түлік қауіпсіздігін қамтамасыз етудің негізгі экономикалық ресурстық әлеуеті. Елдің агроөнеркәсіптік кешеніндегі нарықтық

қатынастар мен экономиканы дамыту ауылшаруашылық ұйымдарының қызметін есепке алудың және аудиттің тиімді жүйесін қалыптастыру қажеттілігін алдын ала анықтайды. Бақыланбайтын көздерден, мысалы, теңіздер мен мұхиттардан алынған балықтарды алу, табиғи ормандарды кесу арқылы ормандарды жинау, ауыл шаруашылық қызметі емес. Авторлар биотрансформация нәтижесінде пайда болған өзгерістерді бағалаудың мысалы ұсынды, мысалы, кірістіліктің, орташа тәуліктік өнімнің, ақуыздың / майдың / көмірсутектің мазмұнын есептеу және т.б.

Түйін сөздер: биологиялық актив, ресурс, ауыл шаруашылығы, жүйе, экономика, биотүрлендіру

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BANK RISKS IN THE SYSTEM ON COUNTERING THE LAUNDERING OF PROCEEDS AND FINANCING OF TERRORISM

Abstract. The paper investigates the problems of bank risks in the system of countering the money-laundering and financing of terrorism. It was revealed that the considered field of finance-bank sector is in close interconnection and functioning with financial monitoring issues. Therefore, it is important to state that the issue of countering the legalization (laundering) of proceeds and financing of terrorism holds a specific place not only in Kazakhstan, but in other countries of the world too; the analysis was conducted. As the combating with criminal proceeds legalization is the most important means of control over the organized crime including its most harmful forms such as drug business and terrorism, the adoption by Kazakhstan of the generally recognized principles and mechanisms on countering the legalization of criminal proceeds and financing of terrorism has not only legal, but social and political significance. The risks, and, consequently, the control degree can differ significantly, the financial monitoring performers should possess the abilities to identify and verify the potentially suspicious transactions. The suggested methods and mechanisms to solve this problem will have beneficial effect on the work of the banking sector and economy of RK in whole.

Key words: financial and banking sector, banking control, legalization of income, countering the legalization, financing of terrorism.

Introduction. One of the most important issues at the current stage of financial relations development in the banking system of Kazakhstan is improvement of measures countering the legalization of criminal proceeds that is the most important means of control over the organized crime including its most harmful forms such as drug business and terrorism; the adoption by Kazakhstan of the generally recognized principles and mechanisms on countering the legalization of criminal proceeds and financing of terrorism has not only legal, but social and political significance for the Republic and other CIS countries. Thus, the considered issue is topical and its solving influences much on social and economic status of citizens.

The program of measures on countering the money-laundering and financing of terrorism is the most important component of the financial monitoring performers' functions and holds a specific place in present-day conditions. The primary goal of any effective program is protection of financial monitoring performers against legalization of criminal proceeds and ensuring the complete adherence to corresponding legislative acts by the financial monitoring performers. Therefore, the development, structural construction and implementation of programs should be the main priorities of any organization.

The programs should base on estimation of risks and be developed for the purposes of management and decrease of money-laundering and terrorism financing risks that could be encountered by the financial monitoring performer. The risk-oriented approach stipulates the individual calculation of risk level for all fields/aspects of the financial monitoring performer activity. The individual aspects of activity implemented by the financial monitoring performer are more risky in view of money-laundering than other and require additional control measures to decrease such risks, while other are less risky and do not require the same attention [1].

Research methods. The research was conducted on the base of monographs, papers by national and foreign scientists in the field of the theory of bank risks, risk-management, theory and issues of financial market, economic theory. The legislative and regulatory documents in the field of financial monitoring were used. The research is based on application of dialectical, historical and logical methods of cognition, and on the methods of analysis and synthesis, grouping and comparison. The main methodological

procedure of the conducted research is system approach allowing solving the set tasks in its entirety and to full extent. The methods of economic and statistical analysis were also used.

Results and discussion. Today, it is important to remember that the commercial banks have a specific status in the banking sector of Kazakhstan. In present-day conditions, the market abilities of the banking sector and bank depend on the focus of country economy development in the structure of the State, on the degree of commercial banks activity regulation by the National Bank, on the state of the legislative base.

Considering the financing and bank sector in view of close interconnection of its functioning with the financial monitoring issues it should be noted that the problem of countering the legalization (laundering) of income and financing of terrorism holds a specific place not only in Kazakhstan, but in other countries of the world too. As the combating with criminal proceeds legalization is the most important means of control over the organized crime including such its most harmful forms as drug business and terrorism, the adoption by Kazakhstan of the generally recognized principles and mechanisms on countering the legalization of criminal proceeds and financing of terrorism has not only legal, but social and political significance. The risks, and, consequently, the control degree can differ significantly, the financial monitoring performers should possess the abilities to reveal and check the potentially suspicious operations. In the banking sector, the special attention should be paid to the program of proper inspection of clients as the effective program of identification is the best way to prevent money-laundering and financing of terrorism. The more the financial monitoring performer knows about its clients the more successful will be the prevention of abuses connected with legalization of criminal proceeds.

For instance, according to the "List of limited transactions" determined by Article 4 of the Law on AML/CFT the following, in purposes of AML/CFT should be implemented strictly and the authorized body should be informed on such limited transactions as:

- crediting or transfer of money to the bank account of a client by a physical person or legal body having a registration, place of residence or staying in offshore zone, or having a bank account recorded in offshore zone, or operations with money and (or) other property by a client with the mentioned group of persons to the amount of 5 million tenge on a cash and non-cash basis;
- international transfer of money to accounts (deposits) opened by an unidentified person, receipt of money from abroad account (deposit) opened by an unidentified person to the amount of 5 million tenge on a cash and non-cash basis;
- payments and transfer of money by one client to another without compensation to the amount of 7 million tenge on a cash and non-cash basis;
- purchase, sale and exchange of foreign currency in cash through exchange offices to the amount of 10 million tenge, cash only;
- withdrawal of money from a bank account or credit of funds to a bank account of a client, or taking cash from a client or giving cash to a client except cases described in sub-paragraphs 13) and 14) of the current Paragraph to the amount of 10 million tenge in cash only, etc. [2,3].

The national security and global participation of the Republic of Kazakhstan in solving the worldwide and regional problems is the main task of the State. Under these conditions, all elements of the governmental system including the national AML/CFT system should operate effectively. Meeting the international standards of FATF the Republic of Kazakhstan joins the number of industrially developed countries that will result in decrease of shadow economy extent and corruption offences, increase of investment attractiveness and economic effectiveness, growth of tax revenues to the national budget and international confidence to Kazakhstan business society including the banking sector. The establishment of the effective national system on countering the legalization of criminal proceeds is one of the topical issue for Kazakhstan and the whole international society. While this issue is not solved the economic reforms in the country remain impossible.

The AML/CFT system the same as any other system represents the arranged organization of all its elements possessing the following main properties – integrity and divisibility, availability of sustainable connections, organization, emergence and hierarchy [4].

Conclusion. Thus, after brief description of our view of the banking sector in Kazakhstan, it is possible to conclude the following: transparency and liberalization of the financing and banking field in Kazakhstan, appearance of wide range of bank services etc. improved significantly the investment attractiveness of our country. However, at the same time, the conditions for criminal groups activity

engaged in money laundering gained from different crime activity were developed. The important role played also the processes of Kazakhstan economy offshoring resulted in capital outflow to abroad and consisted partially of illegal funds. Today, under the conditions of free trans-border flow of capital the anti-money laundering is one of the most important tasks in Kazakhstan. Despite the diversity of "laundering" schemes, the relations of economic entities engaged in laundering the crime proceeds have common nature and represent the individual market of funds laundering. The same as for any market, the main stimulating factor influencing on demand is quality and cost of the service; the weak link of Kazakhstan banking system is the necessity of personal estimation of a financial operation and its attitude to "suspicious". Kazakhstan legislation recommends only the criteria and common signs of operations testifying possible legalization (laundering) of money gained through crime, and financing of terrorism. In particular, an employee of a front-office working with a client associates himself a type of operations demanded or conducted by a client with criteria and signs of unusual deals. If the employee has suspicions that the financial operations are aimed at legalizing (laundering) of crime money or at financing the terrorism, he informs immediately an authorized person who analyzes it again and makes a personal decision on reasonability to qualify the operation as subjected to obligatory control and necessity to inform the Committee of Financial Monitoring on it. Another problem is weakness of prudential supervision over the activity and internal structural departments of lending institutions. The bank offices are beyond the prudential supervision of territorial entities of the National Bank by the place of its actual location. The lack of immediate access to the bank secrecy information; the bodies authorized for criminal intelligence operations may inquire from the banks the certificates on transactions and accounts of physical persons and legal entities, and individual entrepreneurs only on the base of judicial order or through the criminal cases under their activity; poor criminal and administrative sanctions for crimes and offences in the field of AML/CFT [6].

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ҚЫЛМЫСТЫҚ ЖОЛМЕН АЛЫНҒАН КІРІСТЕРДІ ЗАҢДАСТЫРУҒА (ЖЫЛЫСТАТУҒА) ЖӘНЕ ТЕРРОРИЗМДІ ҚАРЖЫЛАНДЫРУҒА ҚАРСЫ ІС-ҚИМЫЛ ЖҮЙЕСІНДЕГІ БАНКТІК ТӘУЕКЕЛДЕР

Аннотация. Мақалада қылмыстық жолмен алынған кірістерді заңдастыруға (жылыстатуға) және терроризмді қаржыландыруға қарсы іс-қимыл жүйесіндегі банк тәуекелдерінің мәселелері қарастырылады. Қаржы және банк секторының саласын зерттей отырып, қаржы мониторингінің проблемаларымен өзара тығыз байланыста жұмыс істейтіні анықталды. Сондықтан, кірістерді заңдастыруға (жылыстатуға) және терроризмді қаржыландыруға қарсы тұру мәселесі тек Қазақстанда ғана емес, сондай-ақ әлемнің басқа елдерінде де ерекше орын алады және оған осы мақалада талдау жүргізілді.

Ақшаны жылыстатумен күресу ұйымдасқан қылмысты бақылауға алады, оның ішінде есірткі бизнесі мен терроризм сияқты ең қауіпті нысандарын да бақылайды. Қазақстанда ақшаны жылыстатуға және терроризмді қаржыландыруға қарсы тұрудың жалпыға бірдей принциптері мен механизмін енгізу тек құқықтық қана емес, сонымен қатар қоғамдық-саяси маңызға да ие. Тәуекелдер және тиісінше, бақылау дәрежесі әртүрлі болуы мүмкін, қаржы мониторингі субъектілері күдікті операцияларды анықтауға және тексеруге қабілетті болуы тиіс. Бұл мәселені шешудің әдістері мен тетіктері ұсынылуда, бұл банк секторының жұмысына және тұтастай алғанда Қазақстан экономикасына оң әсерін тигізеді.

Түйін сөздер: қаржы және банк секторы, банктік бақылау, кірістерді заңдастыру, лаңкестікке қарсы әрекет ету, терроризмді қаржыландыру.

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БАНКОВСКИЕ РИСКИ В СИСТЕМЕ ПРОТИВОДЕЙСТВИЯ ОТМЫВАНИЮ ДОХОДОВ И ФИНАНСИРОВАНИЮ ТЕРРОРИЗМА

Аннотация. В статье рассмотрены проблемы банковскихрисков в системе противодействия отмыванию доходов и финансированию терроризма. Выявлено, что рассматривая сфера финансово-банковского сектора находится в теснойвзаимосвязи и функционирования с проблемами финансового мониторинга. Поэтому важно обозначить, что проблема противодействия легализации (отмыванию) доходов и финансированию терроризма занимает особое место не только в Казахстане, но и также в других странах мира и проведен анализ. Так как борьба с легализацией преступных доходов является важнейшим средством контроля над организованной преступностью, в том числе таких ее наиболее опасных форм, как наркобизнес и терроризм, внедрение в

Казахстане общепризнанных принципов и механизма противодействия легализации преступных доходов и финансированию терроризма имеет не только правовое, но большое общественно политическое значение. Риски и, следовательно, степень контроля могут существенно различаться, субъекты финансового мониторинга должны обладать возможностями для выявления и проверки потенциально подозрительных операций предложены методы и механизмы в решении данной проблемы, что благотворно скажется и на работе банковского сектора и в целом экономики РК.

Ключевые слова: финансово-банковский сектор, банковский контроль, легализация доходов, противодействие легализации, финансирование терроризма.

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NATIONAL MANIFESTATIONS IN THE WORK OF PROFESSIONAL KAZAKH ARTISTS (1980-2000)

Abstract. One of the main ideas of the worldview is a magnificent painting of a painting of a country in the world of Kazakh painting. Therefore, it is necessary to clarify the paths and continuity of the ancient Russian art of Kazakhstan in modern art, based on the laws of the sphere of art. This is because it allows you to analyze regular forms and essence, images and symbols of works of art that are traditionally practiced at the present time.The article identifies significant changes in the Kazakh pictorial art from 1980 to 2000. The traditions of national traditions, the mythical and Turkic worldview are reflected in the works of Kazakh artists. Kazakh artists came from schools of European and Russian art and studied the roots of the Turkic peoples during the years of independence. Describing the history of their ancestors, the artists made every effort to create national clothing and ethnographic values, as well as the foundations of worldview. It is clear that the work of these artists are philosophical and mythological in nature. Drawing on traditional images in their works, artists promote worldview, mythology, and philosophy in its understanding.

Key words:traditional images, worldview, painting, Turkish cognition, national motive, mythical image, motives, picture of the world, national spirit, national self-consciousness.

In the Kazakh painting art, painters combine creativity with mythology in the ideology of representation of the originality. Consistent consideration of the national mythological worldview in fine arts gives an opportunity to visualization of the fine arts in the public consciousness, the artistic image of the world, the closeness of national historical consciousness, the past and present of aesthetic cognition, and the design of future development trends.

At the same time, it is necessary to open a common core of arts, which is one of the main sources of fine arts, and to develop a new national art concept. As it is known that theoretical foundations of fine arts in Kazakhstan are not studied in detail, it is still abandoned in some other artistic spheres. Since painting is one of the most important forms of national culture representing the Kazakh people and culture in the world arena, it is necessary to study scientifically the place and features of its national and world culture [1].

The peculiarity of the art of displaying the truth is that it is a beautiful image. Artistic expression is the expression of the most important, typical image in the individual image, or the general, most important typical aspects of life in the form of a personal phenomenon, ie, in a sensitive form.

Consequently, it is impossible to balance the image image with both concept and senses. The peculiarity of the image is that it can be acquired through the individual. The artistic images in real artwork depict the important aspects of the truth, without showing the truth.

Traditional images and motif scenes of Kazakhstan's art can be found in every painting of the artists of each generation. As the themes and performances of each generation differ from each other, as well as the evolution of the Kazakh fine arts, traditional images are distinguished by their different views[2].

During the 1920's and 1930s, artists tried to portray ethnographic images only as they were. At that time the first Kazakh artist A. Together with Kasteev. Talented Kazakh artists, such as Ismailov, his brother K. Kozhykov, and others.

A decent factor of national perception and national spirit in the form of art that is new to the Kazakhs. Kasteyev's creative work. The life and work of Ismailov brothers, Kojikov brothers, coincided with the rapid redelegation of cultural traditions. According to his own mentality, the artistic orientation and social life of the Kazakhs in the Turkic, East context were translated into the context of European devices.

In the art of the 1940- 1950s, he expresses his professional sense of national identity. During this period K. Telzhanov, S. Mambeev, M. Kenbaev, K. Shayakhmetov, R. Sakhi and many other painters have received professional training at the best art schools in Leningrad and Moscow. The genetic structure of the imagery and worldview inherent to the nomads' generation combine the peculiarities of the European and Russian schools with the mastering of the techniques of painting, giving them the insights on the world and the stages of the art that coincides with the thaw in political life of the country.

In the creativity of these artists, the national mentality-specific transformation and unity of all elements, ie the return to the traditional idea of immanent harmony of the world, are new-level. Here the intensity of epic heroic initiatives is intensified, the improvisation inherent to the traditional Kazakh art is a principle that defines the creative rhythm of the character.

The creative quarter of Kazakh artists in the period from 1960 to 1970 expanded their knowledge to the various forms of search. At the beginning of these artists S.Aytbaev stood. National art style is created in the works of artists. Here are the main themes of the Kazakh painting of the 20th century: Interview with other national traditions, where the Russian realistic school, French impressionism, the current Soviet painting; synthesis of the innovative power with the national spiritual experience. A deep, intensive creativity process has continued the process of extending the value of the traditional worldview in painting from the world of creative practices, mastered by the national mentality, artistic tradition and novelty, developed and adapted to the expansion. The centuries-old continuity of the spiritual continuity arising in the art of the 20th century, while retaining the original and preserving its own identity, is the main subject of the traditional, stable, distinctive mentality of Kazakh culture.

The conventional "nationalization" of art was also discovered in the second half of the 1980s. The freedom granted by the rebuilding period, the emergence of an uncontrolled arbitrary art scene, aroused interest among artists and sculptors for their roots and sources of origin. The succession of these types of art with the spiritual traditions of the people, along with their interest in their culture and tradition, was also reflected by the visual and plastic forms of artwork through the system of ancient Kazakh spiritual wealth[3].

The stunning feature of the Kazakh fine arts was the aspiration to explore the Kazakh, Turkic, and Eastern Archaic. The myth of myths, the art of art change from the world, and the art of the young artists, appeared on the basis of their deep-rooted view of the usual world outlook and image. B. Baptishev, G. Madanov, A. In the works of Esdauletov it is surprising that the desire to get acquainted with the spirit of our ancestors, to the ancient forms of consciousness, not only to national initiatives and spiritual sources, but also to national history and consciousness, and to get acquainted with the universal human race on the planet.

They have come to terms with the flow of time and find themselves in the right place, and have a clear vision of art and have come to be the wise man of the time, with the types and outlook of the national consciousness armed with new philosophical doctrines. News in science combined with philosophical movements of the twentieth century, rebuilt in the sculptural compositions reflecting the works of the fine arts and the world, reviving the imme- diate rhythm of genetic nature of the nomadic people's culture. In the eye-catching, metaphorical system of symbols and symbols, the concept of delicate harmony among all elements of the world's structure, the common time cycle in the spatial structure, the unity and connection between living and dead matter, and the voluntary and exemplary characteristic of nomadic there was an understanding of vigorous spiritual upsurge.

It is worth noting that young artists have introduced the strongest sacred moment in the art of the same period. Probably, most probably, through scenes that explain the ancient beliefs and beliefs of the Great Steppe, they may have come to archaic as permanent, unchanging, indivisible values and insights, as a matter of great importance to their inner personality[4].

It is interesting to note that introducing a stabilizing initiative to the Kazakh art, as well as a positive guide to Kazakh art, is a turning point to ancient values. Having deserved eternal world outlook and spiritual signs, he has been unbreakable in this period as well as with the global and universal world, with endless connections. History, mythology of mankind, is reflected in their fictional works, reflecting the ancient rules of Dalai's life. The cosmogonic and ecological feelings of those works, the wisdom of iman for the perfection of the world, and the precise scale of morality and ethical values inherent only to our ancestral generations.

Between the 1980s and early 1990s, it was the time for volunteers to do the work of artists. During these years, which has been stretched from the search path and from various origins, the artist's generation is turning to the roots of Turkic peoples. It does not depict painting as a genuine obsession with philosophical significance. In the 1980s and early 1990s, the period when the traditional images and motifs of Kazakhstan's art began to appear in artistic creativity.

It is well-known that 1990 was considered a year of independence and was focused on all aspects of freedom of expression and tried to determine its own freedom. At the same time, he is developing pace at the moment. The imagination in the consciousness of the man who was under the control of the Soviet Union, now fosters the freedom. Kazakh artists try to expand the worldview of the Turkic world by promoting historical values. In this area Sydykhanov, B. Baptishev, B. Tabiyev, A. The artists such as Yesdauletov will have their favorite places. This is one of the most commonly encountered artifacts in honey art, which is honey stones.

Honey honey is the beginning of sculpture art in the Turkic world as well as in the general human society. Traditional image, that is, honey skull is often aimed at depicting meaning in Kazakh artists' creativity. It's only a single point to show the past. This use also took place in the works of 1950-60 artists. For example, a professional painter K. T. By the appearance of honey stone in the "Kokpar" by Telzhanov, the artist presented the idea of the main vendor's idea and presented it to the present artists as ready-made ones. The reason for this is that it is because honesty is stamped in the works of art as a way of showing the past in some of the meaningless works. Honey honey is to show an eternity, to show the age of our ancestors in the centuries, as well as the sound of kobyz and the history of ancient Turks. It is likely that he will not be able to handle various gaps. There are artists who turn the world into a ridiculous fashion as an easy way to show the "past and present" by embroidering cell phone carriers from the chest of honey or balmy stone, which has undergone various changes in the design of fine art[5].

In the works of 1990 artists, honey stones and parallel structures of the megalithic structure became traditional motifs. Motivational manifestations of deep philosophical meanings are inherent in the works of some artists. The Megalithic Views It is possible to meet the motifs of Baptishev's works. And the traditional motif scenes of the painter A. You can meet in the works of Sydykhanov. The artist is full of character. Sydykhanov's works are characterized by ancient historical and symbolic manifestations and philosophical evidence of modern manifestations. It is true that when we discover the meaning of the characters in the artist's works, we find mythological knowledge. Because the artist, who mastered the essence of mythology and philosophy, invites the viewer to see his work deeply, without looking at the spectator. The distinction of seeing and seeing the artist's work is that we can distinguish between these traditional images and the motive of the deep meaning of the works.

According to the results of the study, the period of Turkic cognition or mythological outlook in Kazakh painting came in 1980-1990. The imagination of the Kazakh artists, which was not limited to Turkic knowledge, was very wide. They tried to study the philosophical philosophy of the general human body. The works of these artists who seek to explore the archeological roots and rootstocks need mythological, philosophical analysis. The only force that unites the Kazakh visual arts is the deepening of these archetypes. Various phenomena and traditional motifs of the great land, which have passed through their own imagination through the widening of their own thoughts, become precious. Returning to the past and depicting some of the elements of today's past are illustrated by the artist's imagination.

In the 1990-2000 Kazakh folklore was created philosophic way of life with the traditional world of knowledge in terms of shaping and style of the Kazakh painting. The painters are trying to reveal the symbols of traditional art to discover the semantic significance of the characters themselves. Artists trying to disclose mythological understanding have resorted to world philosophy, mythological mythology, considering the symbolic nature as a general. In each of the waves of aggression, Kazakh elements tried to create national elements, including elements. And one of these uses has given a great result and has turned into imaginative content, and the second artist has been able to reverse its creativity. When you look at the works of artists from the 1990s and early 2000s, you immediately notice that they have a new ideology. As it has been mentioned above, it is to acquaint the future generations with the history of the Kazakh people through Turkic worldview, with the advancement of historical values as we have already mentioned[6].

Having deeply studied the subject of the research, we understood that the works of artists embraced by Turkic cognition in the Kazakh painting art as well as national archaic invites viewers to master the symbolic language of painting through philosophical thinking and mythological pupils.

The artistic consciousness of the twentieth century, first of all, feels that it is impossible to show the infinity and the present reality (reality), which is the invalidity of existing poetic formulas. Second, the artist's striving to turn chaos into a sequence, deep and extensive forms of artistic creatures, the ability to find the way, to overcome the epoch, to be "superior in competition", to overcome the enduring psychology and unavailability of all this[7].This dilemma is a trend reflected in the scope of modernism and postmodernism in artistic creativity.

In the conclusion, we would like to stress, that the formation of the mythological worldview of Kazakh painting through the creativity of the artists has shown that it has developed in different image systems. The traditional image of Kazakh painting has also formed a self-image in the formation. They began to form heroes, heroes' images.An image-based solution in the ethnographic imagery system led by A. Kasteev was the heroic, oblique images of K.Telzhanov's works of our professional artists, and the image of national characters in the works of artists of the sixties - images of visual arts. The period of the appearance of the animated solution is the mound of the Kazakh painting art from 1980 to 2010. Even in the eighth century, the quarter of the thematic quarter was blockaded, although it was a subject of national reality. This is also a feature of all aspects of art. Since 1990 was regarded as a sovereign state, the independent artist imposed on freedom of imagination. They have come to define the history of the Kazakh people. As a result, the language was new, the oldest words were published. They brought traditional images of Turkic awareness. It was in those years that a line of philosophical, mythical images of Kazakh cinema appeared. Also, the images are traditionally connected with the creativity of each Kazakh artist. By virtue of the quintessential words of the Quintile, the appearance of the mythological worldview in the Kazakh painting began with the period when the painting art was formed, and during the 1990-2010 years, their revival, prosperity.

Б.Р. Қарабалаева

КӘСІБИ ҚАЗАҚ КЕСКІНДЕМЕШІЛЕРІ ШЫҒАРМАШЫЛЫҒЫНДАҒЫ ҰЛТТЫҚ ДҮНИЕТАНЫМ КӨРІНІСТЕРІ (1980-2000жж.)

Аннотация. Ұлттық дүниетанымның негізгі арқауларының бірі қазақтың кескіндеме еліміздің әлем картинасы бағытында қалыптасқан қыруар мағұлматтар жатыр. Сондықтан да біз өнертану саласының заңдылықтарын негізге ала отырып, Қазақстандағы бейнелеу өнерінің байырғы көріністерінің қазіргі суретшілерге берілу жолдары мен сабақтастығын айшықтаудың қажеттілігі туындайды. Себебі ол қазіргі кезге дейін дәстүр бойынша жалғасын тапқан көркем туындылардың тұрақты формасы мен мәнін, образы мен белгілерін талдауға жол ашады.Мақалада 1980-2000 жылдар аралығындағы қазақ кескіндеме өнеріндегі елеулі өзгерістер тұжырымдалған. Ұлттық дәстүрлі образдармен, мифтік, түркілік дүниетаным көріністерінің қазақ кескіндемешілері туындыларында белең алған кезеңдері жікке алынып қарастырылған. Қазақстан суретшілері Еуропалық және Орыс өнерлерінің мектептерінен өте келе тәуелсіздік жылдары түркіхалықтарының түп тамырын зерделеуге көшті. Ата-бабаларының тарихын суреттеу барысында суретшілер ұлттық киімдер мен этнографиялық құндылықтарды сондай-ақ әлемдік дүниетаным негізін ашуға бар ынталарын қойды. Бұл бағыт суретшілерінің туындылары философиялық сонымен қатар мифологиялық мағыналылыққа ие болып келетіні анық. Туындыларындағы дәстүрлі образдарға сүйену барысында суретшілер дүниетанымды, мифологияны сонымен қатар, оны түсіну барысында философияны алға тартады.

Түйін сөздері: дәстүрлі образдар, дүниетаным, кескіндеме өнері, түркілік таным, ұлттық нақыш, мифтік көрініс, мотивтер, әлем картинасы, ұлттық рух, ұлттық сана.

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ОСОБЕННОСТИ НАЦИОНАЛЬНОГО МИРОВОЗЗРЕНИЯ В ТВОРЧЕСТВЕ ПРОФЕССИОНАЛЬНЫХ КАЗАХСКИХ ЖИВОПИСЦЕВ (1980-2000гг.)

Аннотация. Одна из основных основ национального мировоззрения - казахская живопись, которая сформировалась в направлении мировой картины нашей страны. Поэтому, основываясь на законах в области искусствоведения, возникает необходимость в отражении преемственности и путей передачи исконно-образных

представлений изобразительного искусства в Казахстане современным художникам. Это позволяет анализировать устойчивые формы и сущность, образ и признаки художественных произведений, которые до настоящего времени традиционно продолжались. В статье сформулированы существенные изменения в казахской живописи с 1980 по 2000 годы. Образы традиционных национальных, мифических, студентов, магистрантов казахского тюркского мировоззрения этапы и растущих проявлений редакции произведения. В годы независимости художники Казахстана перешли на изучение корней тюркских народов, пройдя из европейских и русских школ искусств. При описании истории предков художники сделали все возможное, чтобы раскрыть национальные костюмы и этнографические ценности, а также основы мирового мировоззрения. Произведения художников этого направления имеют как философскую, так и мифологическую значимость. При опоре на традиционные образы в произведениях художники выдвигают мировоззрение, мифологию, а также философию при его понимании.

Ключевые слова: традиционные образы, мировоззрение, живопись, тюркское познание, национальный колорит, мифический вид, мотивы, картина мира, национальный дух, национальное сознание.

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DIRECT FOREIGN INVESTMENTS IN KAZAKHSTAN: STATE AND PROBLEMS

Abstract. The purpose of the study is to make a comprehensive assessment of the attracted foreign investments into the economy of Kazakhstan, and to identify the problems of its attracting.

The work used general scientific methods of research: analysis and synthesis, statistical, graphical, methods of comparison and modeling. In particular, the study is based on a system analysis of the factors determining the dynamics of FDI in the country and its regions, and statistical methods for analyzing the national characteristics of FDI traffic in modern conditions.

The article analyzes the dynamics of attracting foreign direct investment in modern conditions, allowing to assess the existing investment attractiveness of the country and its regions. The paper also identified the main problems that prevent foreign investment in the domestic economy. It is determined that foreign direct investments in the Kazakh economy are concentrated in raw materials industries and industries with a rapid return on capital with relatively little attention to high-tech industries that produce products with a high share of added value. All this makes it necessary to avoid dependence on raw materials and focus the main efforts on the industrialization of the national economy.

The analysis of the regional distribution of foreign direct investment in Kazakhstan has shown their unevenness. Thus, it is revealed that the lion's share of FDI falls on 5 regions, 4 of which specialize in the raw material sector of production. It is shown that the investment attractiveness of the regions of our country for foreign investors is not the same and has significant interregional differences in the volume of foreign direct investment, which in turn requires the development of recommendations on the process of attracting foreign direct investment to the economy of the regions in order to increase their investment attractiveness.

As a result of the study, the authors found the irrationality of the sectorial and regional structure of FDI distribution, which indicates the ineffectiveness of the mechanisms for attracting them to the economy of Kazakhstan. In this connection, the authors propose a set of measures aimed at implementing the new investment policy of the state, including changes in legislative acts, as well as measures to improve the economic mechanisms for FDI attracting.

Key words: foreign direct investments, investment climate, attraction of investments, stimulation of the flow of direct investments.

Introduction

Foreign direct investments influence much on economy development of any country, and Kazakhstan is not an exception. The inflow of foreign direct investments into the country favors the appearance of innovative projects, increase of volume of product production and income, renewal of the state budget and acceleration of economic growth. These also could play a major role in fundamental modernization of production, in improving the production modernization, in improving the international specialization of Kazakhstan and strengthening of the national companies in the global market on this base. However, it is important to ensure the formation of favorable investment climate and effective structure of direct foreign investments, develop new forms and methods of the foreign capital attraction into Kazakhstan economy. The development of such mechanisms should consider the specifics of the economy functioning for the country and its regions, the state of the investment climate. In this regard, the aim of the paper was

determination of tendencies in the field of direct foreign investments attraction into Kazakhstan economy and revealing of problems influencing negatively on FDI inflow.

Main body

The attraction of foreign direct investments is one of the priority tasks of Kazakhstan economic policy as these are able to ensure the transfer of advanced technologies, equipment and know-how to Kazakhstan from abroad, renew on this base the productive facilities and growth of industrial production [1].

Let's consider the dynamics of gross FDI income into the national economy during the recent years.

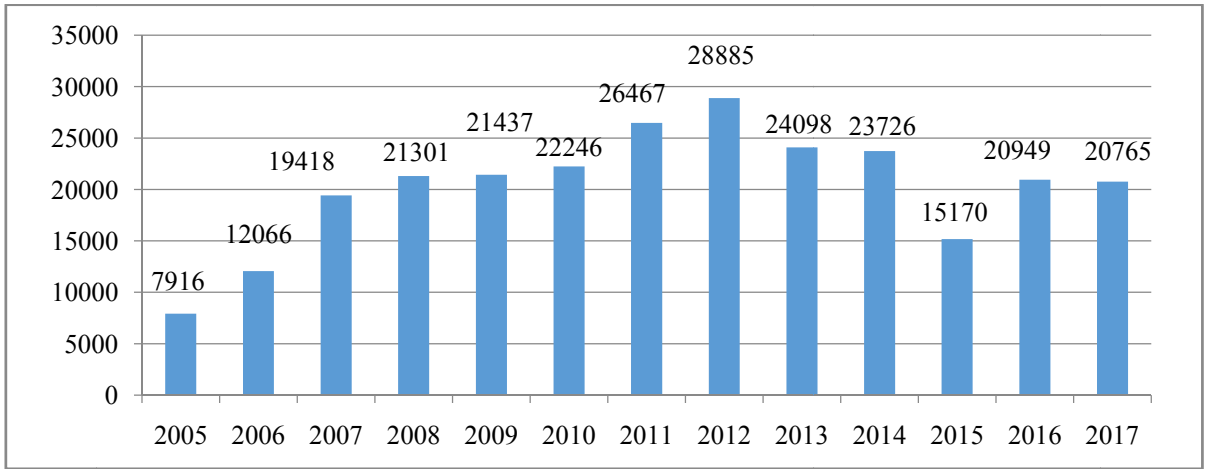

Figure 1 – Gross FDI inflow to Kazakhstan, mln. US dollars

Note: compiled by authors basing on source [2]

For the analyzed period the gross inflow of foreign direct investments into Kazakhstan economy has positive tendency. If in 2005, there were 7.19 billion US dollars investments into Kazakhstan economy, in 2017 this indicator is equal to 20.76 billion US dollars.

The peak of direct foreign investments into Kazakhstan economy was in 2012. That year 28.9 billion US dollars were invested into the country. The lowest FDI inflow was in 2015. That year, the FDI inflow decreased by 36% comparing to 2014. The reason was that starting from 2015 the volumes of income from the investment projects comparing to the previous years decreased more than twice (57%); i.e. the same as in 2015 the energy resources costs decreased twice, the income from direct investments decreased by 2 times comparing to 2014, and comparing to 2010 – by 3 times [2].

Considering the net inflow of foreign direct investments into Kazakhstan economy in recent years, we can observe the following pattern (Figure 2).

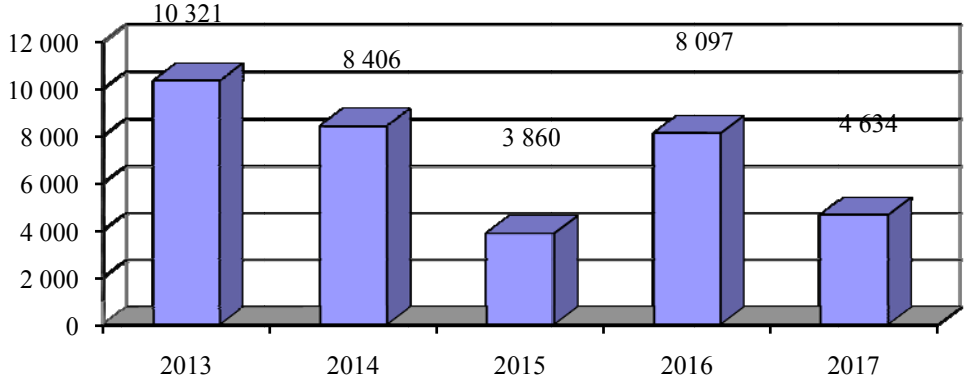

Figure 2 – Net inflow of FDI into Kazakhstan, mln. US dollars

Note: compiled by authors basing on source [2]

The analyzed period shows that the dynamics of net FDI inflow attraction is not stable. In 2015 there was sharp decrease of net FDI inflow. However, in 2016 the country received 8.1 billion US dollars of net foreign investments inflow, and Kazakhstan was ranked 2 among top 5 countries with transit economy that receive FDI (Figure 3). Note that the indicator of FDI inflow increased in 2016 by 147% comparing to 2015.

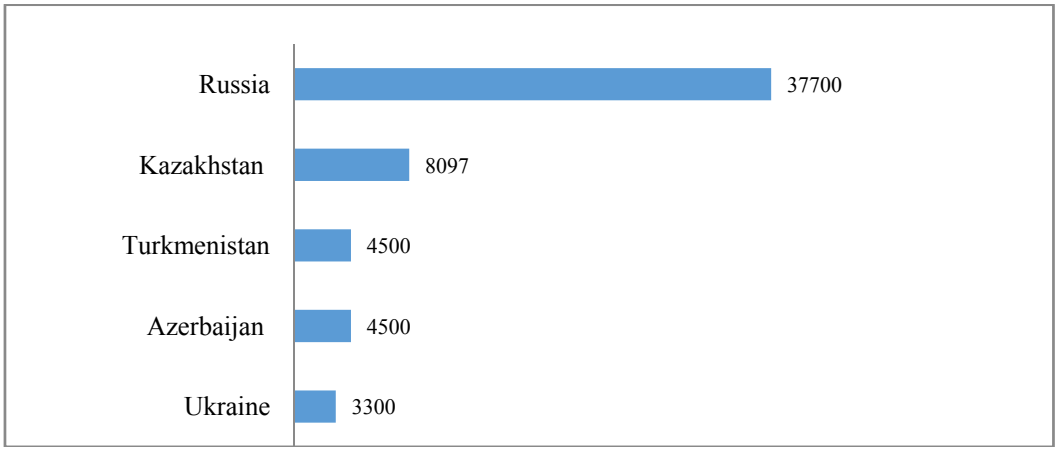

Figure 3 – Top 5 countries with transit economy that receive FDI, 2016

Note: compiled by authors basing on source [3].

The growth of investments in Kazakhstan in 2016 is explained by increase of raw mineral production and increased interest from new investors. Under new mega project, the international consortium invested into the enlargement of the giant Tengiz oil field. The Project is measured at 36.8 billion US dollars. By 2022 this project will start new oil production. This project underlies that foreign investors still prefer the hydrocarbon and raw materials deposits of the country for the FDI, although recently the interest from Chinese, Indian, and Iranian investors was also focused on processing industry. For example, the partnership between the Chinese Company MCC Baosteel and Eurasian Resources Group, Kazakhstan mining group, in which the State owns 40 percent share, develops a plant that costs 1.2 billion US dollars designed to increase local iron ore processing. In addition to extension of the existing activity of investors, the interest of these new investors led to growth of investments into the share capital. And the re-invested income was almost $5 billion – second in size volume fixed until this time [3].

In 2017, the net FDI inflow to Kazakhstan decreased and fell to 4.6 billion US dollars [2].

If we consider the dynamics of FDI attraction to Kazakhstan economy in whole, it is obvious that during the past two decades the inflow of FDI into Kazakhstan economy showed constant high volumes and growth rates. This period can be conditionally divided into two main stages. During the first stage – 1992-2008, Kazakhstan managed to use its advantages in the field of raw resources and attract investments to oil and gas and uranium sectors, financial sector, and partially to production of construction materials and food products. By data of the Ministry of Industry of RK, during this period 51 large investment projects with participation of foreign transnational corporations were implemented.

The analysis of foreign direct investments to Kazakhstan in 2005 and 2017 shows that the main investor to the country economy is Netherlands. In 2017, the Netherlands invested 5.9 billion US dollars to Kazakhstan that is 29% of the whole inflow of foreign direct investments to the country. The key investor for Kazakhstan economy is also the USA. In 2017, the USA invested 3.7 billion US dollars to Kazakhstan economy that is 17.9% of all foreign direct investments to the country. The largest FDI export jump into Kazakhstan economy was from Switzerland and Belgium. If in 2000 Switzerland invested 112 billion US dollars as foreign direct investments, in 2017 it invested 2.9 billion US dollars. South Korea, China, and Russia also increased the inflow share of FDI to Kazakhstan economy for the analyzed period. South Korea increased its FDI share by 9 times, Russia, and China increased it twice. And FDI export share from the Great Britain and France to Kazakhstan decreased by 2.5 times for the analyzed period (Table 1).

Table 1 – The gross inflow of foreign direct investments
to the Republic of Kazakhstan from foreign direct investors in 2005 and 2017

#	Country	FID, mln. US dollars	FID inflow share (%)	#	Country	FID, mln. US dollars	FID inflow share (%)
2005				2017			
1	Netherlands	1944	24,5	1	Netherlands	5998	29
2	USA	1181	14,9	2	USA	3712	17,9
3	France	775	9,8	3	Switzerland	2935	14,1
4	Great Britain	604	7,6	4	Russia	1230	5,9
5	Liberia	336	4,25	5	Belgium	1049	5
6	Japan	335	4,2	6	China	999	4,8
7	Virgin Islands (Britain)	301	3,8	7	France	804	3,9
8	Canada	248	3,1	8	Great Britain	602	2,9
9	Russia	227	2,9	9	South Korea	488	2,3
10	China	216	2,7	10	Bermuda Islands (Britain)	448	2,2
Note: compiled by authors basing on source [2]							

Considering the structure of foreign direct investments to Kazakhstan economy we can observe the following indicators (Table 2).

Table 2 – Gross FDI inflow to Kazakhstan by types of economic activity, 2005 – 2017

Activity	Years								
	2005	2006	2008	2009-2011	2012	2014	2015	2016	2017
1	2	3	4	5	6	7	8	9	10
Agricultural, forest and fish industry	1,3	37,6	38,5	6,5	18,3	1,7	71,8	50,1	26,1
Mining industry and quarries development	1930	3719	3982	5476	7314	8356	3485	7168	10041
Processing industry	346	679	2131	3243	3461	3666	2585	4080	5188
Power supply, supply of gas, steam and air conditioning	120	26,8	130	250	262	254	12,3	72	16,2
Construction	134	265	352	1021	1321	720	791	827	205
Wholesale and retail trade; transport repair	386	765	1324	1833	2625	2802	1511	2290	3129
Transport and stock-keeping	470	241	142	207	417	732	479	504	720
Information and communication	29,6	129	69	260	2005	416	40,6	392	144,8
Financial and insurance activity	110	472	1967	603	2428	521	470	384	418
Operations with real estate property	15,3	37	52,6	227	103	115	41	106	151
Professional scientific and technical activity	4276	5558	8016	9955	8688	5888	5562	4806	244
Education, health care and social services, art, rest and recreation	38	7,2	70	14,4	18	6,1	21	23,3	2,1
Other types of services	51,1	93,2	2961	122	116	70	90	24,5	100
TOTAL	7916	12066	21301	23383	28885	23726	15170	20949	20765
Note: compiled by authors basing on source [2]									

The analyzed period shows that the structure of foreign direct investments in Kazakhstan changed gradually.

In 2005, the large share of FDI was for professional, scientific and technical activity consisted mainly of geological surveys and explorations. The share of this type of economic activity was 54% of all FDI. The mining industry and quarries development were invested with 24.4%. We see that the significant share of foreign direct investments was for the raw materials sector. The processing industry took just 5% (Figure 4).

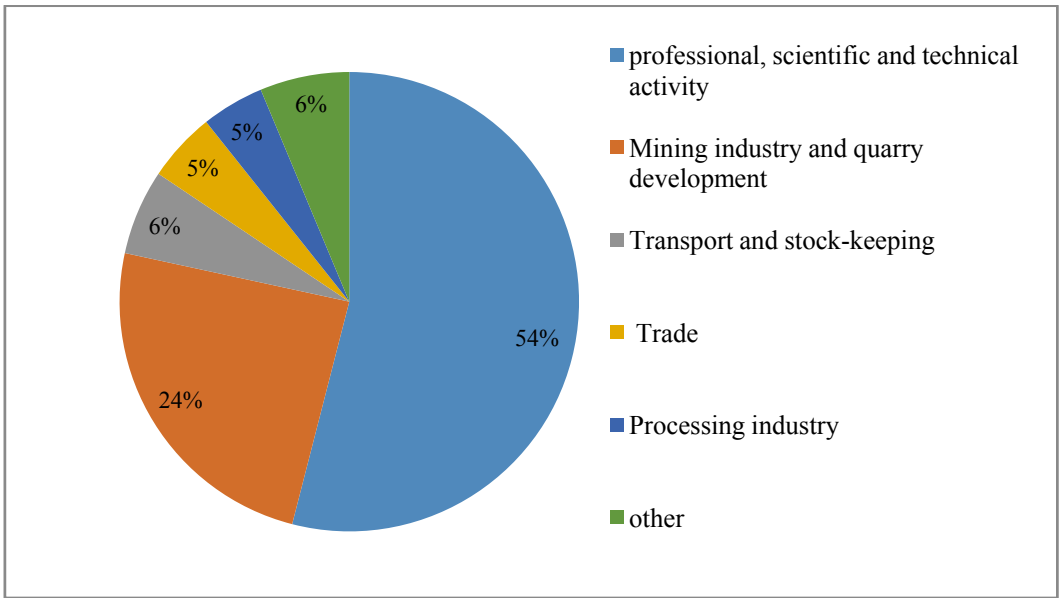

Figure 4 – Gross FDI inflow to Kazakhstan by types of economic activity in 2005.

Note: compiled by authors basing on source [2]

Before the world economic crisis in 2007-2008 this tendency remained. The analysts note that after the prices fall on raw material resources, the government focused on FDI attraction to the processing industry and aimed at accelerated industrial development of the country [4]. This tendency has led to the transformation of FDI structure in Kazakhstan economy. If we look at the FDI structure in 2017 we will note its significant differences comparing to 2005. In 2017 the processing industry had 25% of all attracted FDI. We see that the FDI share inflow to the processing industry increased by 5 times in FDI structure. The largest share of the attracted FDI in 2017 was for the mining industry and quarries development – 48%. The high growth was also in the wholesale and retail trade. The share of this activity is 15% of all FDI in 2017 (Figure 5).

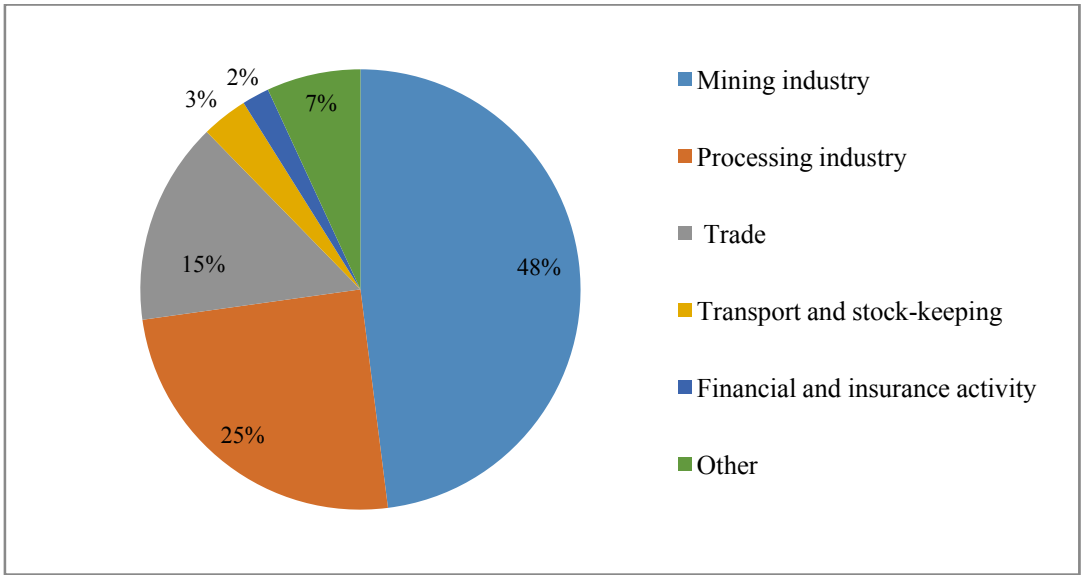

Figure 5 – The gross FDI inflow to Kazakhstan by types of economic activity, 2017.

Note: compiled by authors basing on source [2]

The comparison of two diagrams on distributing foreign direct investments into Kazakhstan economy by types of economic activity, we see that the share of processing industry increased. The large share in processing industry in 2017 belongs to metallurgy sector – 87% FDI of the whole processing industry.

The impulse to development of metallurgical industry of the Republic was, on the one hand, high prices on metals resulted in FDI into this sector of the national economy, and, on the other hand, the State support of this sector as a strategical sector of the Republic economy. The second place in the processing industry in 2017 was the production of rubber and plastic articles – 3.9%. The third place belonged to production of food products, drinks and tobacco goods – 2.1%. After that there is production of charcoal and refinery products – 2%.

Earlier it was noted that in 2017 the largest share of foreign direct investments was for the mining industry and quarries development – 48% of all FDI into the country economy. The largest FDI share of this industry belongs to production of crude oil and natural gas – 97% of the whole mineral resource industry.

In such economic activity as transport and stock-keeping, the largest share in 2017 was for pipeline transportation. This takes 70% of all foreign direct investments into this type of economic activity. On the second place in this sector on FDI attraction is stock-keeping and auxiliary transport activity – 22%.

The analysis of gross FDI inflow by Kazakhstan regions shows quite stable tendency (Table 3). The most popular region for foreign investors is Atyrayu region. The region has more than 400 joint enterprises. For sure, one of the largest projects is construction of the third-generation plant at Tengiz oil field. There is also large oil field Kashagan. However, we observe small decrease of FDI inflow to the region, in 2014 the attracted sum was 9.1 billion US dollars, and in 2017 – 7.6 billion US dollars that is 37% of all FDI in the country. This decrease was first of all due to completion of restoration works at Kashagan and first stage of Atyrayu refinery plant reconstruction.

Table 3 – Gross direct investments inflow to Kazakhstan
from foreign direct investors by Kazakhstan regions, 2014 – 2017

Region name	Years			
	2014	2015	2016	2017
Akmola region	-13,2	15,6	253,4	75
Aktyubinsk region	1 418,9	368,0	1 183,0	1814,3
Almaty region	235,3	131,2	99,9	175,5
Almaty	4 949,2	2 742,5	4 670,4	4005,5
Astana	676,1	424,0	206,1	657,0
Atyrayu region	9 135,7	6 821,0	8 505,1	7677,9
East-Kazakhstan region	2 638,5	1 796,1	2 458,5	2927,6
Zhambyl region	94,4	-30,9	149,6	85,5
West-Kazakhstan region	1 628,1	1 396,7	1 356,8	1201,6
Karaganda region	71,1	31,7	304,2	460,8
Kostanay region	335,2	14,4	358,1	-120,3
Kyzylorda region	359,0	169,2	206,8	98,3
Mangystayu region	1 609,4	227,0	450,2	621
Pavlodar region	346,9	792,7	472,4	581,9
North-Kazakhstan region	6,7	-13,5	2,5	17,8
South-Kazakhstan region	234,3	283,6	272,2	485,2
Total	23726	15170	20949	20765
Note: compiled by authors basing on source [2]				

The second place on FDI attraction belongs to Almaty. In 2017 the attracted sum was 4 billion US dollars that is 19.3% of all FDI in the country. Then, there is East-Kazakhstan region with 2.9 billion US dollars investments – 14% of all FDI in the country. Aktyubins region was invested with 1.8 billion US dollars that is 8.7% of all FDI. The West-Kazakhstan region was invested with 1.2 billion US dollars – 5.8% of all FDI. Akmola, Kostanay, North-Kazakhstan, Zhambyl regions are the least attractive regions for investments. This shows that the most intensively developed regions are those that have oil and gas fields, and confirms again that the main inflow belongs to raw materials sector of economy.

Conclusion.

The conducted analysis showed that foreign direct investments in Kazakhstan economy are focused on raw material sectors and sectors with short pay-back period at relatively low attention to high-technological sectors manufacturing the products with high share of added value. However, it is necessary to remember that namely the manufacture of such products ensures the creation of new work places in the economy, generation of higher income for population, development of human capital, and that becomes especially important under the conditions of strengthening of contemporary world economy globalization process, the improvement of the State competitiveness in the world market of goods and services.

The regional distribution of foreign direct investments in Kazakhstan is uneven (its main share belongs to Atyrayu, East-Kazakhstan, Aktyubinsk, and West-Kazakhstan regions, and Almaty city), i.e. the regions with developing raw material sector, except Almaty.

The misguided sectorial and regional structures of foreign direct investments distribution testify the uneffectiveness of mechanisms on its attraction to Kazakhstan economy.

To ensure the structural transformations of economy and under the conditions of limited internal financing sources, the prime importance is taken on development and realization of new investment policy of the State aimed at high rates of economic growth and enhancement of economy effectiveness.

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ҚАЗАҚСТАНДАҒЫ ТІКЕЛЕЙ ШЕТ ЕЛДІК ИНВЕСТИЦИЯЛАР: АХУАЛЫ МЕН МӘСЕЛЕЛЕРІ

Аннотация. Зерттеудің мақсаты Қазақстан экономикасына шет елден тартылатын инвестицияларды жан-жақты бағалау, және оларды тарту мәселелерін анықтау болып табылады.

Жұмыста зерттеудің жалпы ғылыми әдістері: талдау және синтез, статистикалық, графикалық әдістер, салыстыру әдісі қолданылды. Жеке алғанда, зерттеу республикадағы және оның өңірлеріндегі тікелей шет ел инвестицияларының серпінін анықтайтын факторларды жүйелік талдауға және қазіргі кездегі тікелей шет ел инвестициялар қозғалысының ұлттық ерекшеліктерін талдаудың статистикалық әдістеріне негізделеді.

Мақалада заманауи шарттарда шет елдік инвестицияларды тарту серпініне талдау жүргізілген, ол мемлекет пен оның өңірлерінің инвестициялық тартымдылығын бағалауға мүмкіндік береді. Жұмыста сонымен бірге отандық экономикаға шет елдік инвестициялардың түсуіне бөгет болатын негізгі мәселелер айқындалған. Мақалада анықталғандай, қазақстандық экономикадағы шет елдік тікелей инвестициялар шикізат салаларында және капиталы тез өтелетін салаларда шоғырланған, ал қосылған құн үлесі жоғары өнімді өндіретін жоғары технологиялық салаларға шет елдік инвестор мардымсыз көңіл бөледі. Осының барлығы шикізаттан тәуелділіктен кету және ұлттық экономиканы индустриализациялауға негізгі қауқарды жұмсау қажеттілігін негіздейді.

Мақалада көрсетілгендей, Қазақстандағы шет елдік тікелей инвестициялар өңірлер арасында әркелкі бөлістірілген. Мәселен, тікелей шет ел инвестицияларының көп бөлігі 5 өңірге келеді, ал олардың 4-уі өндірістік шикізат секторында маманданған. Одан басқа, мемлекетіміздің өңірлерінің шет ел инвесторлары үшін инвестициялық тартымдылығы да әркелкі және шет елдік тікелей инвестициялардың көлемі бойынша өңіраралық айрықшалықтарға ие, ал бұл өз кезегінде, аймақтар экономикасының инвестициялық тартымдылығын жоғарылату мақсатында тікелей шет ел инвестицияларын тарту процесі бойынша рекомендациялар әзірлеуді қажет етеді.

Жүргізілген зерттеу нәтижесінде авторлар шет елдік тікелей инвестициялардың аймақаралық және салаларалық бөлістірілу құрылымының рационалды еместігін анықтаған, бұл оларды Қазақстан экономикасына тарту тетіктерінің тиімсіздігін дәлелдейді. Осы орайда авторлар мемлекеттің жаңа инвестициялық саясатын іске асыруға бағытталған шаралар кешенін, оның ішінде заңнамалық актілерге өзгерістер енгізу, сондай ақ тікелей шет ел инвестицияларын тартудың экономикалық тетіктерін жетілдіру бойынша ұсыныстар ұсынады.

Түйін сөздер: тікелей шет ел инвестициялары, инвестициялық климат, инвестицияларды тарут, тікелей шет ел инвестицияларының ағымын ынталандыру.

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ПРЯМЫЕ ИНОСТРАННЫЕ ИНВЕСТИЦИИ В КАЗАХСТАНЕ: СОСТОЯНИЕ И ПРОБЛЕМЫ ПРИВЛЕЧЕНИЯ

Аннотация. Целью исследования является всестороняя оценка привлекаемых иностранных инвестиций в экономику Казахстана, и выявление проблем их привлечения.

В работе применялись общенаучные методы исследования: анализ и синтез, статистический, графический методы, и метод сравнения. В частности, исследование основано на системном анализе факторов, определяющих динамику ПИИ в стране и ее регионах, и статистических методах анализа национальных особенностей движения ПИИ в современных условиях.

В статье проведен анализ динамики привлечения прямых иностранных инвестиций в современных условиях, позволяющий оценить существующую инвестиционную привлекательность страны и ее регионов. В работе также выявлены основные проблемы, препятствующие поступлению иностранных инвестиций в отечественную экономику. Определено, что прямые иностранные инвестиции в казахстанской экономике концентрируются в сырьевых отраслях и отраслях с быстрой окупаемостью капитала при сравнительно малом внимании к высокотехнологичным отраслям, производящим продукцию с высокой долей добавленной стоимости. Все это обуславливает необходимость ухода от сырьевой зависимости и фокусировании основных усилий на индустриализацию национальной экономики.

Проведенный анализ регионального распределения прямых иностранных инвестиций в Казахстане показал их неравномерность. Так, выявлено, что львиная доля ПИИ приходится на 5 регионов, 4 из которых специализируются на сырьевом секторе производства. Показано, что инвестиционная привлекательность регионов нашей страны для иностранных инвесторов неодинакова и имеет существенные межрегиональные отличия по объему прямых иностранных инвестиций, что в свою очередь требует разработки рекомендаций по процессу привлечения прямых иностранных инвестиций в экономику регионов с целью повышения их инвестиционной привлекательности.

В результате проведенного исследования авторами было установлена нерациональность отраслевой и региональной структуры распределения ПИИ, что свидетельствует о неэффективности механизмов их привлечения в экономику Казахстана. В этой связи авторы предлагают комплекс мер, направленных на реализацию новой инвестиционной политики государства, включающие изменения в законодательных актах, также меры по совершенствованию экономических механизмов привлечения ПИИ.

Ключевые слова: прямые иностранные инвестиции, инвестиционный климат, привлечение инвестиций, стимулирование потока прямых инвестиций.

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WASTE MANAGEMENT IN THE TOURISM INDUSTRY: A SYSTEMATIC REVIEW

Abstract. One of the important issue in the world is waste and recycling management. Considering the pollution, economic and social damages, the reduction of natural resources caused by the wastes, the effective management and recycling of the wastes have impact on the operational efficiencies and the effective management and recycling of waste are important in ensuring sustainable development and productivity for enterprises. The tourism industry can be seen as a natural laboratory for waste management and recycling within the scope of its products and services. Recent years, it has been observed that there has been an increasing study on waste management and recycling; however, there is a limited study on the tourism industry. Therefore, the main purpose of the study is to review the waste management studies in the tourism industry by systematic review technique. For this purpose, 15 articles published in the Web of Science (WOS) since 1975 have been examined. The results were evaluated and suggestions were given for future researches within the scope of the tourism industry.

Key words: Waste Management, Tourism, Systematic Review.

With the industrial revolution, mass production has started and the damage to nature has increased with produced more wastes. Until the 1950s, these wastes were ignored by the countries. However, after these years, countries became conscious about the waste and regulate various laws and regulations. Although the tourism sector in the past seems to have been less effective than the heavy industrial sectors in the field of waste extraction, the tourism sector has been more active in the 21st century, as a matter of fact, this has been realized that tourism industry have more wastes. In order to maintain the existence of the tourism industry, it is necessary to protect nature and to evaluate its waste. In this context, various applications have been started. Today's businesses are trying to reduce energy consumption, minimize waste, and be conservative through the use of 3Rs (Reduce, Reuse, and Recycle) applications (Kasavana, 2008: 140).

Hotel enterprises as a tourism industry's most important activity area, occupy a great place in terms of environmental and resources protection (Trung and Kumar, 2005: 111). In the 1990s, hotel management practices for reducing solid waste were negative. Because of labor costs and equipment costs, it is believed that additional costs will arise for the enterprise (Wilco et al., 2001: 372). In fact, in terms of hotel operations, solid waste management is beneficial both in terms of the hotel's monetary activities (minimization of solid wastes, recycling and recovery, etc.) as well as the sustainability of tourism with the reduction of environmental pollution and the health of the surrounding community (Shamshiry et al., 2011: 4).

Trung and Kumar (2005) in their research, they also looked at the waste categories of hotels according to the number of stars and the methods of disposal of these wastes. About 60% of the hotels stated that food waste (wet wastes) was sold to local collectors for animal feed purposes, about 10-30% of solid waste was classified and sold to local collectors for recycling purposes. Reusable dry waste, corresponding to 10-30% of total waste, is classified as plastic, paper, cardboard, tin cans, glass, metal. The remaining waste percentage was directly dumped to the garbage site where it was located (Trung and Kumar, 2005). Waste means a huge monetary loss. Because the purchase price of food discarded as waste, storage, preparation (cooking) cost is formed. Accommodation companies can reduce waste by using waste management applications of many materials, especially food and beverage, and can provide both economic benefit and environmental protection by providing reuse and recycling. In this context, the

purpose of the study was determined as a systematic review of waste management studies in tourism industry and to guide future researches in this issue.

According to Bontoux and Leone (1997) waste is the substance or objects that are disposed of in accordance with national law requirements. Waste management "is a process that starts with product and preparation process planning and continues with purchasing policy, inventory control and production planning combination and generally affects all operational phases" (Kirk, 1996: 102). A typical waste management system includes collection, transportation, pre-treatment, waste handling and final disposal of the remaining wastes. General classification of waste is quite difficult. Household wastes, industrial wastes, ashes, medical wastes, construction debris, solid wastes, biodegradable wastes, non-biodegradable wastes and hazardous wastes are the most common types of waste (Demirbaş, 2011). The classification of waste is important for the effective monitoring, development and implementation of waste management. In addition, classification of waste, coding of each type of waste, collection of waste according to classification, registration and reporting of such issues provide great convenience (Pocock et al., 2009: 1).

In general, solid waste sources in hotels; food and beverage preparation, guest rooms, offices, laundry and garden. Types of solid wastes include food waste, packaging waste (plastic, paper, cardboard, glass, etc.).) and varies from garden wastes to chemical wastes (Trung and Kumar, 2005). Food waste in solid wastes has become an important global problem today. Many countries, institutions and non-governmental organizations are working on edible food waste. Waste disposal of edible food wastes brings environmental, economic and ethical problems (Marthinsen et al., 2012). Food waste is one of the most important issues that have been taken into consideration worldwide in recent times as it plays a direct threat to environmental, social and economic sustainability (Marra, 2013). Food waste can be classified as edible food waste and unbeatable food waste. Edible food waste is also possible in food and beverage firms to separate the waste from the kitchen (in the preparation stage) and the waste from the customer (plate waste). Edible food waste is the expressions used for waste such as bone, egg shell, coffee grounds that are not possible to be consumed by humans (Owen vd, 2013). According to Schott and Andersson (2015: 220), it is possible to split food waste into mandatory food waste and preventable food waste. (Unavoidable) food waste is usually non-edible wastes, such as fruit-vegetable shells, bones, shells from sea products, which are formed during the preparation of the product. Preventable food wastes are actually edible foods, such as stale bread, baked pasta, some of which are prepared for human consumption but not consumed for any reason.

According to Kirk (1996) waste management in hotel enterprises is carried out for four main reasons. These reasons are; arising from legal regulations and regulations, increasing the number of customers with environmental protection awareness, development of eco-tourism and business advantages arising from savings. For these reasons, the hotel management should be more careful about waste management. Because if a hotel stores waste in its source at random and then delivers it to the municipality in this way, there is a criminal sanction. This raises the cost of the hotel operation. In order not to be exposed to this situation, if the hotel management allocates waste from its source and implements waste management, it will fulfill its legal obligations and get rid of the costs of the punishment (Ramachandra, 2006: 4).

Every customer in the hotel creates about 1 kg daily waste (Pirani and Arafat, 2014: 320). Waste volume in hotel enterprises varies according to hotel type, guest characteristics, guest and employee activities and occupancy rate (Pirani and Arafat, 2014: 322). However, 80% of the waste generated by the well-implemented recycling program is recyclable (Hotels and Resorts, 2008). Each hotel has a different concept of waste management. For example, some of them collect only the waste that occurs at one point without separation, while others do the separation at the source to collect the materials that are suitable for recycling. Regardless of the size and operating system of a hotel enterprise, it is necessary to establish a system that effectively manages its waste to minimize costs (Owen et al., 2013: 2).

Recycleable waste is another type of waste from hotel enterprises. The separation and classification of hotel facilities for recycling plastic, metal, glass, paper and food solid wastes is of great importance for the protection of the natural environment. In order to achieve efficiency in recycling, the program must be developed and the participation of staff and customers must be ensured (Enz and Siguav, 1999: 74). For example, glass bottles from hotels' bars, waste paper from reception or old sheets are recycleable waste. Reuse of paper products in the reception or hotel management units, shampoo and other personal cleaning products in the bathroom to be presented in refillable and reusable stationary containers, all food and

beverage service equipment should be selected from durable products and in some cases products should be recycled when disposable products should be used (Cooper ETD, 2008: 363).

Trung and Kumar (2005) conduct a research with sample of 50 hotels operating in Vietnam in terms of energy, water consumption and waste formation issues. As a result of the research, they calculated the use of resources and efficient management of hotel enterprises. It has been determined that waste water management is one of the most important problems for hotels, that the waste water management system in hotels cannot be applied due to the high investment cost, therefore it is necessary to develop low cost waste water treatment systems. In another study, environmental management practices among different hotel categories were investigated by Mensah (2006) in Ghana's major Accra Region. Only 17.3% of hotels recycle their waste, 8% produce compost from food waste and 7.7% prefer recycled paper products in hotel advertising and information posters.

Molina-Azorin et al. (2009) is examined the relationship between environmental practices in Spanish hotel enterprises and company performances by using cluster analysis and regression analysis. According to the study, if hotels improve their environmental responsibilities, they provide sustainability by protecting the natural structure and resources of the place and increase their income by reducing the cost of environmental management applied by the hotels and increasing their performance levels. Kallbekken and Saelen (2013) observed a change in the amount of food waste by the use of two simple non-disturbing methods in hotel restaurants. These two simple methods are to reduce the size of the plate and to use social markings. When these methods were used, it was observed that the amount of food waste in the hotel decreased by about 20%. Singh et al. (2014) investigated what can be done to increase the role of hotel businesses in terms of recycling. The result is that the wastes from the hotel are recyclable.

The aim of the study is to make a systematic review of waste management studies in the tourism industry. In this context, the main question of the research is what is known about waste management in the tourism industry. Systematic review method was used in the research (Herdman, 2006). Systematic review can be defined as a method of gathering the information obtained when appropriate criteria are met on a given subject (Higgins & green, 2008). English articles published in Web of Science (sci-expanded, SSCI, a@HCI, CPCI-s, CPCI-SSH and ESCI) database were used in the research. It was determined that there was a total of 7611 articles related to the subject in the scanning with the keyword waste management. The path following the criteria for inclusion in the research is shown in Figure 1.

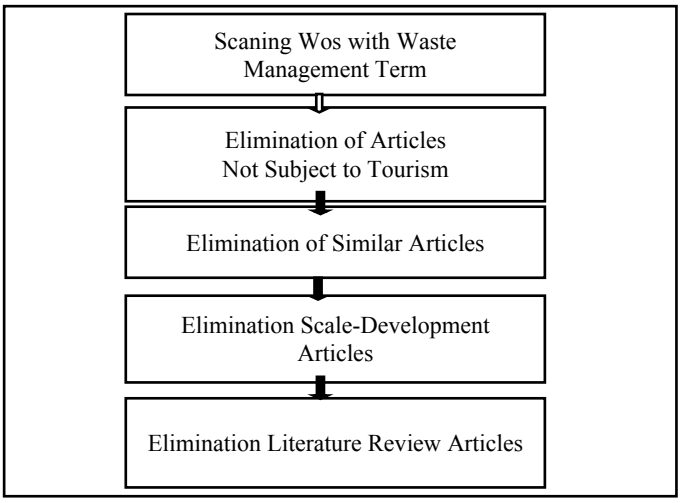

Figure 1 - Criteria For Inclusion In Research

Scale development studies and literature survey studies, which are not subject to the tourism industry, have been excluded. As a result, 15 studies were found and evaluated in accordance with the determined research criteria.

The studies included in the study were categorized according to the regions where the researches were conducted, sampling characteristics and methodology and other issues related with waste management in tourism industry.

When the research areas analyzed, it found that there are one study in Morocco, India, Mallorca, Cape Town, Hill Towns, Bahamas, Pennsylvania, Tanzania, Romania and Italy, Wales, Turkey, Welsh (Wales) and three studies in Vietnam region. As can be seen, the number of waste management reseacrhes in the tourism industry is very low.

The sample and method results about the researches are summarized in Table 1. Table 1 shows that the first study was conducted in 2003 and in recent years the studies on waste management in the tourism industry showed an upward trend. When the methods of the studies were examined, it was determined that 8 articles were used observation method, 6 articles were used questionnaires, 2 researcehs were used semi-structured interviews, 3 articles are case studies, 2 articles were used benchmark and 1 research was used application method. Therefore, it can be said that the studies on waste management in the tourism industry have examined the subject in several methods instead of using only one method.

Table 1 - Method and Sample Analysis of the Researches

Authors (s))	Method	Sampling
Kuniyal, J.C., Jain, A.P., Shannigrahi, A.S., 2003	Obsevation	For two years (a total of 113 days) observation was carried out in trekking stands.
Trung, D.M., Kumar, S., 2005	Questionnaire, Benchmark	Data has been collected from 50 hotels. Also compare hotels in Europe and Asia with Vietnam.
Radwan, H., Jones, E., Minoli, D., 2008	Semi-structured interview	Data were collected from 4 local managers and 3 private waste companies.
Kaseva, M.E., Moirana, J.L., 2009	Observation and Questionnaire	Data on the determination of waste loads and waste extraction procedures were collected on tourist routes.
Radwan, H.R.I., Jones, E., Minoli, D., 2012	Semi-structured interview	Data collected from the 18 hotel manager.
Alonso-Almeida, M.M., 2012	Interview	First of all, interviews were made with ten hotel managers, but in the study, interviews were made with three hotels administered by women.
Wyngaard, A.T., Lange, R., 2013	Case Study	A total of 50 surveys were distributed to 25 hotels. 25 questionnaires are given to food and beverage departments, 25 questionnaires are given to room division. Interviews were conducted with human resources department.
Singh, N., Cranage, D., Lee, S., 2014	Waste Management Application	Research used total of 5 hotels for waste management application.
Sealey, K.S., Smith, J., 2014	Benchmark	Waste and recycling were monitored for 10 months. Benchmarks were made between 7 kitchen departments.
Arbulu, I., Lozano, J., Rey-Maquieira, J., 2016	Case Study	Mallorca region has been researched.
Bashir, S., Subhrangsu, G., 2016	Interview	Data were collected from 60 households and hotels. Then the meeting was held with the tourists.
Bekiroğlu, S., Elmas, G.M., Yagshiyev, Y., 2017	Questionnaire	Data has been collected from 100 hotels in Istanbul.
Phu, S.T.P., Hoang, M.G., Fujiwara, T., 2018a	Interview	A total of 120 hotels were interviewed and data were collected.
Phu, S.T.P., Fujiwara, T., Dinh, P.V., Hoa, K.T., 2018b	Interview	300 households, 120 hotel managers, 50 restaurant managers and 17 recycling business owners were surveyed and face-to-face interviews were conducted.
Giurea, R., Precazzini, I.D.I., Ragazzi, M. et al., 2018	Case Study	Municipal waste management related to Romania and Italy tourism has been examined.

Compiled by the author.

Table 1 shows the following important issues related to the samples of the researches;

- 10 researches has obtained data from hotel enterprises,
- Studies that collect data from hotel enterprises have collected data through questionnaires, interviews and semi-structured interviews.,
- A study has been carried out by the on-site application method in the hotel business,
- A study was carried out with benchmark in 7 kitchen departments,
- A study compared Vietnam and Asian and European hotels in line with the results of the questionnaire,
- Case study method has examined the Mallorca, Romania and Italy destinations.

As shown in Table 1, researches examining waste management in the tourism industry are usually focused on hotel enterprises. Beside the hotel, there are limited work that collects data from local administrators and tourists. In recent years, it has been determined that there is a tendency to questionnaire and interview methods in the researches related to waste management.

Kunial et al (2003) stated that pollution in the region is increasing rapidly due to the lack of awareness among visitors and the lack of concrete government policies to manage waste in the trekking area with the increasing number of visitors in and around Sahib Valley. During their observation on trekking route, they observed that soft drinks bottles and disposable mineral water bottles were easily visible on the roads along the route. They stated that the trekking point looks like an ugly slum area. Because of the visitors, they expressed that in the evenings there were stacks of food waste in and around Lake Hempund, which ultimately could lead to risks for local communities, future visitors and natural environmental components.

Radwan et al (2008) in their study showed that the local government provides a recycling system with three different themes, offering cardboard, glass and mixed recycling bags for commercial enterprises. In addition, local government has prepared brochures to inform businesses about the importance of recycling and how to do it. As a result of semi-structured interviews with the public and private sectors, they found that the most important obstacle to recycling commercial wastes was cost. The private sector has stated that the most effective tools of directing the waste management sector towards sustainability are storage tax and legislation.

Kaseva and Moirana (2009) estimated that the total amount of waste produced in the study was between 87 tonnes in 2003 and 125 tonnes in 2006. They determined that the waste collection rate, which was 64% in 2003, increased to 94% in 2006. They suggested that this recovery was caught because of the waste collection system implemented in Kilimanjaro National Park Management. The study also found that the recyclable materials in total waste were about 34%.

Arbulu et al (2016) conducted case studie to determine the problems experienced in public-private partnerships in recycling systems in mature tourist destinations (Mallorca). In mass tourist destinations located in small geographic areas such as islands, land prices tend to be more expensive. Therefore, waste and recycling plant construction is biased in such destinations. In relation to recycling and energy recovery facilities, one drawback of the recycling facility system in Mallorca is that tourism is dependent on seasonality. Public-private partnerships are not considered in recycling systems as the facility will have an empty capacity in some seasons.

Giurea et al (2018) stated that the agro-tourism sector in Trentino, Italy has to comply with a regulation that states that the minimum percentage of products offered should be produced by the farm itself. The authors see this application as a way to reduce packaging waste in the region. The Italian and Romanian tourism regulations have also determined that waste can positively affect environmental protection through proper management of water and energy resources.

Trung and Kumar (2005) collected data to investigate resource utilization and management in Vietnam hotels in terms of energy, water and waste. Authors proposed that hotels can use green labeling and pilot projects to traine personnel and visitors for efficient resource use. As a result, the authors found that water consumption in Vietnam hotels was higher than in European hotels. Alonso-Almeida (2012) has shown that women managers are aware of water management as a result of their interviews in hotels.

Radwan et al (2012) found that the Welsh council government is largely dependent on storage to dispose of solid waste from small hotels that do not meet the Green Dragon Environmental stardard. In contrast, small hotels that match the Green Dragon Environmental Standard have used waste as a last solution.

Wyngaard and Lange (2013) have determined that worm farms can reduce the amount of food waste in landfills as a result of their survey and interviews with hotels. This can be achieved by converting organic food waste into usable compost. The authors have shown that there is a relationship between the

application of eco initiatives to recycle water and food waste and the reduction of the amount of waste produced by a hotel.

Singha et al (2014) determined that 87%, 89% and 84% of the total waste disposed of by data collected from three hotels were recyclable, respectively. After three years of research, 212.16, 204.78 and 241.92 tons of waste are produced. However, because the real garbage is only 13%, 11% and 16%, these three hotels could save USD 12.920, USD 12.758 and USD 14.225, respectively. The remaining waste can be recycled and sold. The authors' analysis showed that a hotel could generate approximately USD 21,372 profit over a period of five years, after USD 43,200 of labor cost and USD 30,000 of extra spending.

Sealey and Smith (2014) identified some of the challenges and obstacles to solid waste reduction in the Bahamas through a year-long pilot project. These challenges are logistics and labor, economies of scale for island recycling, and finally training requirements. Successful solid waste management requires basic components of regulation, manufacturer accountability and consumer awareness.

Bashir and Subhrangsu (2016) showed that tourism industry is the main source of solid wastes in the Dehangam, especially in periods of religious tourism activities in the peak season. The authors found that local institutions had problems such as lack of capacity, lack of flat land in the region, unsuitable locations of land-related waste collection infrastructure. One of the important findings of the study is that there is a strong relationship between the non-scientific disposal of waste management and the degradation of the quality of surface waters and the emergence of water-borne diseases during the tourism season.

Bekiroğlu et al (2017) found that 70% of Istanbul hotel managers and employees were sensitive to waste paper recycling, but they were not aware of the benefits of waste paper recycling. In addition, because of waste paper recycling, 18 thousand trees, 3 thousand tons of water and 1.3 thousand tons of fuel were saved and 27 thousand tons of CO2 production per year were prevented. In the last five years, hotels in Istanbul have an annual average of 752 tons of paper waste, which corresponds to 78% of the foreign trade deficit of Turkey's paper sector.

Phu vd (2018a) conducted a study to examine the recycling system in Hoi An. According to the results, Hoi An has a high potential to improve recycling. However, it has been determined that recyclable waste constitutes three-quarters of total waste and that the amount of waste is high. In addition, the rate of recycling was 62% for residential residents, 39% for hotel sectors and 56% for restaurants. Recycling mostly covers papers, plastics and metals and the recycling rate is 24%.

Phu et al (2018b) revealed that the waste production rate of hotels is 2.28 kg/guest per day and the hotel's capacity may vary depending on the price of the room and the restaurant level. Differences in waste production rates of hotels were statistically significant. The waste composition of hotels was 58.5% for biodegradable waste, 25.8% for recyclable products and 15.7% for others. As the capacity of hotels and the number of rooms increases, the recyclable waste rate decreases.

This systematic review is one of the first studies to combine waste management in the tourism industry with the data from the Web of Science database, identify waste management and recycling levels associated with hotels, and the benefits of waste management practices.

Although there are many studies on waste management in the Web of Science database (7611 papers), studies on waste management in the tourism industry (15 papers) are limited. Many of the studies conducted in the hotel were used questionnaire, interview and semi-structured interview technique to collect data (Trung and Kumar, 2005; Radwan et al, 2012; Wyngaard and Lange, 2013; Singha et al, 2014; Seeley and Smith, 2014; Bashir and Subhrangsu, 2016; Bekiroglu et al, 2017; Phu et al, 2018a; Phu et al, 2018b). Some studies have been carried out with the aim of cross-country benchmark (Giurea vd, 2018) in relation to tourism, some studies have been carried out with the aim of examining the applications of local governments in tourism regions (Radwan et al, 2008; Arbulu et al, 2016), some studies have been carried out with the aim of examining tourist routes (Kunial et al, 2003; Kaseva and Moirana, 2009).

Radwan et al (2008) revealed that the most important obstacle to recycling waste was the cost. In Kaseva and Moirana (2009) study, they determined that the total recyclable materials were approximately

34%; that the total waste volüme revelaed from Singha et al (2014) study was 87%, 89% and 84%, respectively from three hotels; and that the Phu et al (2018a) was 25.8% for recyclable products. According to Bekiroğlu et al (2017) hotels in Istanbul have an annual average of 752 tons of paper waste, corresponding to 78% of the foreign trade deficit of Turkey's paper sector in the last five years, and Singha et al (2014) has determined that only 13%, 11% and 16% of garbage is the real garbage, respectively in three hotels.

As a result of the research within the scope of systematic review, a large proportion of the waste of hotels was determined to be suitable for recycling. Therefore, it can be said that a large part of the wastes can be reuse if the sustainable and effective recycling policy to be applied in the hotel enterprises. Furthermore, it can be said that with the waste management policy, both savings and productivity will be increase in hotel enterprises.

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ТУРИЗМ ИНДУСТРИЯСЫНДАҒЫ ҚАЛДЫҚТАРДЫ БАСҚАРУ: ЖҮЙЕЛІ ШОЛУ

Аннотация: Әлемдегі маңызды мәселелердің бірі қалдықтарды басқару және қайта өңдеу болып табылады. Қалдықтардан туындайтын қоршаған орта табиғи ресурстарының сарқылуын, экономикалық және әлеуметтік зиянын және ластануын ескерсек, қалдықтарды тиімді басқару және қайта өңдеу операциялық тиімділікке әсер етеді және кәсіпорынның тұрақты дамуы мен өнімділігінің артуын қамтамасыз ету үшін маңызды болып табылады.

Туризм индустриясын өз өнімдері мен қызметтері шеңберінде қалдықтарды басқару және қайта өңдеу бойынша табиғи зертхана ретінде қарастыруға болады. Соңғы жылдары қалдықтармен жұмыс істеу және қайта өңдеу бойынша зерттеулердің артуы байқалады, дегенмен де туризм индустриясын зерттеуде баяусыздық байқалады. Сондықтан зерттеудің негізгі мақсаты жүйелі шолу әдісін қолдана отырып, туризм индустриясындағы қалдықтарды басқару бойынша зерттеулерді қарау болып табылады. Осы мақсатта 1975 жылдан бастап Web of Science (WOS) базасында жарияланған 15 мақала қарастырылып сарапталды. Нәтижелер бағаланып, туризм саласын зерттеуге қатысты ұсыныстар берілді.

Түйін сөздер: қалдықтарды басқару, туризм, жүйелі шолу.

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УПРАВЛЕНИЕ ОТХОДАМИ В ИНДУСТРИИ ТУРИЗМА: СИСТЕМАТИЧЕСКИЙ ОБЗОР

Аннотация. Одним из важных вопросов в мире является управление отходами и переработкой.

Принимая во внимание загрязнение, экономический и социальный ущерб, сокращение природных ресурсов, вызываемое отходами, эффективное управление и рециркуляция отходов оказывают влияние на операционную эффективность, а эффективное управление и рециркуляция отходов имеют важное значение для обеспечения устойчивого развития и производительности для предприятия.

Индустрия туризма может рассматриваться как естественная лаборатория для обращения с отходами и их переработки в рамках своих продуктов и услуг. В последние годы было отмечено, что замечается все больше исследований по управлению отходами и утилизации, тем не менее, существует ограниченное исследование индустрии туризма. Поэтому основной целью исследования является обзор исследований по управлению отходами в индустрии туризма с помощью метода систематического обзора. Для этой цели было исследовано 15 статей, опубликованных в Web of Science (WOS) с 1975 года. Результаты были оценены, и были даны предложения для будущих исследований в сфере туризма.

Ключевые слова: управление отходами, туризм, систематический обзор.

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MODERN ECONOMIC EVALUATION OF DEVELOPMENT OF ENTREPRENEURSHIP IN THE REPUBLIC OF KAZAKHSTAN

Abstract. The article considers the current state of Kazakhstani business from a legal point of view, i.e. what features are typical for small, medium and large businesses. The study made an in-depth analysis of their main indicators, such as: the number of registered, active, by the dimension of enterprises of various forms of ownership, the output of products in small and medium businesses, in terms of financial and economic activities of medium and large enterprises; the number of people employed in small and medium businesses in organizational form. In addition, the article made a SWOT analysis of the activities of entrepreneurship in Kazakhstan.

Keywords: economy, state, entrepreneurship, income, subjects, five year period, public sector, small, medium and large business, consumer demand, individual, legal entity, main indicators, property, output, financial and economic activity, number, Kazakhstan.

Entrepreneurship, as a special form of economic activity, can be carried out both in the public and private sectors of the Kazakhstan economy. In accordance with this, there is a distinction between state and private entrepreneurship [1].

The development of entrepreneurship in Kazakhstan is caused by two circumstances:

- features and specifics of the current stage of improvement of the NTP, which provides a corresponding material basis for the effective functioning of entrepreneurship;
- differentiation of consumer demand and in the context of increasing incomes of the population and economic growth in the service sector [2].

Small businesses include

- individual entrepreneurs and legal entities engaged in business:
- with an average annual number of employees of not more than 100 people
- and the average annual income of no more than 300,000-fold monthly calculation index (MCI) established by January 1 of the corresponding financial year (paragraph 3 of Article 24 of the Commercial Code).

The subjects of small business can not be individual entrepreneurs and legal entities that carry out activities under paragraph 4 of Article 24 of the Business Code.

The subjects of medium-sized businesses include:

- individual entrepreneurs and legal entities engaged in business, not related to small and large businesses, that is, meeting the following criteria:
- the average annual number of employees is from 101 to 250 people;
- and (or) the average annual income is above 300,000 times the MCI, but does not exceed 3,000,000 times the MCI inclusively (clause 5 of Article 24 of the Commercial Code).

The subjects of large business include:

- individual entrepreneurs and legal entities carrying out entrepreneurship and meeting one or two of the following criteria:
- the average annual number of employees is over 250 people and (or) the average annual income is over 3,000,000 times the MCI [2].

Over the past years, a new generation of entrepreneurs has grown up in Kazakhstani society and at present not all enterprises are registered and actually operate in the country and this is revealed on the basis of table 1, which clearly reflects enterprises of all types of ownership according to these characteristics.

Table 1 - Analysis of registered enterprises of various forms of ownership in the Republic of Kazakhstan

№	Indicators	2013	2014	2015	2016	2017	Share in RK 2017, %	Absolute deviation 2017/2013
Number of registred enterprises								
1.	The registered legal entities RK	338 981	353 833	360 287	383 850	412 677	100	+73696
2.	The registered legal entities RK with state ownership	27 637	27 672	27 183	27 051	26 612	6,45	- 1025
3.	The registered legal entities RK with private ownership	293 239	307 780	315 522	336 738	362 966	87,95	+69727
4.	The registered legal entities RK with joint ownership	18105	18381	17582	20061	23099	5,6	+4994
5.	The registered legal entities with non-state ownership (p. 4+p3)	311344	326161	333104	356799	386065	93,55	+74721
Note: complited by the author on the basis of [3]								

The analysis in table 1 - the number of registered legal entities in Kazakhstan for the period from 2013 to 2017 shows that legal entities with private property are growing every year and their increase for 5 years was + 69,727 units, or in fact for 2017 it is equal to 3,62966 units or 87.95%, but registered state-owned legal entities for the period under review decreased to -1025 units, in fact, in 2017 it amounted to 26612 units or 6.45%.

Table 2 - Analysis of active enterprises of various forms of ownership in the Republic of Kazakhstan

№	Indicators	2013	2014	2015	2016	2017	Share in RK 2017, %	Absolute deviation 2017/2013
Number of operating legal entities								
1.	The operating legal entities	183 322	197 829	221 655	236 103	256 122	100	+72800
2.	The operating legal entities with state ownership	24 827	25 071	25 127	25 134	25 111	9,8	+284
3.	The operating legal entities with non-state ownership	148495	170758	196528	210969	231011	90,2	+82516
4.	Share of operating legal entities in total number of registered in all	54	56	61,52	61,0	62	-	+8
5.	The share of operating legal entities registered with state form of ownership in total	90	91	92,44	93	94,36	-	+4,36
Note:complited by the author on basis of [3]								

Over the five-year period, according to Table 2, the following picture emerges: the share of operating in the total volume registered for state legal entities is practically stable and ranges from 90% to 94.36%, i.e. enterprises open and practically operate, which cannot be said about public sector enterprises, although their share in the total number of existing enterprises in 2017 was 90.2% or 2310011 units, but in the total number, 64.75% of registered enterprises only operate.

In addition to registration legal entities in our study, we studied the number of operating legal entities of the Republic of Kazakhstan, including by state ownership in 2013 there were 24,827 units, and in 2017 - 25,111 units or 9.8% of the total number of operating enterprises, and the rest A share of 90.2% or 231011 units are operating non-state owned firms.

The next indicator characterizing entrepreneurship is the number of operating legal entities according to their size, shown in Table 3.

Table 3 - Analysis of the number of existing legal entities by dimension

Indicators	2013	2014	2015	2016	2017		Deviation 2017/2013	
					+,-	%	+,-	%
Total	183 322	197 829	221 655	236 103	256 122	100	+72800	+40
Increase in number of operating legal entities compared to last year	0	+1,08	+12,04	+6,52	+8,48	-	-	-
Small enterprises	167 361	181 338	212 925	227 613	247 770	96,73	+80409	+48
Increase in number of operating enterprises compared to last year	0	+8,35	+17,42	+6,9	+8,86	-	-	-
Medium-sized enterprises	13 606	14 094	6 311	6 128	6 050	2,36	-7556	-55,5
Increase in number of operating enterprises compared to last year	0	+3,59	-55,22	-2,89	-1,27	-	-	-
Large enterprises	2 355	2 397	2 419	2 362	2 302	0,91	- 53	-2,25
Increase in number of operating enterprises compared to last year	0	+1,78	+0,92	-2,36	-2,54	-	-	-
Note:complited by the author on basis of [3]								

Table 3 shows that from the period of 2013 to 2017 in general, the number of operating legal entities in Kazakhstan increased by 40% or + 72800 units and in 2017 actually amounted to 256,122 enterprises, of which: small enterprises grew by 48 over the same period % (in the share in 2017 among all enterprises - 96.7% or 247770 units); medium-sized enterprises decreased by -55% (in the share in 2017 among all enterprises - 2.36% or 6050 units); large enterprises decreased by - 2.53% (in the share in 2017 among all enterprises - 0.91% or 6050 units). The main part of the country's entrepreneurs choose the form of IP organization due to favorable business conditions. Opening a LLP compared to an IP is a more complicated procedure, moreover, the cost of opening a legal entity exceeds the cost of registering an IP more than 6 times [4]. This fact leads to the inhibition of the process of transition of small business to medium, that is, the PI do not expand their business through the transition to a larger form of organization as an LLP and / or JSC, instead register new PIs.

This proves that the republic is dominated by active enterprises, small enterprises and there is a risk of a dynamic reduction of medium and large enterprises. The structure of SMEs by industry is an important indicator of the qualitative development of private entrepreneurship and the economy as a whole.

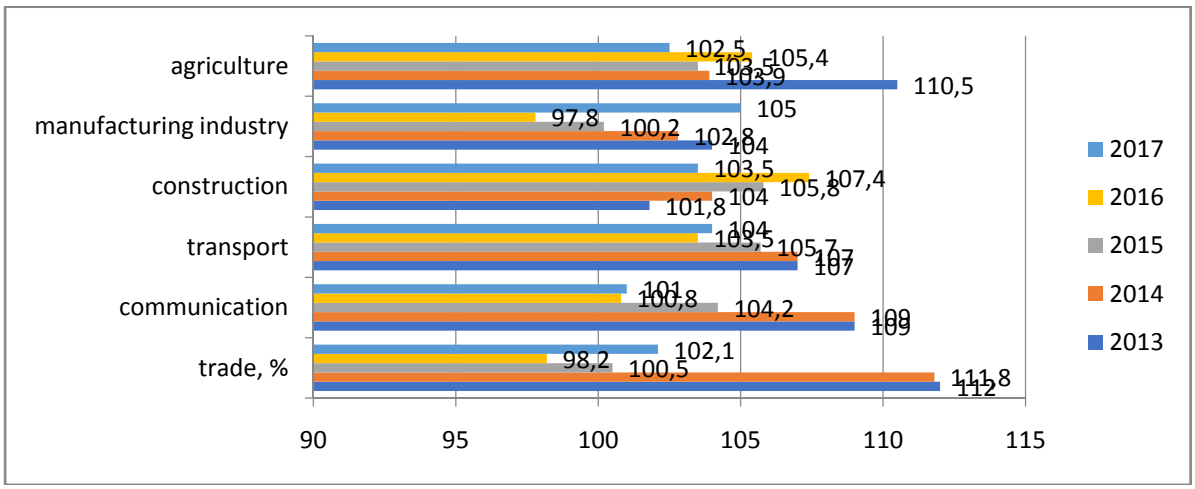
The performance of entrepreneurial activity and the risks of the GP sectors of the national economy of Kazakhstan over a five-year period shows that it develops despite the crisis and difficulties in the economy and are presented in Table 4.

Table 4 - Effectiveness of GPs to branches of the national economy of Kazakhstan

Branches	threshold	2013	2014	2015	2016	2017	Deviation 2017/ 2013, %
Agriculture, % of the previous year	Growth of not less than 1 %	110,5	103,9	103,5	105,4	102,5	-8
Mining quarrying processing , % of the previous year		103,9	101,7	97,5	97,8	107,2	+3,3
Manufacturing industry , % of the previous year		104,0	102,8	100,2	97,8	105,0	+ 1
Electricity, gas, steam and air conditioning % of the previous year		103,9	104,4	98,5	100,5	102,5	-1,4
Construction, % of the previous year		101,8	104,0	105,8	107,4	103,5	-1,7
Transport and warehousing , % of the previous year		107,0	107,0	105,7	103,5	104,0	-3
Communication and information , % of the previous year		109,0	109,0	104,2	100,8	101,0	-8
Trade, % of the previous year		112,0	111,8	100,5	98,2	102,1	-10
Note: complited by the author on basis of [3]							

Analyzing the growth, according to Table 4, GPs by individual sectors, the dynamics of economic growth by growth in% from the previous year, it is clear that there are no average annual risks for 5 years despite the global crisis, although there were risks for some industries and years: mining industry quarries

and manufacturing in 2016, the growth rate in 2016 was 97.8% compared to last year, and the average annual growth over 5 years was 101.62%, and, accordingly, there are no risks in the above-mentioned sectors of the economy. I would especially like to note the average annual best achievements in GPs of the national economy of Kazakhstan in terms of growth in% of the previous year over 5 years, according to the rating: transport + 105.44%; agriculture + 105.16%; trade - + 105%; communication and information - 104.8%; construction - 104.5% and the last places are occupied by the manufacturing industry and electricity, gas, steam and air conditioning - by 101.96% each; mining quarrying processing - 101.62%.



Note: compiled by the author on the basis of [3]

Figure 1 - GP growth by branches of the economy, as% of the previous year from 2013 to 2017

Figure 1 clearly shows that the largest growth in 2017 was made by the mining industry of quarrying - 107.2%, the processing industry - 105%, transport - 104%. With the growth of industry, the volume of transport services is also growing, since This industry is the main link in the supply of any product and with the growth of production, transportation services are growing.

One of the most important indicators determining the development and risk assessment in small business is the production of SME products (table 5).

Table 5 - Estimation of output in small and medium business for 2014-2016 (thousand tenge)

Legal form	2014	2015	2016	2016/2014, %
Legal entities of small business	8 007 342	10 200 061	13 568 530	+169,5%
Individual entrepreneurs (IE)	972 670	1 518 237	1 511 733	+155,4%
Peasant farms	786 084	904 543	1 043 755	+132,8%
Total :	9 766 096	12 622 841	16 124 018	+165,1%
Note: complited by the author on basis of *[3]*				

The data shown in table 5, the production of small and medium-sized businesses over 3 years in absolute money terms shows an increase of 65.1% in general. At the same time, the largest increase occurred in the legal entities of small business - by 69.5% for 2014-2016. The output of individual entrepreneurs grew by 55.4%, while output in peasant farms - by 32.8% [3].

When assessing the risks in Table 5, they were not identified, all SME structures produce products with positive indicators. The largest share in the total amount of firms are trade and communications, and the smallest industry.

The next characteristic of entrepreneurship is the definition of their financial and economic independence, which is discussed in Table 6 and is shown for medium and large enterprises, producing the bulk of products and services.

Table 6 - Analysis of indicators of financial and economic activities of medium and large enterprises

Indicators	2012	2013	2014	2015	2016	Deviation 2016/2012	
						+,-	%
Volume of production and service rendered, million tenge	18 570 402	18 806 567	20 513 182	19 461 913	23 507 900	+4937498	26,58
Revenue from sales of products and services, million tenge	28 188 104	30 002 914	31 774 583	26 373 466	33 107 389	+4919285	17,45
Cost of goods sold and services rendered, million tenge	17 365 552	19 604 000	20 698 636	18 254 494	22 160 375	+4794823	+27,6
Profit (loss) before tax, million tenge	6 139 809	5 104 019	5 100 655	-1 856 075	5 931 748	-208061	-3,39
Profitability of production , in percent	25,7	19,3	17,0	-5	17,8	-7,9	-30,7
Note:complited by the author on basis of [3]							

The economy of Kazakhstan has entered a phase of slow economic growth, since after receiving a shock of oil prices, the economy of Kazakhstan is undergoing a difficult process of adaptation of all sectors to new price and demand parameters of the external and domestic market [4, 5, 6]. Households, business and government are in the process of finding and changing their development strategies. Establishing a new equilibrium state of the economy will require a certain time lag.

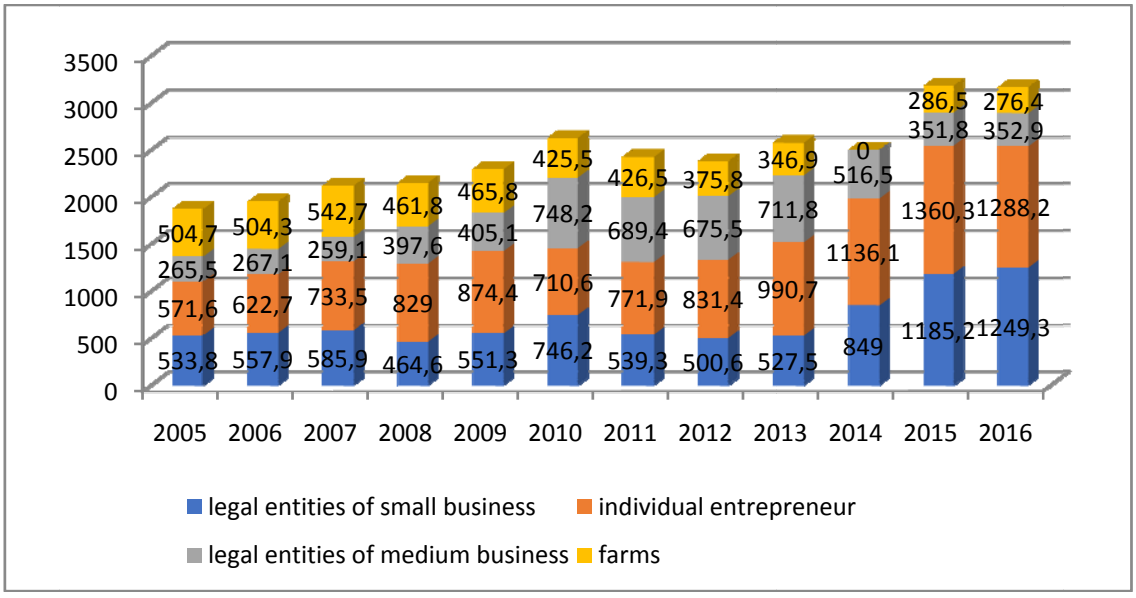


Figure 2 - The number of people employed in SME by organizational form

Note: compiled by the author on the basis of [7].

The number of jobs in SMEs also tends to increase. So compared to 2005 the growth rate of this indicator was 23%. In general, in Kazakhstan, 36% of the employed population is small and medium-sized businesses. If we go over a more detailed picture of the number of SMEs in Kazakhstan, according to Figure 2, we can identify the following. In the republic as a whole, the number of employed population increased by 3% over 3 years while the number of employed in SMEs increased by 22.6%. This contributed to an increase in the share of people employed in this business in the total number of the employed population: in 2014, this figure was 27%, in 2015 - 33.6%, and in 2016 - 32.9%. Thus, in 2016, the largest number people are employed in individual entrepreneurs, they reached 1288.2 thousand people, then legal entities of small business, the number of which is 1249.3 thousand people, then legal entities of medium entrepreneurship - 352.9 thousand people. The number of people employed in peasant

farms decreased by 1.9 times compared to 2012, for the period 2005 -2016 it decreased to 1.82 times, and for 2012 to 2016 it decreased by 1.4 times, based on the above, in The dissertation research calculates the risks of legal entities of medium-sized businesses and farms for the period 2012-2016.

The development of business in the Republic of Kazakhstan in recent years has been proclaimed as one of the most important areas of state regulation. He has high hopes for solving the problems of the economy: the development of entrepreneurship and trade, the creation of a class of small owners, new jobs, the provision of payments to the budget by expanding the tax base due to the growth of entrepreneurial activity.

Although there are positive aspects of the development of small business, but Kazakhstan does not reach, according to the characteristics of the development of SMEs of foreign countries, this is especially observed when assessing the analyzed features of the state of the average business, peasant and private farms. 53% of the working-age population works in the US SME sector, 71.7% in Japan, and 50% of the active population in the EU countries. In the EU, medium-sized enterprises make up only 1% of the total number of enterprises, while providing about 20% of the total turnover of enterprises and 17% of the total employment of the population [8, p. 73].

Like any economic phenomenon, entrepreneurship has both positive and negative sides. SWOT-analysis [8,9] of table 6, allows us to give a qualitative description of the current state for the period 2012-2017, which determine the possibilities and threats to the development of the object of study.

Table 6- SWOT-analysis of the activities of entrepreneurship in Kazakhstan

STRENGTHS	WEAKNESSES
The number of existing legal entities in the whole of Kazakhstan is growing, has grown by 40% and amounted to 256,122 units in 2017, including small enterprises grew by 48% or 247770 units	Number. medium. operating entities, legal entities decreased over 5 years by 55.5% or amounted to 6050 units, large enterprises by 2.25% and amounted to 2302 units
Small start-up capital	Local market
High susceptibility to innovation	vulnerability to economic crisis
Quick response to changing market conditions	Limited resources for development attracting qualified professionals
Minimal risks for small business	Risks: 1) in terms of the number of operating enterprises, a negative risk pattern was revealed for medium-sized enterprises, which amounted to 25.19% and for large enterprises, the business risk was 2.3% 2). The risk in terms of the number of employed workers in average business and in peasant farms is 21.65%, for farms and peasant farms - 9.18% in general for these legal entities the risk was 9.35%
SMEs in Kazakhstan are 26.8% of GDP, 18% of exports, 37% of employees and more than 99% of business entities	
Small specializes in services and the agricultural sector	
Medium and large enterprises are represented by naturally in the industrial sector	
80.8% of the country's entrepreneurship entrepreneurship subjects without the formation of legal entities (PI and K (F) X)	
Flexibility, quick response to changing market conditions	The lack of business beginners knowledge of work in market conditions
Operational adaptability to changes in consumer demand, the ability to reorient activities	legal illiteracy Imperfection of current legislation, cruel tax and customs policy, especially in administrative matters
Attraction in functional entrepreneurial work, familiarizing them with civilized market relations of the population	Bureaucracy, extortion and corruption.
	25.4% of the country's entrepreneurs are “on demand” entrepreneurs
Creates an atmosphere of competition	weak measures for the implementation of policies to support entrepreneurship and the training of qualified personnel
OPPORTUNITIES	THREATS
Mastering new types of products	Small life cycle
Accelerated learning investment.	Barriers with the administration (regulation by the state)
High capital turnover and innovation	High competition
Development through cooperation with large firms	Vulnerability to attempts of strong pressure of external environment
Growth and transition to the level of large companies	
Note:complited by the author	

Today, the development of entrepreneurship is consistent with global mass trends towards the creation of a flexible mixed economy, a combination of various forms of ownership, and an adequate economic model, which implements the difficult synthesis of a competitive market mechanism and a municipal settlement of small and medium manufacturing [9]. And if entrepreneurship acts as the skeleton, the axis of the progressive economy, then all the diversity is the muscles of the economic organism.

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ҚАЗАҚСТАН РЕСПУБЛИКАСЫНДА КӘСІПКЕРЛІКТІҢ ДАМУЫНЫҢ ҚАЗІРГІ ЗАМАНҒЫ ЭКОНОМИКАЛЫҚ БАҒАЛАУ

Аннотация. Мақала қазақстандық кәсіпкерліктің қазіргі жай-күйін құқықтық тұрғыдан қарастырады, яғни шағын, орта және ірі кәсіпкерлік субъектілеріне қандай ерекшеліктер тән. Зерттеуге олардың негізгі индикаторларына терең талдау жасалды, олар: тіркелген, белсенді жұмыс істейтін, әр түрлі меншік нысанындағы кәсіпорындардың мөлшері бойынша, шағын және орта бизнесте өнім шығару, орта және ірі кәсіпорындардың қаржы-шаруашылық қызметінің көрсеткіштері бойынша; ұйымдастыру нысаны бойынша шағын және орта бизнесте жұмыс істейтіндердің саны. Сонымен қатар, мақалада ҚР кәсіпкерлік қызметіне SWOT-талдау жасалды.

Түйін сөздер: экономика, жағдай, кәсіпкерлік, табыс, субъектілер, бес жылдық кезең, мемлекеттік сектор, шағын, орта және ірі бизнес, сатып алу сұранысы, жеке тұлға, заңды тұлға, негізгі индикаторлар, меншік, өнім шығару, Қаржы-шаруашылық қызмет, саны, Қазақстан.

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СОВРЕМЕННАЯ ЭКОНОМИЧЕСКАЯ ОЦЕНКА РАЗВИТИЯ ПРЕДПРИНИМАТЕЛЬСТВА В РЕСПУБЛИКЕ КАЗАХСТАН

Аннотация. Статья рассматривает современное состояние казахстанского предпринимательства с правовой точки зрения, т.е. какие особенности характерны для субъектов малого, среднего и крупного предпринимательства. В исследовании сделан глубокий анализ их основных индикаторов, таких как: количество зарегистрированных, активно действующих, по размерности предприятий различных форм собственности, выпуск продукции в малом и среднем бизнесе, по показателям финансово-хозяйственной деятельности средних и крупных предприятий; численность, занятых в малого и среднего бизнеса по организационной форме. Кроме того, в статье сделан SWOT-анализ деятельности предпринимательства РК.

Ключевые слова: экономика, состояние, предпринимательство, доход, субъекты, пятилетний период, государственный сектор, малый, средний и крупный бизнес, покупательский спрос, физическое лицо, юридическое лицо, основные индикаторы, собственность, выпуск продукции, финансово-хозяйственная деятельность, численность, Казахстан.

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INNOVATIONS IN THE ECONOMY OF THE AGRARIAN SECTOR

Abstract. In modern conditions, one of the main factors of agricultural development, which helps in ensuring the sustainable development of the agro-industrial complex, is innovation. Its effectiveness depends on the state of the external and internal economic environment, the availability of the necessary conditions for the introduction and rational use of innovative products. An innovative approach in relation to the agrarian sphere consists of: first, a study of the role and degree of influence of institutions that ensure the success of the transformation process in the agrarian sphere as a whole on the basis of modernization. Secondly, the creation of the necessary institutional environment and, finally, thirdly, the implementation in economic practice of the results of research and development in the form of new forms of organization and management, financing and crediting of production; new approaches to training, retraining and staff development; new technologies, new equipment, new fertilizers, etc.

Keywords: innovations, agriculture, economics, modernization, technology.

INTRODUCTION

The problem of sustainable economic growth of agricultural production on the basis of its consistent transfer to the innovative path of development in recent years has been extensively studied in domestic agro-economic science, analyzes the current state of the industry, the main directions for restoring and further developing the material and technical base of crop production and animal husbandry, the role of agricultural science in innovation. However, a number of theoretical, methodological, methodological and practical issues related to the processes that are taking place still need to be resolved and argued. These problems are of particular relevance at the present time, when, on the basis of innovation in the agricultural sector, the tasks of ensuring sustainable development of rural areas, improving the quality of life in rural areas, and further increasing the efficiency of agricultural production will have to be addressed.

MAIN PART

In the agro-industrial complex, the innovation process is a constant stream of transformation of research and development into new or improved products, materials, new technologies, new ones.

The development of the agricultural sector of the economy is influenced by global processes characterized by inconsistency and ambiguity. Firstly, overproduction of agricultural products, raw materials and food in highly developed countries and malnutrition in developing countries. Secondly - the expansion of the production of environmentally friendly products and the growth of agricultural production through the use of GMOs. Thirdly, the reorientation of a part of the population towards the consumption of bioproducts and the hiding of information in commercial networks about products grown with the use of genetically modified seeds, etc.

Over the past 20 years, there has been a steady decline in prices on world food markets. This was facilitated by: growth in agricultural production in low-cost countries (Brazil, New Zealand); increased financial support for agricultural producers in the United States, European countries, and others. In recent

years, they have been growing for several reasons: the drought of recent years in several regions of the world (in Australia for 6 years) has led to a twofold decrease in grain production; the rapid demand for biofuels, due to rising fossil fuel prices. As a result, up to 40% of the corn harvest was sold as fuel, and not as food or feed grains.

Economic growth on a global scale provided an increase in demand for food, especially in China, India - for dairy and meat products, as a result, a rise in prices not only for livestock products, but also for grain. Adverse climate change in recent years and rising energy prices have led the US and European governments to develop measures to renew financial support for agricultural producers in order to increase biofuel production. In the US, it produces how much gasoline in Russia.

Moreover, in the economy there is a change in the mode of production - industrial is replaced by information, based on the "production and productive application of information" [4, p. 6]. In such conditions, it is necessary not only to understand the current situation, but also to be able to see the future in the development of agricultural production, to evaluate possible threats and risks.

Innovative activity in the agricultural sector has its own characteristics and the main difficulties associated with them in the development and implementation of innovations. They are distinguished by a variety of regional, sectoral, functional, technological and organizational features. At the same time, some researchers call not the creation of fundamentally new products in the industry as the main feature of the innovation process in the agro-industrial sector, but the development of new technologies based on the achievements of science and technology in related industries in the economic practice.

Innovation process - the process of creating, distributing innovations, which consists of 5 stages:

1) fundamental theoretical research, conducting research R & D, and the result - the discovery and new theoretical knowledge;

2) the implementation of knowledge, the search for areas of practical use and implementation in the practical field, the search for investors;

3) research and development (OCD);

4) commercialization, introduction to the market;

5) the innovation process ends with the disposal of the product.

Consider the GDP by type of economic activity for 2018.

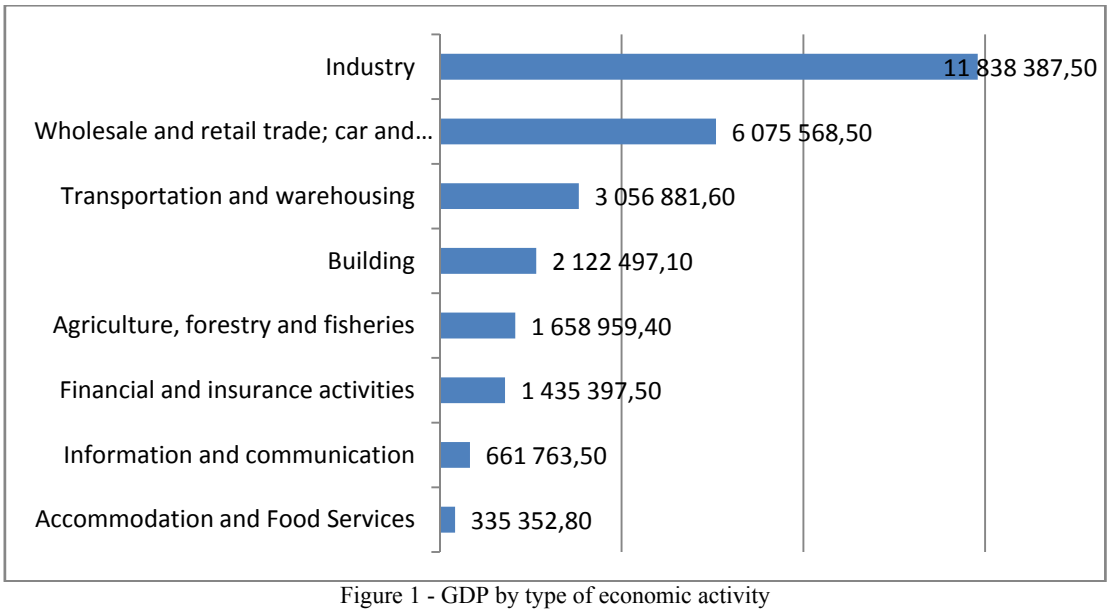

Figure 1 - GDP by type of economic activity

The leader in the GDP of the Republic of Kazakhstan is industry 11838387.5 million tenge, the share of agriculture is 1658959.4, which indicates a small share. Modern production largely depends on the quantity and quality of information used, ensuring its productive materialization in technical and technological processes. Economic growth as a whole is no longer reduced to the well-known types of growth (extensive and intensive), but the formation of a new informational type of economic growth

(includes some features of known types of growth). Informational growth occurs due to qualitative changes caused by the use of scientific and technical information in agricultural production.

Information technologies are one of the means to increase the efficiency of public administration, since their use improves the quality and speed of processing and transferring information flows, and this helps to ensure national interests, improve economic manageability, develop high-tech industries and high technologies, increase productivity, improve socio-economic relations, enrichment of the spiritual life of society.

The conceptual basis of informatization of the agro-industrial complex provides for information and analytical support for the agro-industrial production, the activities of the government bodies of the agro-industrial complex; agrarian market; information and consulting services for agroindustrial production; informatization of enterprises and associations of agriculture; research and educational activities and improvement of the information and library service system.

Information support of the management of the agricultural sector is aimed at:

• creation of a state network of information and marketing centers for the implementation of information services, conducting research and ensuring the development of the electronic market and the latest state planning system by drawing up industry and intersectoral balances;

• creation of an automated information and analytical system for monitoring the performance of socio-economic development indicators of the agricultural sector on the basis of information and marketing centers;

• inventory of electronic information resources and the creation of an integrated information and reference (search) network; creation of a single information and analytical center [7].

The sectoral structure of income generation by types of economic activity for January-September 2018 is presented in Table 1.

Table 1 - Sectoral structure of income generation by type of economic activity for 2018
in percents

	salary	other taxes on production	gross profit / gross mixed income
Agriculture, forestry and fisheries	25,4	0,1	74,5
Industry	23,2	2,7	74,1
Mining and quarrying	17,0	3,8	79,2
Manufacturing industry	28,6	1,3	70,1
Electricity, gas, steam and air conditioning	38,6	1,7	59,7
Water supply; sewage system, control over the collection and distribution of waste	56,1	2,1	41,8
Building	41,3	0,4	58,3
Wholesale and retail trade; car and motorcycle repair	31,7	0,3	68,0
Transportation and warehousing	40,1	1,2	58,7
Accommodation and Food Services	40,7	0,5	58,8
Information and communication	48,1	1,6	50,3
Financial and insurance activities	27,5	0,9	71,6
Real estate transactions	8,8	0,6	90,6
Professional, scientific and technical activities	49,5	0,7	49,8
Administrative and support services	54,7	0,6	44,7
Public administration and defense	78,6	0,1	21,3
Education	72,4	0,1	27,5
Health and social services	58,4	0,2	41,4
Arts, entertainment and recreation	59,9	0,3	39,8
Provision of other services	22,2	0,1	77,7
Activities of households employing domestic servants and producing goods and services for their own consumption	51,6	0,2	48,2
Total by industry	32,5	1,2	66,3

The share in the sectoral structure of education income by type of economic activity is wages observed in government and defense 78.6%, education 72.4, health and social services 59.9%. Minimum taxes are on agriculture, forestry and fisheries, public administration and defense, education 0.1%, the

maximum figure for mining and quarrying is 3.8%. Gross profit is maximal in mining and quarrying 79.2%, in agriculture, forestry and fisheries 74.5% and in industry 74.1%, while other services 77.7%.

One of the acute problems of agro-industrial production is the low efficiency and effectiveness of management decisions made due to insufficient development of the intellectual and cultural environment in rural areas, insufficient use, including local business practices, and new information technologies.

Agriculture is an ideal environment for the application of information technology (IT). In this regard, for the effective and sustainable functioning of economic entities of the republic in the new conditions, it is necessary to apply advanced information technologies to identify their internal reserves, attract external investments, as well as carry out the restructuring of organizational structures and reengineering management systems. The idea is to optimize decision making on the local application of fertilizers and pesticides to the soil using the most heterogeneous data to increase the productivity of agricultural production.

Modern IT allows farmers to receive advice, recommendations, regardless of the time and place of their location. A farmer can describe his problems through ordinary speech, illustrated with photographs or videos. In this case, the time and location of the farmer are determined automatically. Then he can send his materials via e-mail to the supporting agricultural services and get an answer after a while, or he can solve his problem online through the Internet.

The expansion of information databases is an important but not sufficient condition for their effective use in farms. Baseline information should be convenient for assessing biological and physical systems in order to develop useful knowledge of the current state of the farms, as well as forecasting results in the implementation of various scenarios. The accumulated knowledge in agricultural research over the years must be applied to obtain practically useful information by processing databases. This means that IT is an indispensable source for the implementation of research and development.

CONCLUSION

A number of factors contribute to the growth of IT investments in the region: ongoing economic reforms, privatization, growth in foreign direct investment, significant demand from small and medium-sized businesses, and individual users for personal computers and software.

General conditions for the effective development of the agrarian sector of the economy are also technological re-equipment of the farms of the entire agro-industrial complex; introduction of energy and resource-saving technologies for the production, storage and processing of agricultural products; reproduction of soil fertility, prevention of all types of their degradation; creation of a modern system of information and infrastructure support for innovation in the agricultural sector of the economy; introduction of affordable insurance systems for agricultural producers; strengthening the role of government organizations in enhancing innovation; development of regional and municipal innovative development programs, etc.

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АГРАРЛЫҚ СЕКТОР ЭКОНОМИКАСЫНДАҒЫ ИННОВАЦИЯЛАР

Аннотация. Қазіргі жағдайда агроөнеркәсіп кешенінің тұрақты дамуын қамтамасыз етуге көмектесетін ауыл шаруашылығын дамытудың негізгі факторларының бірі инновация болып табылады. Оның тиімділігі сыртқы және ішкі экономикалық ахуалдың жай-күйіне, инновациялық өнімді енгізу мен ұтымды пайдалануға қажетті жағдайлардың болуына байланысты. Аграрлық салаға қатысты инновациялық көзқарас: біріншіден, жаңғырту негізінде аграрлық саладағы трансформация процесінің жетістігін қамтамасыз ететін институттардың рөлі мен дәрежесін зерттеу. Екіншіден, қажетті институционалдық ортаны құру және, ақыр соңында, үшіншіден, шаруашылық практикасында ғылыми зерттеулер мен әзірлемелердің нәтижелерін ұйымдастыру және басқарудың, қаржыландырудың және несиелеудің жаңа нысандары түрінде енгізу; кадрларды даярлау,

қайта даярлау және қайта даярлаудың жаңа тәсілдері; жаңа технологиялар, жаңа жабдықтар, жаңа тыңайтқыштар және т.б.

Түйінді сөздер: инновациялар, ауыл шаруашылығы, ауыл шаруашылығы, экономика, жаңғырту, технологиялар.

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ИННОВАЦИИ В ЭКОНОМИКЕ АГРАРНОГО СЕКТОРА

Аннотация. В современных условиях одним из основных факторов развития сельского хозяйства, помогающим в обеспечении устойчивого развития агропромышленного комплекса, является инновационная деятельность. Ее результативность зависит от состояния внешней и внутренней экономической среды, наличия необходимых условий для внедрения и рационального использования инновационной продукции. Инновационный подход применительно к аграрной сфере представляют собой: во-первых, исследование роли и степени влияния институтов, обеспечивающих успех трансформационного процесса в аграрной сфере в целом на основе модернизации. Во-вторых, создание необходимой институциональной среды и, наконец, в-третьих, реализацию в хозяйственную практику результатов исследований и разработок в виде новых форм организации и управления, финансирования и кредитования производства; новые подходы к подготовке, переподготовке и повышению квалификации кадров; новые технологии, новую технику, новые удобрения и т.д.

Ключевые слова: инновации, агропромышленный комплекс, сельское хозяйство, экономика, модернизация, технологии.

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MATHEMATICAL MODELS OF INFORMATION PROCESSING AND MANAGEMENT SYSTEMS

Abstract. The modern scientific and technical revolution is accompanied by the rapid penetration of digital and computer equipment into technical systems for various purposes, which opens up prospects for the implementation of increasingly complex and efficient information processing and control algorithms. This led to an increase in interest in the theory of linear non-stationary systems (LNS), which, firstly, provides models of modern complex control objects and information transfer channels, and, secondly, is the theoretical basis for the synthesis of non-stationary systems with significantly richer potential than stationary systems. A similar situation is observed simultaneously in various fields of theory and technology, including automatic control, the theory of information processing systems, radio engineering, the theory of pattern recognition, etc.

Keywords: mathematical models, information, user research, human perception, assessment methods, information processing.

INTRODUCTION

At present, one of the main problems in modeling information-processing systems is the no stationarity of information transmission channels, which manifests itself in a random or relatively “fast” change in the parameters of these systems over time. In this regard, a promising direction for solving problems of analysis and synthesis of non-stationary information processing systems is the construction of their models in the class of non-stationary modulation systems (M-Systems). M-Systems correspond to many real technical systems, such as systems with quadrature decomposition of signals, communication channels with random parameters, Keynes models, etc.

An essential feature of such models is the separation of inertial and inertia less signal transformations, and only inertia-free transformations determine the non-stationarity of the system as a whole. Separating non-stationary systems, M-Systems in the class allows us to significantly simplify the mathematical description of these systems by representing them in the form of parallel (MR), sequential (MB) and parallel serial (MRB) structures.

MAIN PART

The concept of a model approach. Increases the variety of models used. A computer technology has been used to be a computer technology. The number of simulated objects is not analog, but it is discrete or combined (combined digital) systems. This requires a digital form. In this case, it is in the form of a transition to simulation modeling. In fact, the simulation algorithm is a direct description. It has been found that it is not necessary to express the information. In addition, from a methodological point of view, it is preferable to describe all links of M-Systems. In this case, we are talking about a discrete (digital) form.

The computer systems are currently used in computer control systems. Processes [1-6]. The requirements for quality control are determined. He also gave an opportunity to provide new opportunities for information technology.

IGOs,

- Parallel computing and supercomputers;
- Cloud computing and technology;
- Embedded computing and systems.

It is obvious that you are not in the first place. In the case of a small group of people, it is not a problem. What is the difference between information systems management specialists.

Nevertheless, it should be noted that the use of modern computer technologies in any variant when creating control systems is primarily determined by the need to provide the required functionality, which is achieved on the basis of formalized (mathematical) approaches at the research design stage. The main objective of the whole complex of works that are performed at this stage is to form mathematical models of control devices or control laws that provide the desired dynamics for systems operating in all possible navigation modes.

The involvement of modern information and computer technologies in the field of marine ship management is carried out within the following six generalized interrelated areas:

- Mathematical modeling of existing or developed elements and the control system as a whole, including the marine environment;
- Computer modeling in accordance with the constructed mathematical models and criteria for the quality of functioning;
- Analysis of the structural, dynamic, functional and other properties of the system as a whole and its individual elements;
- Synthesis of algorithms for the functioning of the system and its individual variable components in the form of their mathematical models;
- Support of operation algorithms and information flows in the system in real time;
- Algorithmic and software of test benches and training complexes for training crews and maintenance personnel working with the control system.

For each of these areas there is a well-defined ideology of actions aimed at achieving the best results when using information and computer support.

For the issues under consideration, a special role is played by digital control and signal processing systems based on modern computer elements. Obviously, for such systems, the use of modern information and computer technologies significantly suppresses all other approaches within the above directions. This is due to the obvious specifics of modeling, analysis, synthesis and implementation of digital systems. Note that the principal feature of the use of computers in control systems is that they simultaneously serve as both an object and a tool for research and design, as well as a basic element for implementing synthesized digital control algorithms.

Within the framework of formalized approaches, the desired elements of the designed system, or rather, their mathematical models, most often, are formed as the results of solving various optimization problems [7]. This essentially distinguishes modern design ideology from classical approaches, where optimization methods were usually used only as an auxiliary tool, which makes it possible to widely use computer technologies with a significant improvement in the quality of design solutions.

In particular, at present, various approaches are widely used, based on I-theory, which allow minimizing the matrix “gains” of elements of projected systems, which are represented by norms in the corresponding Hardy spaces. The theory of H2 and H-optimization [8 - 10] is very popular, associated with solving a wide range of problems in the field of synthesizing feedbacks, simplifying mathematical models of objects, ensuring robust stability and quality, etc.

Discrete models of the dynamics of motion control systems

The dynamics of marine moving objects are usually represented by nonlinear systems of ordinary differential equations.

$$x = Fin(+ Fhd((t) , \quad (1)$$

Where the vectors are x = ^ xp} eE12, V = E3, and y = {s, yu, y2} eE3

Respectively, the state, the linear and angular velocities of the MPO are determined, and the vector xp £ E - its movements and angles of rotation. The vector § £ Et represents the control actions on the MPO,

whose motion occurs under the influence of forces and moments Fin, Fhd of inertial and hydrodynamic nature, as well as specially distinguished external forces and moments {G (G).

The mathematical model (1) is supplemented by the equations of the dynamics of the drives

$$S = Fs (t, S, and), \quad (2)$$

Where and £ Et is the vector of control signals, as well as the equations of meters

$$Y = Fy (t, x, 8), \quad (3)$$

Where y £ EP is the vector of measured dynamic variables.

If the mode of stabilization of MPO is considered during its longitudinal motion at a constant speed, linearization of equations (1–3) is usually performed, reducing it to

$$x = Ax + B\ 8 + W\ ^), 8 = u,$$
$$^)> \quad (4)$$
$$Y = Sh,$$

Where x £ En is the MPO state vector, which determines the deviations from the equilibrium position, A, B, C, and H are matrices with constant components.

Mathematical formalization of the corresponding substantive problems is proposed to be based on the theory of optimization, setting quality functionals on the motions of discrete models of the systems under consideration.

On the example of stabilization of a given course, a new approach to the synthesis of digital filters, included in the multi-purpose structure of control laws, is proposed in the work. In contrast to the currently used methods, it is based on the non-standard task of minimizing the intensity of control of a ship moving in conditions of sea waves.

Simulation is used if experiments with real objects, systems is impossible or too expensive. The main difference of modeling from other methods of studying complex systems is the possibility of optimizing the system before its implementation.

Distributed information management systems (I & C) are multifunctional interconnected sets of stationary and mobile elements distributed in space with developed technical means for receiving, transmitting and processing information. Regardless of the type and purpose of such systems have the following characteristic features [1].

Distribution. ISCs are located on large areas from regional to global scales and include a large number of controlled, controlling and combined elements.

The mobility of the elements. The elements of the system can be stationary, mobile or moving. The movement of elements is carried out continuously or periodically along deterministic or stochastic trajectories.

Availability zones. The implementation of functional interactions between moving and stationary (mobile) elements of distributed ILEs is possible, as a rule, only when the moving element is located in the zone of accessibility ("visibility") of the fixed (mobile) element. The accessibility zone is determined by the mutual arrangement of elements in space and the types of technical means used.

Speed performance. The need for the operational development of control actions determines the high requirements for the execution time of the corresponding functions by the elements and the system as a whole.

Inadmissibility of loss of information. For distributed I & C systems, as a rule, an important condition is the inadmissibility (strict limitation) of loss of information of certain types. This requires special measures to analyze and control the completeness of the transmitted, processed and received information.

Vitality. In some cases, the functioning of the systems of the class under consideration proceeds under conditions of adverse impacts, which leads to a violation of the regular modes of operation of individual elements and the system as a whole.

Typical examples of distributed information and control systems are: automated aircraft control systems (ACS LA), satellite communication systems, operational services management systems, etc.

An example of a digital course management system

The proposed approach to digital filtering as part of the multipurpose control law (7), (8) will be illustrated by the example of a stabilization system for the course of a transport vessel with a 6000t displacement.

A mathematical model of a ship moving at a constant speed of V = 8 m / s in the presence of sea waves with an intensity of 5 on the Beaufort scale is the following system of linear difference equations:

In [k + 1] = an in [k] + a 12 a [k] + L1 5 [k] + ^ d [k],
A [k + 1] = a21 in [k] + a22 a [k] + l2 5 [k d [k], (20)
[[k + 1] = Ta [k] + [[k], 5 [k + 1] = Ti [k] + 5 [k], y [k] = [[k].

Here in - the angle of drift, and - the angular velocity of the course, f - yaw angle, 5 - the angle of deviation of the vertical rudders. For the period of discreteness T = 1, we have the following values of the coefficients:

An = 0.955, a12 = 0.560, a21 = 0.0267, a22 = 0.592, h1 = —0.0132, h2 = —0.00742, / = —0.0648, / = —0.00456.

The desired quality of development of team corrections for the course provides the following basic control law:

$$\text{And} = \text{to } 1 \text{ in} + \text{to } 2 \text{ a} + \text{k3f} + \text{k05} + \text{vy}, \quad (21)$$

Where k 1 = 0.912, k = 6.11, k3 = -2.22, k0 = -0.339, V = 3.44. For this law, we have the eigenvalues of the matrix Ac: z1 = 0.658, z2 = 0.757, = 0.870, = 0.922.

Form an asymptotic observer

$$\text{z 1 [к +1]} = \text{a 11 z 1 [к]} + \text{a12 Z2 [к]} + \text{\^{} 5 [к]} + \text{д 1 (y [к] -Zз [к])}, \text{ z 2 [к +1]} = \text{a21 z 1 [к]} + \text{a 22 Z2 [к]} + \text{Ь 2 5 [к]} + \text{д 2 (y [к] -Zз [к])}, \quad (22)$$

z3 [k +1] = Tz2 + z3 + d3 (for z3), where g1 = 0.0335, g2 = 0.00446, g3 = 0.0944.

For these coefficients, the matrix A – gc has the eigenvalues z1 = 0.560, ^, 3 = 0.946 ± 0.0183 /.

The equations of the stabilizing control law for the observer's output (22) without a filter are

$$\text{And} = \text{to } 1 \text{ g1} + \text{to } 2 \text{ g 2+ to } 3 \text{ g3} + \text{to } 0 \text{ 5} + \text{vy}. \quad (23)$$

A mathematical model for the formation of control loops has been built, taking into account the choice of optimal values of the controlled parameters of control objects and means of observation. The algorithm of the solution is described in the general case with the implementation of the optimal distribution at each step of the search for the optimal values of the controlled parameters.

The problem of optimizing the functioning of the systems of the class under consideration is closely related to the tasks of a formalized description of the functioning processes, procedures for collecting, processing and analyzing the relevant characteristics of the elements and their interrelationships affecting the quality of control of the system as a whole.

CONCLUSION

In the process of developing and improving distributed I & C systems, there are complex problems of evaluating the effectiveness of their functioning (in terms of the listed and other characteristics) with different structural options, adverse effects, schedule changes and element trajectories, emergency situations, various management strategies, etc.

One of the most convenient means of mathematical modeling used in analyzing the functioning of the systems of the class in question are simulation models that describe the structure and behavior of the system as a program for a PC and allow machine experiments to obtain the necessary data on the functioning of the elements and the system as a whole. Certain time intervals. This paper describes a simulation model designed to solve these problems in the aircraft control system and to carry out machine experiments.

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АҚПАРАТТЫҚ ЖӘНЕ БАСҚАРУ ЖҮЙЕЛЕРІНІҢ МАТЕМАТИКАЛЫҚ МОДЕЛЛЕРІ

Аннотация. Қазіргі заманғы ғылыми-техникалық революция цифрлы және компьютерлік техниканың әртүрлі мақсаттарға арналған техникалық жүйелерге тез енуімен бірге жүреді, бұл ақпаратты өңдеу және бақылаудың алгоритмдерін барынша күрделі және тиімді түрде жүзеге асырудың болашағын ашады. Бұл, ең алдымен, заманауи кешенді басқару объектілерінің модельдерін және ақпаратты беру каналдарын ұсынатын желілік стационарлық емес жүйелердің (LNS) теориясына қызығушылықты арттырды, екіншіден, әлдеқайда бай әлеуеті бар стационарлық емес жүйелерді синтездеудің теориялық негізі болып табылады стационарлық жүйелерге қарағанда. Осындай жағдай теория мен технологияның әртүрлі салаларында, соның ішінде автоматтандырылған басқару, ақпараттық өңдеу жүйелерінің теориясы, радиотехника, үлгіні тану теориясы және т.б.

Түйін сөздер: математикалық модельдер, ақпарат, пайдаланушы зерттеулер, адам қабылдау, бағалау әдістері, ақпаратты өңдеу.

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МАТЕМАТИЧЕСКИЕ МОДЕЛИ СИСТЕМ ОБРАБОТКИ ИНФОРМАЦИИ И УПРАВЛЕНИЯ

Аннотация. Современная научно-техническая революция сопровождается бурным проникновением цифровой и компьютерной техники в технические системы различного назначения, что открывает перспективы реализации все более сложных и эффективных алгоритмов обработки информации и управления. Это обусловило повышение интереса к теории линейных нестационарных систем, математическому моделированию, которая, во-первых, предоставляет модели современных сложных объектов управления и каналов передачи информации, а, во-вторых, является теоретической основой синтеза нестационарных систем, обладающих существенно более богатыми потенциальными возможностями, чем системы стационарные. Подобная ситуация наблюдается одновременно в различных областях теории и техники, среди которых автоматическое управление, теория систем обработки информации, радиотехника, теория распознавания образов и др.

Ключевые слова: математические модели, информация, исследование пользователя, восприятие человека, методы оценки, обработка информации.

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AGRARIAN ENTREPRENEURSHIP AND INNOVATIVE METHODS OF ITS DEVELOPMENT

Abstract. Agrarian entrepreneurship is an important element in the development of agriculture and the immediate task of improving the innovation system of the agro-industrial complex of the Republic of Kazakhstan is to increase the agrarian innovation potential. According to the authors, in order for the innovative development of the agro-industrial complex of the RK to meet its purpose and justify the hopes placed on it in the foreseeable future, a full-fledged and comprehensive provision of this process is required, allowing it to overcome the features of its inertial and often stagnant and even regressive nature. This applies to all areas of the innovative development of the agro industrial complex of Kazakhstan. The introduction of IT technologies in Kazakhstan will not only increase the productivity of agricultural production, but also increase the competitiveness of agricultural products. Thanks to digitalization in developed countries, agriculture creates conditions for increasing production volumes, increasing the country's export potential.

Keywords: agrarian business, rural areas, innovations, methods, agro-industrial complex, agriculture.

INTRODUCTION

In the Message of the President of the Republic of Kazakhstan Nursultan Nazarbayev to the people of Kazakhstan dated January 10, 2018, digitalization and new technologies were named the main vector of development of the country. In a special way, this issue concerns agriculture, because it is extensive farmland and diverse climatic conditions that are the main resources for strengthening the economic stability of Kazakhstan. The backbone of the innovative development of the agro-industrial complex in the Republic of Kazakhstan is the reproduction of agricultural innovations and the adoption in mass practice of more advanced methods of agricultural production, which in their totality determine the innovative development of agriculture. Ensuring innovative development of the agro-industrial complex consists of two blocks - resource and institutional. The resource block includes financial, personnel, material and technical, informational support. The institutional unit includes organizational, economic, infrastructural, regulatory support; The development of innovation-oriented forms of management is adjacent to this group.

MAIN PART

The increased value of innovation development and the associated expectations of obtaining the required results in an acceptable time frame do not allow to rely only on the existing innovation system of the agro-industrial complex, which is not capable in its modern form with extended scales and sufficient rates to apply innovations in mass agricultural production practice. The basis of the mechanism of crisis phenomena in the agrarian sector of the economy was in the period of reform and is currently determined by a destructive policy with regard to providing measures for the innovative development of the agro-industrial complex.

From the experience of foreign countries, an innovative agrarian economy is formed when agro-industrial production is based mainly on the basis of innovative activity, which is impossible without new technologies for the formation of a single financial and information space.

Table 1 - State of innovation activity in the Republic of Kazakhstan

	Number of enterprises total, units			Deviation, %	of which are innovative			Deviation, %
	2015	2016	2017		2015	2016	2017	
The Republic of Kazakhstan	31784	31077	30854	0,97	2585	2879	2974	1,15
Akmola	1325	1301	1299	0,98	90	91	98	1,09
Aktobe	1236	1234	1149	0,93	86	115	116	1,35
Almaty	1643	1648	1797	1,09	114	129	146	1,28
Atyrau	1276	1193	1145	0,90	102	101	92	0,90
West Kazakhstan	857	917	932	1,09	35	33	49	1,40
Zhambylskaya	852	834	846	0,99	90	90	96	1,07
Karaganda	2340	2235	2309	0,99	216	238	257	1,19
Kostanay	1502	1438	1475	0,98	218	161	167	0,77
Kyzylorda	846	812	784	0,93	99	91	89	0,90
Mangystau	1027	1060	1131	1,10	41	43	40	0,98
Pavlodar	1354	1286	1292	0,95	65	83	112	1,72
North Kazakhstan	1047	1049	1023	0,98	111	119	115	1,04
Turkestan	884	905	939	1,06	52	60	50	0,96
East Kazakhstan	2091	1985	2010	0,96	240	296	303	1,26
Astana	4103	4003	4039	0,98	541	543	582	1,08
Almaty city	7970	7716	7124	0,89	377	590	550	1,46
Shymkent	1431	1461	1560	1,09	108	96	112	1,04

The number of enterprises in Kazakhstan has a tendency to decline by 3%, however, the number of entrepreneurs introducing innovations is steadily growing by 15%. At the same time, the highest growth of innovative enterprises is observed in Almaty by 46%, in Aktyubinsk by 35% and by 28% in Almaty oblasts.

Analysis of the innovation state in the republic consisted in the development of theoretical and methodological foundations, conceptual provisions for the formation of a system for the development of innovations in agriculture, taking into account the use of the institute of agricultural consulting in the process of innovative support for rural producers. Within the framework of the proposed system for the development of innovations in agriculture, the theoretical foundations and methodological provisions of the formation of the system for the adoption of innovations in agriculture were developed; the economic essence of innovation activity is revealed as the most effective direction for the development of the agrarian sector of the economy and a classification of innovations in agriculture is proposed.

Innovations in agriculture are actively used in all areas: crop production, animal husbandry, product processing, etc.

One of the flagships in the development of innovative digital solutions for agricultural automation in Kazakhstan is TerraPoint. A relatively young company of talented specialists today can compete with foreign suppliers of software for the automation of agricultural objects.

Among the new ideas that need to be implemented as soon as possible in the agro-industrial complex of Kazakhstan are:

• Unmanned aerial vehicles to control farmland

These machines make it possible not only to map farmland in a timely manner, but also to analyze the NDVI vegetation index. The use of UAVs in agriculture allows monitoring of weed infestation, analysis of soil heterogeneity and development of diseases, control of screenings, mapping, and much more.

• Unmanned transport agricultural vehicles

Worldwide, the development of unmanned tractors is under development. The first prototypes already exist. These machines will be able to cultivate the land on their own without a person and harvest according to the previously programmed scenario. In addition, there are already mini-robots for spot recognition of weeds and crop diseases, and accurate application of chemicals or fertilizers as needed.

• Automation of processing, storage and production of agricultural products

Innovative technologies for automation of agricultural facilities allow you to fully automate all processes, equipment and technological processes. This helps reduce production downtime, minimize the impact of the human factor and increase productivity, reduce losses and degrade grain quality.

• Sensors, sensors and automatic process control systems

Placed everywhere on farmland sensors can continuously transmit via radio channels the parameters of controlled crops and transport: humidity, temperature, fuel, the level of plant health. The obtained data is stored on the server and analyzed, promptly warning the heads of farms about the need to apply certain measures.

• GPS trackers and access control systems for recording the movement of grain from the field to the elevator

Thanks to GPS trackers, the agricultural machinery movement is constantly monitored, and the access control systems of agrotransport allow not only to ensure entry / exit for the current of only certain cars, but also to carry out Photo and video fixation of the vehicle entry and exit at the time of weighing the car body. Well, the automatic determination of the gross weight and tare will be a nice bonus.

• Precision Farming

This term is a kind of synthesis of all previous innovations. Precision farming involves an integrated high-tech agricultural management system, which includes geographic information systems (GIS), yield assessment technologies (Yield Monitor Technologies), variable rating technology (Variable Rate Technology), and remote sensing technologies. In other words, precision farming implies an “individual approach” to different parts of the field. This is a kind of "aerobatics" in plant growing.

Problems of investment security in the agricultural sector:

• in agriculture there is a steady trend of deterioration of financial and economic indicators;

• the profound consequences of the decline in production in the industry are the consistent destruction of its reproductive potential (technology, land, human factors, undermining of intellectual forces, the state of science, etc.);

• lack of own financial resources in agriculture, a significant reduction in long-term lending led to a significant reduction in investment activity;

• there is no system for organizing investment activities in agriculture, both in the country and its regions.

One of the forms of attracting capital to the industry is state participation as an investor. As part of this direction, a study of the regulatory legal acts on public-private partnership in the agricultural sector is carried out.

The revitalization of the investment process should be aimed at preserving and expanding the reproductive function of investments, contributing to increasing production capacity, raising and expanding existing production, as well as achieving financial stability and successfully overcoming crisis phenomena in agriculture.

The consequence of increasing the degree of investment attractiveness should be an increase in the socio-economic effectiveness of the functioning of the reproduction complex. The intensity of resource attraction depends on many factors that can be structured into two groups. The first is the characteristics of the objective prerequisites for placing funds, that is, the investment potential of the republic. The second group includes indicators of the economic dynamics of the state of the social sphere, institutional factors. This group describes the likelihood of investment risks, that is, the likelihood of complete or partial loss of invested resources, which foreign capital is especially afraid of.

Automation and modernization of the grain elevator allows to solve the following tasks:

Ensuring reliable operation, increased productivity and increased safety of operation of the grain elevator/mill;

Monitoring, analysis and visualization in real time of the state of the technological process of the grain elevator;

Management of grain movement routes at the production facility;

Improving the efficiency of working personnel, minimizing the influence of the "human factor".

Thus, the popularity of search queries reflects the reality. Kazakhstanis are not yet sufficiently informed about the existing technologies for the automation of the agro-industrial sector and the stages of a gradual transition to the digitization of agricultural enterprises.

CONCLUSION

The basis of innovative development is scientific and technical development for agro-industrial production as a constantly replenished and renewable source of continuously increasing opportunities for innovative renewal of the agro-industrial complex. Scientific and technical achievements often determine the very possibility of a transition to the sustainable development of the agro-industrial complex, whereas the implementation of the supporting measures of the innovation system determines how quickly such a transition will occur.

Consequently, one of the main tasks of ensuring blocks of the innovation system of the agro-industrial complex is the creation of favorable conditions for the formation of a fund of innovations and their development in production while smoothing the existing differences between the results obtained in production and the potential of scientific and technical developments. This refers to both the quantitative set of innovations that are available and accessible to consumers, and their ability to improve production, economic and other indicators of agro-industrial activity.

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АГРАРНЫҢ КӘСІПКЕРЛІКТЕРІ ЖӘНЕ ОНЫҢ ДАМУЫНЫҢ ИННОВАЦИЯЛЫҚ ӘДІСТЕРІ

Аннотация. Аграрлық кәсіпкерлік ауыл шаруашылығын дамытудың маңызды элементі және Қазақстан Республикасының агроөнеркәсіптік кешенінің инновациялық жүйесін жетілдірудің тікелей міндеті аграрлық инновациялық әлеуетті арттыру болып табылады. Авторлардың пікірінше, ҚР агроөнеркәсіптік кешенінің инновациялық дамуы оның мақсатына сай келуі және жақын болашақта оған үміт артатындығын дәлелдеу үшін, бұл процестің өзінің инерциялық және жиі тоқырау және тіпті регрессивтік сипаттамаларының ерекшеліктерін жеңуге мүмкіндік беретін толыққанды және жан-жақты қамтамасыз ету қажет. Бұл Қазақстанның агроөнеркәсіп кешенінің инновациялық дамуының барлық бағыттарына қатысты. Қазақстанда IT-технологияларды енгізу ауыл шаруашылығы өндірісінің өнімділігін арттырып қана қоймай, ауыл шаруашылығы өнімдерінің бәсекеге қабілеттілігін арттырады. Дамыған елдерде цифрландырудың арқасында ауыл шаруашылығы ауыл шаруашылығы өндіріс көлемін ұлғайтуға, еліміздің экспорттық әлеуетін арттыруға жағдай жасайды.

Түйін сөздер: аграрлық бизнес, ауылдық жерлерде, инновациялар, әдістер, агроөнеркәсіптік кешен, ауыл шаруашылығы

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АГРАРНОЕ ПРЕДПРИНИМАТЕЛЬСТВО И ИННОВАЦИОННЫЕ МЕТОДЫ ЕГО РАЗВИТИЯ

Аннотация. Аграрное предпринимательство является важным элементом в развитии сельского хозяйства и непосредственной задачей совершенствования инновационной системы АПК РК является

увеличение аграрного инновационного потенциала. По мнению авторов, чтобы инновационное развитие АПК РК отвечало своему предназначению и оправдало в обозримом будущем возлагаемые на него надежды, требуется полноценное и всестороннее обеспечение этого процесса, позволяющее преодолеть черты его инерционного, а нередко застойного и даже регрессирующего характера. Это относится ко всем направлениям обеспечения инновационного развития АПК РК. Внедрение IT-технологий в Казахстане повысит не только продуктивность сельхозпроизводства, но и позволит увеличить конкурентоспособность сельхозпродукции. Благодаря цифровизации в развитых странах в сельском хозяйстве создаются условия для наращивания объемов производства, повышения экспортного потенциала страны.

Ключевые слова: аграрное предпринимательство, сельские территории, инновации, методы, агропромышленный комплекс, сельское хозяйство.

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SUSTAINABLE DEVELOPMENT OF THE ECONOMY: CONCEPT AND FACTORS

Abstract. At the present stage of development, globalization and dynamism are inherent in the social and historical process, which, on the one hand, contribute to an increase in economic growth rates and thus provide an opportunity to meet the growing needs of an increasing number of the world's population, and on the other hand, entail uncertainty and instability of development, destabilizing factor, significantly complicating the development of the economy. The increasing influence of globalization gives the problem of transition of the economy to the model of sustainable development of particular urgency, causing an increased interest in it, both domestic and foreign scientists. Sustainable development of the economy is ensured by balance, harmony between the socio-economic interests of man and the state of the environment. This article discusses the evolution of the term "sustainable development", clarifies the definition of the category "sustainable development". The authors made an attempt to create the necessary scientific basis for further research, ensuring the formation of a theory of sustainable development of the economy. Based on the research data since the late 80s, the theory and practice of sustainable economic development has been under the scrutiny of researchers and politicians both in our country and abroad. The result of the study was also the systematization of significant factors that can play a crucial role in the sustainable development of the economy, having a negative impact and a positive one. These factors are presented in tabular form. These factors are defined on the internal and external, depending on the scope of distribution. Internal factors affecting the sustainability of the economy are divided into economic, social and environmental factors. External factors affecting the sustainable development of the economy are grouped according to the type of impact as factors of direct and indirect influence on the process under study. On the basis of the conducted research, fundamental conclusions were made on the problem of sustainable development of the economy.

Keywords: sustainable development, factors of sustainable development, quality of life, "green economy".

Introduction. In the middle of 50s of the 20th century, the contradictions between economic growth were fully manifested as a means recognized by all means of fully satisfying the growing needs of society and the interests of the person for whom this growth should be carried out. For the first time, these ideas were voiced in the report of the Rome Club "Limits to Growth" [1] in 1972, prepared by a group of scientists under the leadership of American cybernetics, Professor D. Meadows and his wife. This report was based on the ideas of J. Forrester, who predicted the inevitability of a catastrophe on a global scale in the 21st century as a result of environmental contamination, depletion of natural resources, and a population explosion in developing countries.

The only way out of the current situation is the transition from aggressive forward development to sustainable development.

Methodology of the research. In the article general scientific methods have been applied, which provide system analysis and an interdisciplinary approach to research. To achieve the result, the methods of dialectical-logical approach, analysis-synthesis and induction- deduction.

Results and discussion. As the study showed, initially the problem of sustainability became the subject of research by economists on the eve of the crisis of 1929. A significant contribution to the development of this problem was made by a consistent "market leader", an economist, a mathematician

V.V. Novozhilov, who studied in those years the contradiction between the principle of price stability and the change in the rate of economic growth [2]. In essence, he laid the foundations for the theory of sustainable economic development, combining market mechanisms with elements of centralized planning and management [3].

The modern interpretation of the concept of "sustainable development" was immediately preceded by the reports of the Club of Rome, which became the stimulus for world public opinion to find a new disposition in the dialogue between man and nature. In 1962, the resolution of the UN General Assembly "Economic Development and Nature Protection" was adopted, and in 1972 an organization was created to implement the United Nations Environment Program. The report "Our Common Future", prepared by the World Commission on Environment and Development (1987), pointed to the need to change the business activity and lifestyle of mankind, focus the economy on meeting the needs and legitimate desires of people, but it was noted that ecological possibilities of the planet must be taken into consideration.

In essence, the Commission called for a "new era of environmentally friendly economic development". After the publication of the report, the phrase "sustainable development" became the focus of attention of the world community.

In the early 1980s, the term "sustainability" appeared in research by the International Union for the Conservation of Nature (International Union Conservation of Nature) and was used to denote the ability of ecological systems to maintain their structure and functional properties when exposed to external factors [4]. The statement of the World Conservation Strategy was the first real attempt to define sustainable development: "In order for development to be sustainable, it must take into account social and environmental factors, as well as economic ones; living and nonliving resources; and long-term, as well as short-term, the advantages and disadvantages of an alternative action. "However, this definition places more emphasis on environmental sustainability than on sustainable development as such.

At the same time, there is no uniform interpretation of sustainable development. A number of authors associate this concept with stable development. Thus, according to scientists [5], sustainable development is a stable socio-economic development that does not destroy its natural base. Researcher Nureev R.M. [6] defines sustainable development as a process of harmonizing the productive forces, satisfying the necessary needs of all members of society, while preserving the integrity of the natural environment and creating opportunities for balance between economic potential and the demands of people of all generations.

The findings of the UN Commission on Environment and Development formed the basis for decisions on the vital need for civilization to enter the trajectory of sustainable development, adopted at the 1992 UN Conference on Environment and Development in Rio de Janeiro. Sustainable development was understood as development that satisfies the needs of the present generation and does not jeopardize the ability of future generations to meet their needs.

The term "sustainable development" describes the type of economic development that ensures reproducibility of limited resources and the quality of economic growth. In this regard, it is advisable to immediately notice that it is not legitimate to put an equal sign between sustainable growth and sustainable development. The first, from our point of view, means a clearly expressed vector of growth namely within certain fluctuations of its rates, having positive (plus) values. The second implies not only positive values of growth, but also its absence or even recession, which, however, must overlap with positive values of growth.

The most correct, in our opinion, is the point of view of the authors [7, 8, 9, 10], who assert that sustainable development is a continuous process of meeting the needs of present and future generations. At the same time, the continuity of the process is considered as a non-decreasing growth rate of opportunities to meet the needs in the long term, which is possible only if a balance of interests is achieved, harmony between all elements of the economy.

Consequently, sustainable development includes two groups of concepts: first, the needs and possibilities necessary for the preservation and development, and, second, the restrictions imposed on the ability to satisfy the needs, caused by the state of technology and the organization of society (Figure 1).

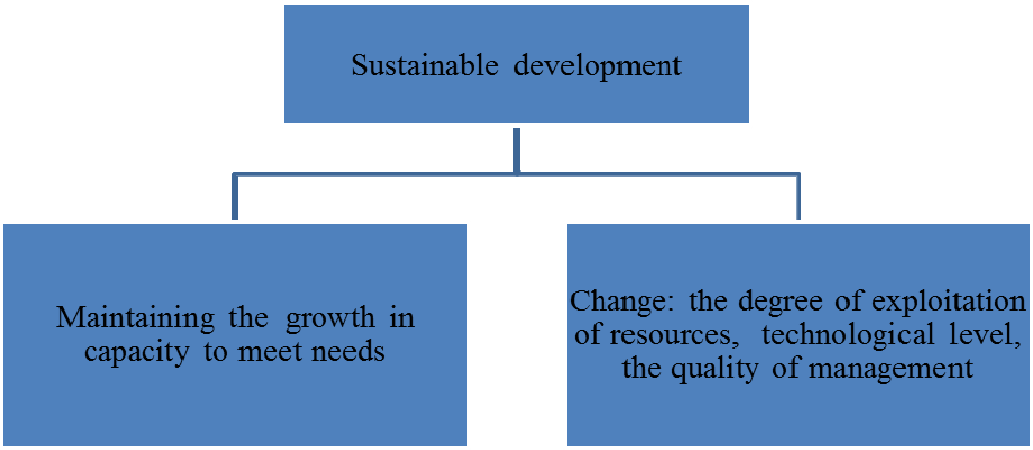

Figure 1 - What remains and what changes in the conditions of sustainable development

Note: [3]

Thus, we believe that sustainable development is, in essence, a process of change, in which the exploitation of resources, the direction of investment, the orientation of technological development in harmony with social well-being and ecological balance increase the value of current and future potential.

At the same time, various aspects affect the sustainable development of the economy, which can be divided into internal and external factors. Internal factors affecting the sustainability of the economy are divided into 3 blocks: economic, social and environmental. External factors affecting sustainable development are presented as direct and indirect impact factors.

Table 1 presents the main factors affecting the sustainable development of the economy.

Table 1 - The main factors of sustainable economic development

The main factors of sustainable economic development				
Inner factors			Outer factors	
Economic	Social	Ecological	Factors of direct exposure	Factors of indirect effect
1. Developed infrastructure; 2. Scientific and technical potential; 3. Investment attractiveness.	1. Developed social sphere; 2. Quality of life; 3. The level of labor resources.	1. Natural and climatic conditions; 2.Anthropogenic pollution.	1. The state of the global economy; 2. Resource provision; 3. The level of the legal framework.	1. Political stability; 2. Scientific and technical progress.
Note: compiled by the author based on sources [3, 11, 12, 13]				

Let us consider the internal factors of sustainable development.

Internal factors:

1. Economic

- Developed infrastructure. The infrastructure influences the development of all sectors of the economy and, accordingly, a developed infrastructure allows achieving stability and sustainability.

- Scientific and technical potential. The level and pace of scientific and technological progress largely depend on the scientific and technical potential of the country. Scientific and technical progress directly affects the production sector, that is: improves production capacity; increases production weight. This affects the country's economy.

- Investment appeal. Investments are an investment of capital in the form of real financial investments for the purpose of obtaining profit or other economic benefits. They play a huge role at the macro and micro level. Investing foreign capital increases the competitiveness of the host country. The flow of investment improves productivity. Investments also improve the quality of products, and this affects the competitiveness of products, brings it to the international level, that is, it expands ties with foreign markets.

2. Social

- Developed social sphere - socio-demographic processes in the country and the standard of living of the population, the degree of well-being in society.

- The quality of life. The satisfaction of human needs and aspirations is the main task of sustainable development. However, economic growth alone is not enough, since high levels of productive activity can coexist with widespread poverty and be a threat to the environment.

- The level of labor resources - the quality of labor potential, the ability to ensure the transition of the economy to an innovative type of development.

3. Ecological

- Natural and climatic conditions. Natural conditions directly affect the lives and economic activities of the population. They depend on: the resettlement of the population, the development and placement of productive forces, their specialization. Also, climatic conditions affect the costs of production. In addition to increased energy costs, the natural factor affects the whole people's way of life, domestic culture, behavioral stereotype, which ensure the maintenance and reproduction of a living human labor force.

- Anthropogenic pollution. As mentioned earlier, economic growth can be accompanied by a threat to the environment. This is unacceptable in the framework of the transition to sustainable development, as sustainable development of the economy involves a balance between the economic well-being of society and the quality of the environment.

Conclusion. So, the study of sustainable development and its factors allows us to draw the following fundamental conclusions:

Firstly, the problem of sustainable development is interdisciplinary one.

Secondly, the development process is characterized by the presence of a complex relationship between the phenomena of stability and variability.

Thirdly, in the field of theoretical knowledge about the processes of sustainable development, it is conditionally possible to distinguish three main approaches in designing models of sustainable development: resource, biospheric, integrative. All of them are based on a single philosophical and scientific foundation.

Fourth, the theory of sustainable development is based on the harmonization of social, economic and environmental subsystems, aimed at finding ways to transition the system to a model of sustainable development, ensuring a non-decreasing growth rate of opportunities to meet the needs of current and future generations and the preservation of the environment.

Fifth, sustainable economic development depends on many factors, both internal and external.

Thus, the sustainable development of the economy is a complex process leading to the solution of the problems of mankind, improving the quality of life through balanced development based on harmony with the environment through the further formation of a "green economy" as an integral part of the strategy of sustainable development.

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ЭКОНОМИКАНЫҢ ТҰРАҚТЫ ДАМУЫ: ТҮСІНІГІ ЖӘНЕ ФАКТОРЛАРЫ

Аннотация. Қоғамдық –тарихи үдерістің қазіргі заманғы дамуына жаһандану мен серпінділік тән, ол бір жағынан, экономикалық өсу қарқынының артуына әсерін тигізеді және сонымен қатар жер шары халқының көп бөлігінің өспелі қажеттіліктерін қанағаттандыру мүмкіндігін қамтамасыз етеді, екінші жағынан, белгісіздік пен дамудың тұрақсыздығына алып келеді, экономиканың дамуын едәуір қиындататын тұрақсыздандырушы фактор ретінде әрекет етеді.

Жаһандану әсерінің күшеюі экономиканың тұрақты даму үлгісіне көшу мәселесіне ерекше қауіптілікті тудырады, бұл отандық және шетелдік ғалымдардың қызығушылығын арттырады. Экономиканың тұрақты дамуы адамның әлеуметтік-экономикалық мүдделері мен қоршаған ортаның жай-күйі арасындағы тепе-теңдік, үйлесіммен қамтамасыз етіледі. Бұл мақалада «тұрақты даму» терминінің эволюциясы талқыланып, «тұрақты даму» санатының анықтамасы түсіндіріледі. Авторлар экономиканың тұрақты даму теориясының қалыптасуын қамтамасыз ететін алдағы зерттеулер үшін қажетті ғылыми базаны құру әрекетін жасады. 80-жылдардың аяғынан бастап, зерттеудің деректеріне сүйенсек, экономиканың тұрақты даму теориясы мен практикасы біздің елімізде де, шетелде де зерттеушілер мен саясаткерлердің басты назарында болды. Жүргізілген зерттеудің нәтижесі экономиканың тұрақты дамуында елеулі рөл атқаратын жағымсыз және жағымды әсерді тудыратын маңызды факторларды жүйелендіру болды. Аталған факторлар таралу саласына байланысты ішкі және сыртқы болып анықталды. Экономиканың тұрақтылығына әсер ететін ішкі фаторлар

экономикалық, әлеуметтік және экологиялық факторлар болып бөлінеді. Экономиканың тұрақты дамуына ықпал ететін сыртқы факторлар зерттелетін үдеріске әсер етуіне түрлеріне байланысты тікелей және жанама болып жіктеледі.

Жүргізілген зерттеулер негізінде экономиканың тұрақты даму мәселесі бойынша түбегейлі қорытындылар жасалған.

Түйін сөздер: тұрақты даму, тұрақты даму факторлары, өмір сапасы, «жасыл экономика».

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УСТОЙЧИВОЕ РАЗВИТИЕ ЭКОНОМИКИ: ПОНЯТИЕ И ФАКТОРЫ

Аннотация. На современном этапе развития общественно-историческому процессу присущи глобализация и динамизм, которые, с одной стороны, способствуют увеличению темпов экономического роста и тем самым обеспечивают возможность удовлетворять возрастающие потребности все большего числа населения планеты, а с другой – влекут за собой неопределенность и неустойчивость развития, выступают дестабилизирующим фактором, существенно осложняющим развитие экономики. Усиление влияния глобализации придает проблеме перехода экономики на модель устойчивого развития особую остроту, вызывая повышенный интерес к ней как отечественных, так и зарубежных ученых. Устойчивое развитие экономики обеспечивается балансом, гармонией между социально-экономическими интересами человека и состоянием окружающей среды. В данной статье рассматривается эволюция термина «устойчивое развитие», уточнено определение категории «устойчивое развитие». Авторами сделана попытка создать необходимую научную основу для проведения дальнейших исследований, обеспечивающих формирование теории устойчивого развития экономики. Исходя из данных исследования еще с конца 80-х годов теория и практика устойчивого развития экономики находится под пристальным вниманием исследователей и политиков как в нашей стране, так и за рубежом. Результатом проведенного исследования стало также и систематизация существенных факторов, которые могут сыграть решающее значение в устойчивом развитии экономики, оказав как отрицательное воздействие, так и положительное. Перечисленные факторы представлены в табличной форме. Данные факторы определены на внутренние и внешние в зависимости от сферы распространения. Внутренние факторы, воздействующие на устойчивость экономики, разделены на экономические, социальные и экологические факторы. Внешние факторы, оказывающие влияние на устойчивое развитие экономики, сгруппированы в соответствии с типом воздействия как факторы прямого и косвенного воздействия на исследуемый процесс. На основе проведенного исследования сделаны принципиальные выводы по проблеме устойчивого развития экономики.

Ключевые слова: устойчивое развитие, факторы устойчивого развития, качество жизни, «зеленая экономика».

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FACTORS OF DEVELOPMENT OF INNOVATIVE ACTIVITY AT THE FOOD INDUSTRY ENTERPRISES

Abstract. The food industry is a strategically important sector of the national economy, so the development and implementation of innovative technologies in the food industry is sufficient interest. Innovation in the food industry should be focused primarily on issues such as improving the quality and safety of food, including products of socially significant and essential goods [1].

The processes of formation and the application of innovation in the food industry have their own characteristics. In the article, an author identifies the main factors of development of innovative activities at the food industry. These factors were considered within the framework of the process and resource approaches. According to the author for the revitalization of the food sector in the innovation sphere it is necessary to create networks and network organizations to support communication between enterprises in the sector. Moreover, to improve the innovation activity of food industry enterprises the main measures were proposed.

Key words: innovation, innovation activity, food industry.

Introduction

In today's unstable business environment, it is very important for the food industry to meet new market trends that require from enterprises of the sector, technical and economic changes. It has a significant impact on enterprises throughout the food production chain: consumer - trade - food product manufacturing - production of raw materials. Innovations are certainly a major factor of success for solving these problems. The ability to meet or exceed quality standards through innovative development can attract more customers by gaining trust and protecting their interests. Furthermore, it can help businesses to compete when they enters unfamiliar and risky new markets. For this reason, it is very important to determine the main factors of the development of innovation activities in the food industry.

The problem of food security is one of the fundamental strategic problems that must be solved to ensure stability in the state. Despite the fact that the approach to its solution in different states has its own national peculiarities, there is a general provision on supporting and ensuring the necessary level of food supply of the population in amounts that guarantee sustainable economic development and socio-political stability in society [2].

Results and discussion

The complexity, diversity and inconsistency of modern sociopolitical and economic transformations in society, their novelty and dynamism in the conditions of market transformation, acutely raise the question of maximizing the ability of using the scientific and technical potential of food production industries in the recovering and developing the real economy and giving it an innovative character.

The complexity, diversity and inconsistency of modern sociopolitical and economic transformations in society, their novelty and dynamism in the conditions of market transformation, acutely raise the question of maximizing the ability of using the scientific and technical potential of food production industries in the recovering and developing the real economy and giving it an innovative character.

The main role is played by science as a generator of the scientific and technical development of the food industry, which providing constant technical-technological and socio-economic renewal of the food production industries.

Innovative activities in the food industry require a qualitatively new approach. Instead of being a single act of introducing any innovation, it should be a strategically oriented system of measures for the development, implementation, mastering, production, commercialization and analysis of the effective innovations.

The following directions should be included to the main areas of innovation in the food industry [3]:

- technological;
- assortment (production of the new food products);
- marketing;
- innovation infrastructure

Technological innovations in the food industry are directed to:

- develop storage technologies for agricultural products that serving as the raw materials for food production, which allows to increase the shelf life without loss of quality;
- use of resource-saving technologies based on modern processing methods, characterized by the most useful yield and minimum waste;
- improve technological processes in order to reduce time of the production cycle without loss of product quality;
- develop and implement its own packaging lines that meet the specific of the manufactured products;
- improve of tare, packing and transportation methods.

The main features of assortment innovations in the food industry organizations are:

- development and production of environmentally friendly products of mass consumption: production of products for therapeutic and prophylactic purposes, taking into account modern medical and biological requirements to improve the structure of nutrition of the population;
- product development for children and special population groups;
- enhancing product quality, certification and standardization of products.

Innovation activities also include marketing research of sales markets and the search for new consumers, search and information about the possible competitive environment and consumer properties of goods of competing firms, search for partners in the implementation and financing of the innovation project.

Innovation infrastructure includes organizations, firms, associations, covering the entire cycle of innovation, from the generation of new scientific and technical ideas and their development to the production and sale of high-tech products.

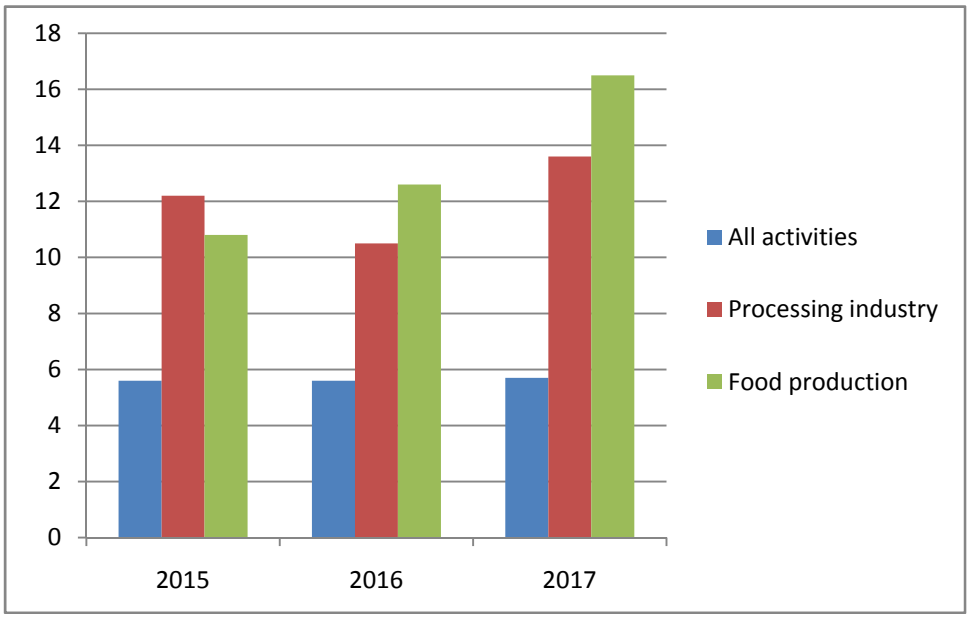

Figure 1 –Innovation activity of food production enterprises in the Republic of Kazakhstan for the period of 2015-2017

The structure of indicators of innovative activity of the enterprise includes human resources, costs of innovation and financial support of innovation, the results of innovation in the form of output of innovative products and services. In the Figure 1, we have shown the changes of the level of innovation activity of food production enterprises in the Republic of Kazakhstan for the period of 2015-2017 [4].

In terms of the innovation activity level of enterprises producing food products in Kazakhstan, it can be noted that this indicator increased by 1.5% in 2017 compared to the level of 2013, and is 16.5%. In addition, it should be mentioned that in comparison with all the activities in the country and the processing industry, the activity in the field of innovation in a food production company is much higher.

In the most general form, the factors of development of innovation in an industrial enterprise can be considered in the framework of the process and resource approaches [3].

Within the process approach, it considers a part of the economic system of an enterprise (including its processing system), at the input of which is processes, and the output is the process component of the finished product of work performed, services rendered, which is a combination of process costs and profits, formed by processes.

Also, the resource approach to the development of innovative activity considers that part of the economic system of an enterprise (including its processing system), at the input of which are used resources, and the output is the resource component of the finished product of work performed, services rendered, which is a combination of process costs and profits, formed by processes.

Within the framework of the process-resource approach, solving problems of effective innovation management at an industrial enterprise goes back to analyzing the process and resource factors (marketing, organizational, economic, social, technological, financial, as well as factors associated with government regulation of business activities), either directly or indirectly determining the competitiveness of products manufactured by the enterprise.

Introduction of innovation is related to ensuring their competitiveness, which is an important aspect for any business.

Before making a decision on the development of activities related to innovation, it is necessary to thoroughly examine the company, as well as its main players (competitors) [5].

Marketing factors are one of the important parameters in the planning of the implementation of innovative products, in particular, market size, since reassessing the parameters of demand for products can lead to unprofitability of production, since the share of fixed costs in the cost structure is reduced only with an increase in production.

The influence of organizational factors in the initiation of innovation is also plays a crucial role. These factors are: the desire for simple technological solutions, the rejection of hard work, and low wages of highly qualified specialists lead to a decrease in the competitiveness of industrial products. In order to avoid such problems, the head of the organization must to have a proper understanding of the strategic features of the implementation of an innovative project.

Additionally, when developing an innovation activity plan, it is necessary, based on crisis exit strategies, in the form of a plan of measures to overcome crisis situations, to concretize the causes which is giving rise to certain crisis conditions, as well as to determine the volumes and sources of resources (financial, personnel, information, etc.) necessary for the implementation of the planned activities.

Scientific and technical factors for the innovation development at the industrial enterprise require solving a set of tasks related to ensuring appropriate innovation activity involving highly qualified engineers and scientists, developing an innovation development program, and having sufficient production space (technical area).

Simultaneously with the solution of technical and production issues, active communication with the public (target audience) is carried out, because the practice test can weaken the effects of competition (its negative part, for example, in cases of mass return of goods), ensure rapid overcoming of problems and contribute to enhancing trust to the company (its innovative products, especially in the situation of detection of problems during operation and industrial testing) by the public.

Social factors of interaction with the public have a significant impact in the promotion of innovative industrial product, which requires the preparation of relevant specialists in the company and direct control of their activities in the format of the approval of the advertising brief by top managers of the company.

It should be also taken into account that an enterprise cannot surpass its competitors in all characteristics of an innovative product. It is necessary to prioritize and create strategies for the development of competitive advantages that most closely correspond to trends in the development of a market situation. In this regard, it is advisable to use the advantages of the international division of labor: many industrial innovation projects are based on consolidating the efforts of enterprises that have relative advantages in the production of certain parts, assemblies, mechanisms, or in the provision of services [6].

When developing an innovative product, companies often make a systematical error, which consists in over-focusing on the technical superiority of a product over competitive analogues, losing sight of the fact that competitiveness is characterized as the degree of attractiveness of a given product for a consumer, whose view on an innovative product is based on its own judgment.

The development of innovation in the food industry requires a new approach in the field of organization, technology, cooperation and communication [6]. The sector faces an important task - it is a solution of problems associated with the various needs of the population, which in the future may require a doubling of food production and nutrition, while production resources will decrease. Overcoming these problems for food industry enterprises is possible if they are not only open to innovation, but also support the creation of inventions and new discoveries, as well as the widespread dissemination of innovation.

In order to intensify the activities of the food sector in the field of innovation, it is necessary to maintain the creative potential of enterprises. The creation of networks and network organizations to support communication between sector's enterprises plays a major role in enhancing the participation of SMEs in the development of innovations. With the development of network interaction, these networks can follow the path of intensification, which begins with social interaction and gradually develops in the direction of more intensive interactions. At present, it is very important for food industry enterprises to promote and support industry initiatives, in the form of invention and discovery. As well as an equally important process is the selection, evaluation, acceptance of the given invention and their transformation into innovative developments. Depending on the level of problems and the radical nature of the new inventions, it is necessary for enterprises in the industry to improve or completely change the processes of organizing, processing and managing innovation activities.

Therefore, it is extremely important for the sector to evaluate the proposed inventions, select suitable funds for investment and agree on the steps for the implementation of innovative projects.

The following main measures are proposed to improve the innovation activity of food industry enterprises [7]:

- to create a department for innovative development, which functions would include the development of a project for the introduction of innovative technologies;
- it is necessary to introduce elements of civilized management,
- to introduce a staff of specialists in the field of management of the organization,
-to create a new system of staff motivation to innovation activity.

As it was mentioned before, food industry enterprises should adhere to the open innovation model, which in turn includes the use of innovative developments in various fields of science. These include developments in the area of information sciences, information technology, natural science, engineering, organization and management. The role and influence of the organization and management on innovative development are often underestimated and ignored by enterprises of the sector. For example, when developing innovative projects, the effect of organizational (cooperation and logistics) and management concepts (leadership issues or employee motivation) on the production of innovative products do not taken into account.

Especially, the combination of factors from different disciplines opens up new opportunities for creating innovations. This is illustrated by a discussion of the "bioeconomy" (EU, 2015b) [6], where new opportunities in the field of information technology, natural science and technology meet with economic and management changes.

Conclusion

The food and processing industry closes the production chain of the agro-industrial complex on the way of agricultural raw materials. Therefore it is important to preserve and more efficiently process agricultural products turning it into final products and raw materials for high-quality industry and consumer demand. This can be realized on the basis of an integrated innovative approach. In order to

solve this problem, it is necessary to strengthen the role of the state in terms of regulation of the economic processes, the development and implementation of scientific and technical areas and the introduction of innovations.

The implementation of the state innovation policy will contribute to the increasingly progressive technical, technological, organizational and economic renewal of the food production industries and raise their efficiency.

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ТАМАҚ ӨНЕРКӘСІБІ КӘСІПОРЫНДАРЫНДА ИННОВАЦИЯЛЫҚ ҚЫЗМЕТТІ ДАМЫТУДЫҢ ФАКТОРЛАРЫ

Аннотация. Тамақ өнеркәсібі ұлттық экономикада стратегиялық маңызды рөл атқарады, сондықтан тамақ өнеркәсібінде инновациялық технологияларды дамыту және енгізуге ерекше қызығушылық артқан. Тамақ өнеркәсібіндегі инновациялар бірінші кезекте тамақ өнімдерінің, соның ішінде әлеуметтік-маңызды әрі аса қажетті азық-түлік өнімдерінің сапасы мен қауіпсіздігін арттыру сияқты мәселелерді шешуге бағытталуы тиіс [1].

Тамақ өнеркәсібі кәсіпорындарында инновацияларды қалыптастыру мен қолдану үдерісі өзіндік ерекшеліктерге ие. Мақалада автор тамақ өнеркәсібі кәсіпорындарында инновациялық қызметін дамытудың негізгі факторларын анықтаған. Бұл аталған факторлар үдерістік және ресурстық тәсілдер тұрғысынан қарас-тырылған. Автордың пікірінше, тамақ секторының инновация саласындағы қызметінің белсенділігін арттыру үшін сала кәсіпорындарының арасында коммуникацияны қолдайтын жүйелер мен жүйелік ұйымдарды қалыптастыру қажет. Сонымен қатар тамақ өнеркәсібі кәсіпорындарының инновациялық қызметін жетілдіру бойынша негізгі шаралар кешені ұсынылған.

Түйін сөздер: инновация, инновациялық қызмет, тамақ өнеркәсібі.

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ФАКТОРЫ РАЗВИТИЯ ИННОВАЦИОННОЙ ДЕЯТЕЛЬНОСТИ НА ПРЕДПРИЯТИЯХ ПИЩЕВОЙ ПРОМЫШЛЕННОСТИ

Аннотация. Пищевая промышленность является стратегически важной отраслью национальной экономики, поэтому разработка и внедрение инновационных технологий на предприятиях пищевой промышленности представляет достаточный интерес. Инновации в пищевой промышленности должны быть направлены, в первую очередь, на решение таких вопросов, как повышение качества и безопасности продуктов питания, в том числе продуктов социально-значимых и продуктов первой необходимости [1].

Процессы формирования и использования инноваций на предприятиях пищевой промышленности имеют свои особенности. В статье автором определены основные факторы развития инновационной деятельности на предприятиях пищевой промышленности. Эти факторы были рассмотрены в рамках процессного и ресурсного подходов. По мнению автора, для активизации деятельности пищевого сектора в области инновации необходимо создание сетей и сетевых организаций для поддержки коммуникации между предприятиями сектора. А также были предложены основные мероприятия по совершенствованию инновационной деятельности предприятий пищевой промышленности.

Ключевые слова: инновация, инновационная деятельность, пищевая промышленность.

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