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## TO REDUCE GLOBAL CLIMATE ISLAND FOCUSED LOCAL COOPERATION

**Abstract:** The article discusses the problem of global warming. The phenomenon of "greenhouse effect" was analyzed, and one of the main components of this phenomenon was methane gas and its causes. Experiments to eliminate methane gas by collecting manure from cattle, sheep, goats, and chickens in warehouses and processing it with earthworms have been conducted, the results of which are described in this article. The application of the proposed technology will reduce global warming due to the elimination of methane, increase the yield of cotton, wheat and other agricultural products by 15-20%.

**Key words:** global climate, "greenhouse effect", atmosphere, soil, carbon dioxide, methane, manure, waste, California red worm, vermotechnology, natural fertility.

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### Introduction

It is known that the main cause of global warming is the phenomenon of "greenhouse effect". That is why, a number of microgases play an important role in changing the heat balance of the earth and lead to a gradual increase in temperature on the earth. Although the gases that play a key role in the occurrence of this phenomenon transmit light rays by themselves, they capture infrared rays. Sunlight passes through the atmosphere and heats the earth's surface, and the earth itself reflects heat and infrared

rays. The heat balance of the earth is constant as a result of the constant change in the amount of gases that create the "greenhouse effect" in the atmosphere. If their concentration increases in the air, the surface will heat up as a result of the corresponding change in temperature balance.

Three of the gases that create the "greenhouse effect", namely carbon monoxide, methane and water vapor, play a key role. This is because their concentrations increase rapidly as a result of anthropogenic impacts on the biosphere. The

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'shadowing' property of heat rays is high in methane and especially nitrogen hemoxide molecules, but this property is relatively low in the carbon dioxide molecule. Carbon dioxide is released into the atmosphere through the combustion of organic fuels - oil, gas, coal, wood and other fuels, as well as the respiration of organisms. Most of the carbon dioxide is formed during photosynthesis and is directly involved in physiological processes by entering the newly formed organic compounds.

In the troposphere, all weather events, as well as the circulating motion of water and other chemical elements, occur. The greenhouse effect also occurs in the troposphere. The average temperature of atmospheric air is determined by the amount of solar radiation and the amount of radiation returned from the earth's surface. However, the amount of different substances present in the troposphere determines the greenhouse effect. For example, due to the presence of carbon dioxide (SO<sub>2</sub>), methane, chlorine, carbon dioxide, and ozone (O<sub>3</sub>) in the troposphere, a certain amount of radiation returned from the earth is returned to the earth. Due to the presence of these same substances in the troposphere, the average temperature of the air in the lower atmosphere is now 150C. In the absence of a greenhouse effect, the temperature could be minus 300S, [1]. In the upper layers of the atmosphere, the air heats up to a certain extent due to the radiation returned from the earth, and this temperature returns to the earth. As a result of such complex processes, the reduction of the amount of various chemicals in the atmosphere, which now determine the effectiveness of the greenhouse, has become a major environmental problem. Because the climate is changing due to the greenhouse effect As a result of the above-mentioned adverse events, climate change is occurring, resulting in precipitation and flooding.

In recent years, objective data show that global temperatures are rising and the climate is shifting towards warming.

According to an international group of experts on climate change, officials and scientists in the field,

if the situation continues like this, the temperature could rise by 2-4 0C in the next 50 years. This situation is expected to lead to the melting of glaciers and flooding of the land, leading to drastic changes in weather conditions.

The world community, realizing the ecological, economic, social and political consequences of climate change, is conducting research and various measures to prevent it.

The United Nations Framework Convention on Climate Change was signed by 155 states at the 1992 World Conference on Environment and Sustainable Development in Rio de Janeiro. [6] The ultimate goal of this authoritative international agreement is to prevent dangerous anthropogenic interference with atmospheric greenhouse gases. stabilization to the extent that it is preventable. This level needs to be achieved in a time that allows ecosystems to produce enough food to adapt naturally to climate change and not jeopardize further economic development on a sustainable basis. The Kyoto Protocol, signed on December 10, 1997, provides for individual states to reduce greenhouse gas emissions to 1990 levels.

The second major greenhouse gas is methane. It is known that methane gas is a process that occurs as a result of bacterial decomposition of animal and plant biomass, as well as in the processing of organic raw materials [6,7,8].

### Materials and methods

Methane is formed as a result of bacterial, ie the vital activity of bacteria, digestive processes in the stomachs of animals (ruminants), as well as the chemical decomposition of biogenic, ie organic matter. These substances include amines, ammonia, carbonyl compounds, carbonic acids, mercaptans, hydrogen sulfides, and phenols, which are formed in the stomachs and intestines of animals as a result of the destruction of undigested nutrients and the enzymatic breakdown of amino acids. Their specific discharges are given in the table below, Table 1.

**Table 1. Substances released into the atmosphere**

Name of pollutants	Large horned animals (1tsn weight) mkg / day	Small horned animals (per 1 kg of body weight) mcg / day	Birds (Per 1 ton of weight) mkg / day
Amines, methylamine	1,32	0,86	0,88
Ammonia	37,0	22,0	16,0
Carbonyl compounds	1,5	1,3	2,2
Carbonic acids	1,0	1,86	2,5
Mercaptans	0,002	0,015	0,04
Hydrogen peroxide	2,2	1,8	4,4
Sulfides	0,78	1,5	4,2
Phenols	0,2	0,2	0,4
Total:	(44,002	(29,535	(30,62

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It can be seen from this table that a significant proportion of pollutants are ammonia gas. Ammonia gas is then converted to methane as a result of biochemical processes.

According to social media, the number of cattle in Uzbekistan is 12,240.1 thousand, the number of sheep and goats is 20,427.8 thousand and the number of poultry is 71122.7 thousand.

To make it easier to calculate the pollutants released into the atmosphere by these animals and birds, we calculate their average weights, which are:

Cattle 12240100 head x 2.5 ts = 30600250 ts; sheep and goats 20427800 head x 0.25 ts = 5106950 ts; chickens 71122700 head x 0.02ts = 1422454 ts.

Using specific emissions of pollutants, we calculate the amount of pollutant emitted into the atmosphere by these animals and birds, particularly ammonia, Table 2.

**Table 2. The amount of ammonia released into the atmosphere**

Pollutant	The amount of year-round emissions from large horned animals is tn / year	The amount of year-round discharge from small horned animals tn / year	From birds the amount of emissions during the year is tn / year
Ammonia	0,413	0,041	0,0083

An increase in the addition of methane flux to the atmosphere will lead to an increase in atmospheric temperature in the future, which will have very negative consequences. Currently, the amount of methane in the atmosphere is estimated at 4600-5000 teregram Tg (Tg = 1012gr), [5,6,7-10].

Reducing methane emissions is one of the global challenges and is extremely important today. Currently, this issue is being addressed in various ways. These include the extraction of methane gas from animal waste, deep industrial processing of waste, as well as the reduction of methane emissions from natural decomposition of organic waste, ie through the cultivation of "Vermo technology", in

particular, earthworms. The main feature of these worms is that they convert them into biohumus by consuming various wastes, including animal wastes, as well as hay, leaves, plant residues and other industrial wastes. That is, these worms feed on the waste without allowing it to rot, resulting in the release of pollutants that can be released into the atmosphere during the decomposition of the waste and form biohumus, which is a valuable nutrient for soil nutrition.

*Results and discussion*

Experiments show that earthworms produce 600 kg of biohumus per 1 ton of processed organic matter.

**Table 3. Indications for the treatment of waste with earthworms**

Waste, (1t)	Earthworm, (m3)	Biogumus, (t)	Full processing period, months
Cattle, sheep, goats, rabbits, chicken manure	0,1	0,6	4-6

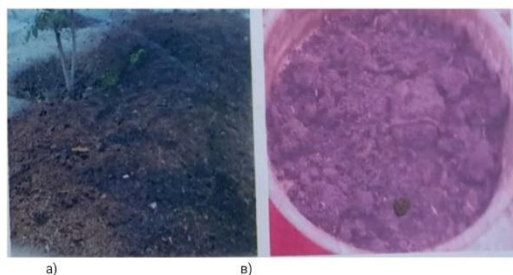


**Picture. 1 a, v. The period of care of worms**



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Picture 2. a, v. Worm breeding grounds.

Laboratory experiments were performed as follows. Substrate (cattle, sheep, rabbit, chicken manure) was carried out in several deep trenches of specially prepared dimensions (1.0x1.0x1.0) m or 1.0 m<sup>3</sup> in the experimental area, Figures 1.2 a, c. Each pit was filled with 300 kg of different fertilizers, 2000, 4000, 6000, 8000 and 10000 worms were placed in the pits, and the periods of conversion of manure into biohumus in different variants were studied.

variant: the number of worms is -2000

- 1- cattle manure 300 kg
- 2-environment (ph) - 4-5
- Temperature 3 - 18-24oS
- 4 Humidity 80-85%.

The period of conversion to 5 biohumus is 12-14 days

- 1- sheep manure 300 kg
- 2-environment (ph) - 4-5
- Temperature 3 - 18-24oS

4 Moisture 80-85% The period of conversion of 5 manure into biohumus is 12-14 days

- 1- 300 kg of chicken manure
- 2-environment (ph) - 4-5
- Temperature 3 - 18-24oS
- 4 Humidity 80-85%.

The period of conversion of 5th manure into biohumus is 12-14 days

- 1- rabbit manure 300 kg
- 2-muhit (ph) - 4-5
- Temperature 3 - 18-24oS
- 4 Humidity 80-85%.

The period of conversion of 5th manure into biohumus is 12-14 days

variant: the number of worms - 4000

- 1- cattle manure 300 kg
- 2-muhit (ph) - 4-5
- Temperature 3 - 18-24oS
- 4 humidity 80-85%

The period of conversion to biohumus is 10-12 days

- 1- sheep manure 300 kg
- 2-environment (ph) - 4-5

- Temperature 3 - 18-24oS
- 4 humidity 80-85%

The period of conversion of 5th manure into biohumus is 10-12 days

- 1- 300 kg of chicken manure
- 2-environment (ph) - 4-5
- Temperature 3 - 18-24oS
- 4 humidity 80-85%

The period of conversion of 5th manure into biohumus is 10-12 days

- 1- rabbit manure 300 kg
- 2-environment (ph) - 4-5
- Temperature 3 - 18-24oS
- 4 humidity 80-85%

The period of conversion of 5th manure into biohumus is 10-12 days

Option 3: the number of worms - 6000

- 1- cattle manure 300 kg
- 2-muhit (ph) - 4-5
- Temperature 3 - 18-24oS
- 4 humidity 80-85%

5- The period of conversion to biohumus is 8-10 days

- 1- sheep manure 300 kg
- 2-muhit (ph) - 4-5
- Temperature 3 - 18-24oS
- 4 humidity 80-85%

The period of conversion of 5 manure into biohumus is 8-10 days

- 1- 300 kg of chicken manure
- 2-environment (ph) - 4-5
- Temperature 3 - 18-24oS
- 4 humidity 80-85%

The period of conversion of 5 manure into biohumus is 8-10 days

variant: the number of worms - 8000

- 1- cattle manure 300 kg
- 2-environment (ph) - 4-5
- Temperature 3 - 18-24oS
- 4 humidity 80-85%

The period of conversion to 5 biohumus is 6-8 days

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1- sheep manure 300 kg  
 2-environment (ph) - 4-5  
 Temperature 3 - 18-24oS  
 4 humidity 80-85%  
 The period of conversion of 5th manure into biohumus is 6-8 days

1- 300 kg of chicken manure  
 2-environment - 4-5  
 3-temperature (pH) - 18-24oS  
 4 humidity 80-85%  
 The period of conversion of 5th manure into biohumus is 6-8 days

1- rabbit manure 300 kg  
 2-environment (ph) - 4-5  
 Temperature 3 - 18-24oS  
 4 humidity 80-85%  
 The period of conversion of 5th manure into biohumus is 6-8 days

option: the number of worms - 10000

1 kg of manure 300 kg

2-environment (ph) - 4-5  
 Temperature 3 - 18-24oS  
 4 humidity 80-85%  
 The period of conversion to 5 biohumus is 4-6 days

1- sheep manure 300 kg  
 2-environment (ph) - 4-5  
 Temperature 3 - 18-24oS  
 4 humidity 80-85%  
 The period of conversion of 5th manure into biohumus is 4-6 days

1- 300 kg of chicken manure  
 2-muhit (ph) - 4-5  
 Temperature 3 - 18-24oS  
 4 Humidity 80-85%.  
 The period of conversion of 5th manure into biohumus is 4-6 days

1- rabbit manure 300 kg  
 2-environment (ph) - 4-5  
 Temperature 3 - 18-24oS  
 4 humidity 80-85%  
 The period of conversion of 5th manure into biohumus is 4-6 days

**Table 3.**

№ т/р	Manure type	Quantity	Ph	t °C	Humidity %	Biohumus rotation time
Option 1 The number of worms is 2000						
1.	Cattle manure	300	4-5	18-24	80-85	12-14 day
2.	Sheep manure	300	4-5	18-24	80-85	12-14 day
3.	Rabbit manure	300	4-5	18-24	80-85	12-14 day
4.	Chicken manure	300	4-5	18-24	80-85	12-14 day
Option 2 The number of worms is 4000						
1.	Cattle manure	300	4-5	18-24	80-85	10-12 day
2.	Sheep manure	300	4-5	18-24	80-85	10-12 day
3.	Rabbit manure	300	4-5	18-24	80-85	10-12 day
4.	Chicken manure	300	4-5	18-24	80-85	10-12 day
Option 3 The number of worms is 6000						
1.	Cattle manure	300	4-5	18-24	80-85	8-10 day
2.	Sheep manure	300	4-5	18-24	80-85	8-10 day
3.	Rabbit manure	300	4-5	18-24	80-85	8-10 day
4.	Chicken manure	300	4-5	18-24	80-85	8-10 day
Option 4 The number of worms is 8000						
1.	Cattle manure	300	4-5	18-24	80-85	6-8 day
2.	Sheep manure	300	4-5	18-24	80-85	6-8 day
3.	Rabbit manure	300	4-5	18-24	80-85	6-8 day
4.	Chicken manure	300	4-5	18-24	80-85	6-8 day
Option 5 The number of worms is 10,000						
1.	Cattle manure	300	4-5	18-24	80-85	4-6 day
2.	Sheep manure	300	4-5	18-24	80-85	4-6 day
3.	Rabbit manure	300	4-5	18-24	80-85	4-6 day
4.	Chicken manure	300	4-5	18-24	80-85	4-6 day

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Experiments have shown that the period of conversion of different fertilizers into biohumus depends on the density of worms under the same conditions, the more densely we place them, the faster the conversion of manure and waste into biohumus. When the number of worms was 10,000, the manure was completely converted to biohumus in 4-6 days.

The experiments were carried out at the farm "Istiqol" in Altynkul district of Andijan region and in laboratory conditions. Table 4 shows the analysis of agrochemical analysis of the resulting "biohumus" product.

**Table 4. Agrochemical analysis of Biogumus products**

Namunaning t / r	Moisture content of the sample, %	Агрохимёвий анализлар натижалари							
		Salinity level (with chlorine)		Nitron in nitrate mode, mg / kg	phosphorus		potassium		methane %
		%	Group		Activ mg/kg	Total%	Interchangeable,%	Total%	
1	50.3	0.007	unsalted	87	108	1,8	670	1,2	-
2	52.4	0.014	unsalted	78	78	1.4	348	0,88	-
3	51.6	0.007	unsalted	81	96	1.6	364	0,96..	-
4	52.2	0.007	unsalted	82	90	1.2	356	0,92	-
middle	<b>51.6</b>	<b>0.009</b>	unsalted	<b>82</b>	<b>93</b>	<b>1.5</b>	<b>434.5</b>	<b>0.99</b>	-

The results of agrochemical analysis showed that the land area of the farm is highly supplied with nitrogen in the form of exchangeable potassium, mobile phosphorus and nitrate, [11]. Due to the low chlorine ion content in the soil, low salinity, no methane gas formation was observed.

In addition to preventing the formation of methane gas, the resulting biohumus has been shown to give high results in increasing the yield of cotton, wheat and other agricultural products on land, [12]. Due to this, the use of mineral fertilizers will be proportionally reduced, the application of biohumus

will increase plant vigor, increase their resistance to various pests, which will reduce the use of pesticides, improve ecology, grow ecologically clean products and increase agricultural exports.

### Conclusions

Treatment of animal manure by earthworms reduces emissions of methane gas into the atmosphere.

By applying the resulting biohumus to the land, it gives high results in increasing the yield of cotton, wheat and other agricultural products.

## References:

- Anderson, T.R., Hawkins, E., & Jones, P.D. (2016). CO<sub>2</sub>, the greenhouse effect and global warming: from the pioneering work of Arrhenius and Callendar to today's Earth System Models. *Endeavour*, Volume 40, Issue 3, September 2016, pp. 178-187 <https://doi.org/10.1016/j.endeavour.2016.07.002>
- Qingchen, C., & Aiqing, F. (2018). Scientific basis of climate change and its response *Global Energy Interconnection*, Volume 1, Issue 4, 2018, pp. 420-427. <https://doi.org/10.14171/j.2096-5117.gei.2018.04.002>Get rights and content
- Bardescu, I., & Legendi, A. (2015). Carbon Dioxide –Significant Emission Sources and Decreasing Solutions. *Procedia - Social and Behavioral Sciences*, Volume 180, 2015, pp. 1122-1128. <https://doi.org/10.1016/j.sbspro.2015.02.225>
- Amstel, A. V. (2012). Methane. A review. *Journal of Integrative Environmental Sciences* Volume 9, 2012 - Issue sup1: Non-CO<sub>2</sub> Greenhouse Gasses. Pages 5-30 <https://doi.org/10.1080/1943815X.2012.694892>
- Ubaev, T.S., Koroteev, M.P., & Artamonova, I.V. (2009). The role of methane in the greenhouse effect. *Melioration and reclamation, ecology*, No 1, 2009, pp.44-49.
- Tursunov, A.T., & Rakhimova, T.U. (2006). *Ecology*, Study guide Mirzo Ulugbek National University of Uzbekistan. (p.138). Tashkent.
- Bazhen, N.M. (2000). *Methane in the atmosphere. Chemistry*. Novosibirsk State

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- University, 2000. Retrieved from <http://window.edu.ru/catalog/pdf2txt/444/21444/4657>
8. (2018). Ed. Doctor of Chemical Sciences, Professor A.G. Ishkova. *The role of methane in climate change*, NIPE, 2018. Non-Governmental Ecological Foundation named after V.I. Vernadsky, Russian Ecological Academy. (p.69). Moscow.
  9. Andreev, N.G. (1989). *Meadow and field forage production*. Textbook. Moscow, "Agropromizdat", Retrieved from <https://search.rsl.ru/ru/record/01001509210>
  10. Petukhov, M.P. (1979). *Agrochemistry and fertilization system*. Textbook. (p.384). Moscow, "Kolos".
  11. Vakhobov, A., et al. (2012). *Soil doctor. Study guide*. (p.42). Andijon: "Life."
  12. Vaxobov, A., & Mirzaev, O. (2001). The effect of Biogumus on the growth, development and yield of cotton. *Bulletin of agrarian science of Uzbekistan*. Tashkent, issue 2.

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## MATHEMATICAL MODELS OF THE HEAT AND MASS EXCHANGE PROCESS DURING PNEUMO-TRANSPORTATION OF COTTON-RAW

**Abstract:** In the scientific literature, there is not enough information on the change in the heat-moisture states of raw-cotton and its components during processing. The article defines the patterns of changes in the heat and humidity conditions of raw-cotton and its components during pneumatic transportation, depending on the initial moisture content of raw-cotton and atmospheric air. Mathematical models for calculating the temperature and moisture content of raw cotton during cooling obtained.

**Key words:** raw-cotton; processing; drying; cooling; humidity; heat transfer; heat capacity; heating.

**Language:** English

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### Introduction

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The effectiveness of the process largely depends on the manufacturability of the processed material. In the primary processing of raw-cotton, its components must have the appropriate thermal and humidity conditions, in which the cleaning and ginning processes are successful, they should be more susceptible to shedding and fiber separation without damage to the seeds, i.e. in technological states [1-5].

In the process of processing, raw-cotton undergoes various effects of thermo-mass transfer phenomena that change the heat of the humidity conditions of raw-cotton and its components. For example, from a riot, raw cotton is conveyed by pneumatic conveying to a drying unit, while it is

ventilated with atmospheric air, as a result, heated raw material in riots is cooled in certain values, and a certain amount of free moisture evaporates. Then, during the drying process, it is heated and dried, depending on the initial humidity, the temperature of the drying agent, and the productivity of drying plants on wet cotton according to certain consistent pattern [6, 7] and the next process, are transported by air, and here it is along the way ventilated and cooled.

In the process of cleaning it is also cooled, after which it again goes with the help of pneumatic conveying to the ginning process, cooling down along the way. In the process of ginning, raw-cotton is heated in contact with the surfaces of the saws and the friction between them in a dense raw roller. In the scientific literature, there is not enough information on changes in the heat-moisture states of raw-cotton and

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its components during processing. Therefore, the study of changes in these indicators is relevant from the point of view of the management of technological states in the process of cleaning and ginning.

Objects and methods of research: Given that mainly cotton is transported by air, in the interval from time  $t = 0$  to time  $t = t^*$ , the raw material components are cooled in pneumatic transport under the influence of atmospheric air. Raw-cotton is absorbed from a distance of  $X = L$  or, starting from the cross-section of  $X = 0$ , it is exposed to atmospheric air.

In pneumatic transport, raw cotton moves at a speed of  $V$ . Denote the heating temperature of the fiber  $T_1(t)$ , the heating temperature of the seeds -  $T_2(t)$ , and the air temperature  $T_e$ . Imagine that seed cooling occurs through the pulp.

The heat transfer between the fiber and the seed is characterized as follows:

$$\alpha_2 [T_1(t) - T_2(t)]$$

Also, the heat exchange between air and fiber has the following expression:

$$\alpha_1 [T_1(t) - T_b(t)]$$

Where  $T_1(0)$  and  $T_2(0)$  – initial heating temperatures, respectively, of fiber and seeds.

Where  $T_1(0)$  and  $T_2(0)$  – initial heating temperatures, respectively, of fiber and seeds. At any point in the cross-section  $[0, L]$ , the temperatures of the components  $T_1(t)$  and  $T_2(t)$  are determined by time depending on  $T_b = T_e(t)$  the temperature of the atmospheric air.

Given the foregoing, we write the kinetic equations according to the principle of heat transfer in the following form [8.9]:

$$\begin{cases} c_1 \rho_1 \frac{dT_1}{dt} = \lambda_1 \frac{4(T_{10} - 2T_1 + T_{\text{БЫХ}})}{L^2} - c_2 \rho_2 V \frac{T_{\text{БЫХ}} - T_{10}}{L} + \alpha_1 (T_e - T_1) + \alpha_2 [T_2 - T_1] + 0,01 \varepsilon_1 \rho_1 r_{21} \frac{dw_1}{dt} \\ c_2 \rho_2 \frac{dT_2}{dt} = \alpha_2 [T_1 - T_2] + 0,01 \varepsilon_2 \rho_2 r_{21} \frac{dw_2}{dt} \end{cases} \quad (1)$$

with initial conditions

$$T_1(0) = T_{10}, T_2(0) = T_{20} \quad (2)$$

Where  $c_1, c_2$  - density, respectively, of fiber and seeds;

$\rho_1, \rho_2$  - density, respectively, of fiber and seeds;

$\lambda_1$  - coefficient of thermal conductivity of the fiber;

$\alpha_1, \alpha_2$  - heat transfer coefficients, respectively, of air-fiber and fiber-seed.

We write the system (1) in the form

$$\begin{aligned} f_1(t) &= \left( 4\lambda_1 \frac{T_{10} + T_{\text{БЫХ}}}{L^2} - c_1 \rho_1 V \frac{T_{\text{БЫХ}} - T_{10}}{L} + \alpha_1 T_e(t) + 0,01 \varepsilon_1 \rho_1 r_{21} \frac{dw_1}{dt} \right) \\ f_2(t) &= \frac{0,01 \varepsilon_2 \rho_2 r_{21}}{c_2 \rho_2} \frac{dw_2}{dt} \end{aligned}$$

To solve system (3), we first consider homogeneous equations

$$\begin{cases} \frac{dT_1}{dt} = -a_{11} T_1 + a_{12} T_2 + f_1(t) \\ \frac{dT_2}{dt} = -a_{21} T_1 + a_{22} T_2 + f_2(t) \end{cases} \quad (3)$$

Where

$$a_{11} = \frac{\alpha_1 + \alpha_2 + \frac{2\lambda_1}{L^2}}{c_1 \rho_1},$$

$$a_{12} = \frac{\alpha_2}{c_1 \rho_1}, a_{11} > a_{12}$$

$$a_{21} = \frac{\alpha_2}{c_2 \rho_2}, a_{22} = a_{21}, a_{22} < a_{12}$$

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$$\begin{cases} \frac{dT_1}{dt} = -a_{11}T_1 + a_{12}T_2 \\ \frac{dT_2}{dt} = -a_{21}T_1 + a_{22}T_2 \end{cases} \quad (4)$$

For that a characteristic equation is [10,11]

$$\Delta = \begin{vmatrix} -a_{11} - \lambda & a_{12} \\ -a_{21} & a_{21} - \lambda \end{vmatrix} = (-a_{11} - \lambda)(a_{21} - \lambda) + a_{21}a_{12} = 0$$

And from this we get this one,

$$\begin{aligned} \lambda^2 + (a_{11} - a_{21})\lambda + a_{21}a_{12} - a_{11}a_{21} &= 0 \quad \text{или} \\ \lambda^2 + (a_{11} - a_{21})\lambda - a_{21}(a_{11} - a_{12}) &= 0 \end{aligned}$$

The solution to this equation has the form

$$\lambda_{1,2} = -\frac{a_{11} - a_{21}}{2} \pm \sqrt{\frac{(a_{11} - a_{21})^2}{4} + a_{21}(a_{11} - a_{12})}$$

As,

$$\begin{aligned} a_{11}^2 - 2a_{11}a_{21} + a_{21}^2 + 4a_{21}a_{11} - 4a_{21}a_{12} &= a_{11}^2 + 2a_{11}a_{21} + a_{21}^2 - 4a_{21}a_{12} = (a_{11} + a_{21})^2 - 4a_{21}a_{12} = \\ a_{11}^2 + a_{21}^2 + 2a_{21}(a_{11} - 2a_{12}) &\geq 4a_{21}a_{11} - 4a_{21}a_{12} = 4a_{21}(a_{11} - a_{12}) > 0 \end{aligned}$$

then, the general solution of system (4) can be written in the form

$$\begin{aligned} T_1 &= c_1 e^{\lambda_1 t} + c_2 e^{\lambda_2 t} \\ T_2 &= \tilde{c}_1 e^{\lambda_1 t} + \tilde{c}_2 e^{\lambda_2 t} \end{aligned}$$

Substituting in (4)

$$c_1 \lambda_1 e^{\lambda_1 t} + c_2 \lambda_2 e^{\lambda_2 t} = -a_{11}(c_1 e^{\lambda_1 t} + c_2 e^{\lambda_2 t}) + a_{12}(\tilde{c}_1 e^{\lambda_1 t} + \tilde{c}_2 e^{\lambda_2 t})$$

Hereof

$$\begin{cases} c_1 \lambda_1 = -a_{11}c_1 + a_{12}\tilde{c}_1 \\ c_2 \lambda_2 = -a_{11}c_2 + a_{12}\tilde{c}_2 \end{cases} \quad (5)$$

Hence,

$$\begin{aligned} \tilde{c}_1 &= \frac{\lambda_1 + a_{11}}{a_{12}} c_1 \\ \tilde{c}_2 &= \frac{\lambda_2 + a_{11}}{a_{12}} c_2 \end{aligned}$$

Then, the general solution of the homogeneous system can be written as

To solve the heterogeneous system (5), we use the method of uncertain coefficients:

$$\begin{cases} T_1 = c_1(t)e^{\lambda_1 t} + c_2(t)e^{\lambda_2 t} \\ T_2 = \frac{\lambda_1 + a_{11}}{a_{12}} c_1(t)e^{\lambda_1 t} + \frac{\lambda_2 + a_{11}}{a_{12}} c_2(t)e^{\lambda_2 t} \end{cases} \quad (6)$$

We find the first derivatives

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$$T_1' = c_1' e^{\lambda_1 t} + \lambda_1 c_1 e^{\lambda_1 t} + c_2' e^{\lambda_2 t} + \lambda_2 c_2 e^{\lambda_2 t}$$

$$T_2' = \frac{\lambda_1 + a_{11}}{a_{12}} c_1' e^{\lambda_1 t} + \frac{\lambda_1 + a_{11}}{a_{12}} \lambda_1 c_1 e^{\lambda_1 t} + \frac{\lambda_2 + a_{11}}{a_{12}} c_2' e^{\lambda_2 t} + \frac{\lambda_2 + a_{11}}{a_{12}} \lambda_2 c_2 e^{\lambda_2 t}$$

From 1

$$(c_1' + \lambda_1 c_1) e^{\lambda_1 t} + (c_2' + \lambda_2 c_2) e^{\lambda_2 t} = -a_{11} c_1 e^{\lambda_1 t} - a_{11} c_2 e^{\lambda_2 t} + (\lambda_1 + a_{11}) c_1 e^{\lambda_1 t} + (\lambda_2 + a_{11}) c_2 e^{\lambda_2 t} + f_1(t)$$

Then

$$c_1' e^{\lambda_1 t} + c_2' e^{\lambda_2 t} = f_1(t) \quad \kappa_1 = \frac{\lambda_1 + a_{11}}{a_{12}} ; \quad \kappa_2 = \frac{\lambda_2 + a_{11}}{a_{12}}$$

$$\frac{\lambda_1 + a_{11}}{a_{12}} c_1' e^{\lambda_1 t} + \frac{\lambda_2 + a_{11}}{a_{12}} c_2' e^{\lambda_2 t} = f_2(t) \quad (\kappa_2 - \kappa_1) e^{\lambda_1 t} c_1'(t) = \kappa_2 f_1(t) - f_2(t)$$

Hence,

$$c_1' e^{\lambda_1 t} + c_2' e^{\lambda_2 t} = f_1(t) \quad c_1'(t) = \frac{1}{\kappa_2 - \kappa_1} e^{-\lambda_1 t} (\kappa_2 f_1(t) - f_2(t))$$

$$\kappa_1 c_1' e^{\lambda_1 t} + \kappa_2 c_2' e^{\lambda_2 t} = f_2(t)$$

From here, we find the coefficients

Where

$$c_1(t) = \frac{1}{\kappa_2 - \kappa_1} \int_0^t (\kappa_2 f_1(t) - f_2(t)) e^{-\lambda_1 t} dt + c_1(0) \quad (7)$$

$$c_2(t) = \frac{1}{\kappa_1 - \kappa_2} \int_0^t (\kappa_1 f_1(t) - f_2(t)) e^{-\lambda_2 t} dt + c_2(0)$$

Using the initial conditions of exercise (2) we find

$$\begin{cases} c_1(0) + c_2(0) = T_{10} \\ \kappa_1 c_1(0) + \kappa_2 c_2(0) = T_{20} \end{cases}$$

Solving above, we get

$$c_1(0) = \frac{\kappa_2 T_{10} - T_{20}}{\kappa_2 - \kappa_1} \quad (8)$$

$$c_2(0) = \frac{\kappa_1 T_{10} - T_{20}}{\kappa_1 - \kappa_2}$$

Where

$$\kappa_2 - \kappa_1 = \frac{\lambda_2 + a_{11}}{a_{12}} - \frac{\lambda_1 + a_{11}}{a_{12}} = \frac{\lambda_2 - \lambda_1}{a_{12}}$$

Finally, we obtain formulas (6) - (8) for calculating the temperature of the fiber and seeds during the transportation of raw-cotton.

Problem (1), (2) requires knowledge of the law of change in humidity of raw-cotton and its components. During the cooling period, the "drying" speed usually increases from zero to a value of a certain speed. In this regard, the kinetics of moisture changes in raw-cotton and its components at the initial

moment, the cooling period can be approximated by equation [12].

$$-\frac{dW}{d\tau} = k(W_H - W)^m, \quad W|_{\tau=0} = W_H \quad (9)$$

where  $k$  is the cooling coefficient;  $W_H$  is the initial humidity;  $m$  is a constant that is less than unity and is determined only by the form of the connection of moisture with the material.

Integrating equations (9) we obtain the formula for calculating the cooling duration:

$$\tau = \frac{1}{k(1-m)} (W_H - W)^{1-m} \quad (10)$$

The unknown coefficient  $k$  is determined by the least-squares method using the experimental data of humidity  $W_i$  and time  $\tau_i$  from the condition [13]

$$S = \sum_{i=1}^N \left[ \frac{1}{(1-m)} (W_H - W_i)^{1-m} - k\tau_i \right]^2 \rightarrow \min$$

Whence, having equated to zero the first derivative of  $S$  concerning  $k$ , we obtain



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$$k = \frac{\sum_{i=1}^N Z(W_i)\tau_i}{\sum_{i=1}^N \tau_i^2},$$

$$Z(W_i) = \frac{1}{(1-m)}(W_H - W_i)^{1-m} \quad (11)$$

where  $N$  is the amount of experimental data.

We determine the unknown  $m$  from the condition of reaching the maximum of the pair correlation coefficient by its absolute value:

$$\max |R|$$

where

$$R = \frac{\sum_{i=1}^N Z(W_i)\tau_i}{\sqrt{\sum_{i=1}^N Z^2(W_i)} \sqrt{\sum_{i=1}^N \tau_i^2}}$$

To calculate the change in humidity from (10) we get

$$W = W_H - (k \cdot (1-m) \cdot \tau)^{\frac{1}{1-m}} \quad (12)$$

Where the cooling rate is calculated by the formula:

$$\frac{dW}{d\tau} = -k^{\frac{1}{1-m}} \cdot \tau^{\frac{m}{1-m}} (1-m)^{\frac{m}{1-m}} \quad (13)$$

**Results and discussion:** Figure 1 and fig. 2 shows the curves of changes in the temperature of the fiber and seeds. The parameters entering into equations (1) - (2) selected from the literature [14, 15]. To verify the adequacy of the model and its solution, experimental data used.

The calculations carried out with the following values: the initial temperature of the fiber 71°C and seeds 57°C (Fig. 1) and, respectively, 40°C and 35°C (Fig. 2), air temperature  $T_{603} = 10^0C$ .

The parameters entering into equations (1) - (2) selected from the literature [14, 15]. To verify the adequacy of the model and its solution, experimental data used.

In the Uchkurgan ginnery, raw cotton of selection grade S-6524, manual picking, industrial-grade I, with an initial moisture content of  $W = 10.0$  and industrial-grade II, with an initial moisture content of 14.3% was studied. After drying them in a 2SB-10 dryer at a temperature of drying agent  $T = 100$  and  $200^{\circ}C$ , the productivity of 3.5 and 10 t / h and after pneumatic transportation at a distance of 25 m, a change in humidity and heating temperature of raw-cotton and its components determined.

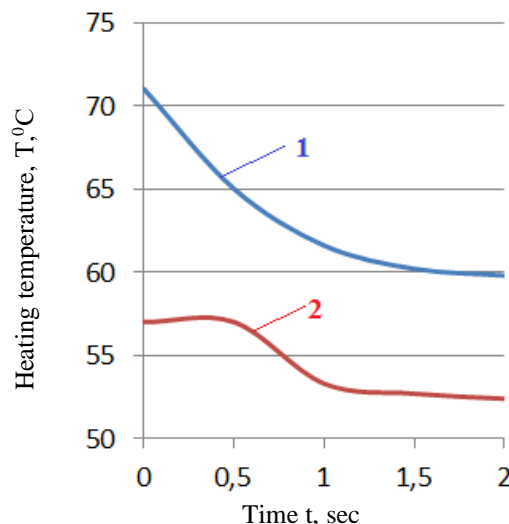


Fig. 1. Cooling fiber (1) and seed (2) during pneumatic conveying

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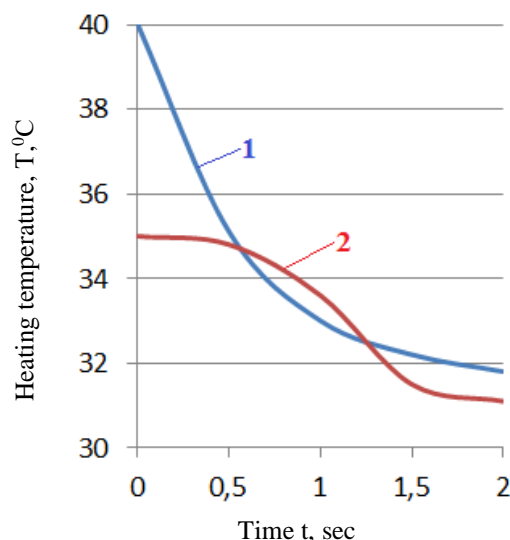


Fig. 2. Cooling fiber (1) and seed (2) during pneumatic conveying

As can be seen from fig. 1 and fig. 2, at the beginning of the cooling process, the heating temperature of the seeds changes slightly, and subsequently, the cooling intensity increases, i.e. the seeds cool quickly. At the end of the process, the rate of cooling of the seeds decreases. This is because, at the beginning of the process, the temperature of the fiber is higher than that of the seeds.

A comparison of the experimental data on the temperature changes of raw cotton components during pneumatic conveying and the calculated ones according to the solution (6) - (8) show that the relative error is no more than 5%, which allows the use of this algorithm to calculate the temperature and moisture content of raw cotton during cooling.

## References:

1. Madumarov, I.D. (1993). *Intensification of the cleaning process with optimization of the heat-moisture state of raw cotton*: Dis. Candidate of Technical Science. (p.160). Tashkent.
2. Anthony, W.S., & Griffin, A.C. (2001). Fiber breakage at gins: moisture and heat. *Cotton Gin and Oil Mill Press*, 102(23): pp.10-13.
3. Byler, R.K. (2006). Historical Review on the effect of moisture content and the addition of moisture to seed cotton before ginning on fiber length. *Journal of Cotton Science*, 10: pp.300-310.
4. Byler, R.K. (2003). *Moisture restoration for seed cotton, two approaches*. (pp.1358-1361). In Proc. Beltwide Cotton Conf. Nashville, TN. 6-10 Jan. 2003 Natl. Cotton Council, Memphis, TN.
5. Byler, R.K. (2005). The effect of modest moisture addition to seed cotton before the gin stand on fiber length. *Journal of Cotton Science*, 9: pp.145-154.
6. Kayumov, A.H. (2017). The influence of drying regimes in moisture of raw cotton and its components. *Journal of Textile Science & Engineering*, pp.1-4.
7. Parpiyev, A.P., Kayumov, A.H., & Pardayev, H. (2016). Effect of temperature of steady heating components of cotton-seed at drying process. *European science review*, -Vienna. №7-8, pp.205-207.
8. Lykov, A.V. (1978). *Heat and mass transfer* (reference book). (p.480). Moscow: Energy.
9. Lykov, A.V. (1978). «*Heat and mass transfer*». (p.450). State Energy Publishing House.
10. Piskunov, A.S. (1974). *Differensial va integral hisob*. Tashkent: «O'qituvchi».
11. Salohitdinov, M.S., & Nasritdinov, O'.N. (1994). *Oddiy differensial tenglamalar*. (p.383). Tashkent: «Uzbekiston».

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---

12. Mamatov, A.Z. (1995). *Modeling the technology of drying raw cotton in order to improve the quality of fiber*. -Diss. student step. Doctor of Technical Sciences.
13. Mikhlin, S.G. (1966). *Numerical implementation of variational methods*. (p.432). Moscow: Nauka.
14. Parpiev, A.P. (1990). *The basics of a comprehensive solution to the problems of maintaining fiber quality and increasing productivity in the preliminary processing of raw-cotton*. Diss. student step. Doctor of Technical Sciences, (p.450). Tashkent.
15. Kadyrov, B.G., Maksudov, I.T., Uldyakov, A.I. (1982). *Theory and practice of drying raw-cotton*. Tashkent: Ukituvchi.

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## READING IN THE PROCESS OF LITERARY EDUCATION DIAGNOSIS OF CULTURE AND MODERN APPROACH TO CORRECTION

**Abstract:** *Navoi made a great contribution to the development of comparative linguistics. His work "Muhokamat-ul lugatain" was devoted to the comparison of unrelated languages, but this side of the work of the poet and thinker is still insufficiently studied. This article covers this problem.*

**Key words:** *General linguistics; historical and comparative method; comparative method; comparative studies; related languages; classification of languages.*

**Language:** *English*

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### Introduction

Today, in our country on the basis of the "strategy of action on five priority directions of development of the Republic of Uzbekistan in 2017-2021" huge changes are being made in all spheres and sectors. In this regard, special attention is paid on the basis of a new modern approach to finding deep solutions to the noble values and traditions in the life of society, in particular, to raising the spiritual potential, consciousness and outlook of our people, especially the younger generation, to the development of a culture of reading, which is of invaluable importance in the upbringing. The role and role of the general culture, that is, the gross level of social, economic, spiritual preparation of the reader-youth in the formation, formation and development of the content of the culture of reading in society, can not be overemphasized. The culture of reading, in turn, dictates interest in the book, the incentive of readers to get acquainted with the literature more widely, to have special knowledge about the book and its work, as well as skills and qualifications in the full use of information sources. The culture of reading ensures that a person has such characteristics that he fully understands the source, receives aesthetic pleasure from it, understands the idea and idea of the author and can evaluate it. Choosing a book, reading it quickly, keeping it cautiously, setting up a personal library,

recommending read books to others are also included in the culture of reading. Hence, the culture of reading directs a person to enter into direct practice, to reconcile with life, to receive spiritual benefit<sup>1</sup>. The fight against ideological risks and threats during today's intense and complex globalisation is closely connected with the solution of a number of topical issues such as raising the culture of reading, especially the promotion of children and young people to the book, promoting reading in libraries. The decree of the president of the Republic of Uzbekistan "on the development of the system of printing and distribution of book products, increasing the reading and reading culture, as well as establishing a commission for the promotion of book products" dated 12 January 2017, F-4789, is of great importance with the aim of raising these noble works to a new, higher A number of research works have been carried out in our republic on the formation of the culture of reading on the basis of the technology, level and intensity of reading. In particular, the doctor of sociological Sciences A.A.Umarov" the role of reading in ensuring socio-cultural development and the formation of a perfect human personality", D.The collaboration of librarians and teachers of Educational Sciences in the educational process "ganieva" the important structural aspects of the reading culture in the research work named 3 are associated with the principles of

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volunteerism, consciousness in obtaining education, free choice of the type of activity, the need for self-development, and this modern approach will serve as an important factor in the formation Today, in the process of literary education, a number of topical issues such as the development of the culture of reading in students, especially children and young people, the promotion of reading in libraries are closely related to the solution. The decree of the president of the Republic of Uzbekistan "on the development of the system of printing and distribution of book products, increasing the reading and reading culture, as well as establishing a commission for the promotion of book products" dated 12 January 2017, F-4789, is of great importance with the aim of raising these noble works to a new, higher A number of research works have been carried out in our republic on the formation of the culture of reading on the basis of the technology, level and intensity of reading. In particular, the doctor of sociological Sciences A.A.Umarov "the role of reading in ensuring socio-cultural development and the formation of a perfect human personality", D.The collaboration of librarians and teachers of Educational Sciences in the educational process "ganieva" the important structural aspects of the reading culture in the research work named 3 are associated with the principles of volunteerism, consciousness in obtaining education, free choice of the type of activity, the need for self-development, and this modern approach will serve as an important factor in the formation Today, in the process of literature education, it is important to diagnose, correct the development of a culture of reading in students on the basis of a modern approach. The effectiveness of reading and learning artistic works, their artistic perception, analysis, diagnosis are the basis of the culture of reading, which is carried out mainly in practice, in connection with experimental and test works. Diagnosis of the culture of reading means the determination, control, estimation of the further development of the reality, the formation of the skills and skills of reading in the students. In the process of literary education, the effectiveness of reading and learning artistic works, their artistic perception is carried out mainly in connection with practical training. In the process of literary education, the academic Lyceum of the Tashkent State Pedagogical University named after Nizami, the academic Lyceum of the Tashkent Institute of textile and light industry and the academic Lyceum of Karshi State University conducted experimental and testing works on the diagnosis and correction of reading, reading culture of books. This study covers 165 readers with. As a result, on the basis of integration of the literary education process with the language education, it was determined that the following situations should be taken into account: – the text in the work of art should be read, after the initial questions and answers, the implementation of

incarnation assignments, as well as what aspects of speech development should be provided as a result On the basis of reading, the experience of students on the cultivation of speech, expressive and fast reading in the work of art, work on the text of the work gives a good result. Vocabulary and word forms gram will focus on mastering the pronunciation and spelling of grammatical means, increasing the vocabulary of the reader and improving the skills of building a sentence, creating a texttirishga to FA boy this wealth. Correction - derived from the Latin word sorrectus, which means correction, correction. The incredibly large educational and educational role of the mutolaa is due to these effective conditions. It is of incomparable importance in the improvement of the speech of students as a subject of study, in the rise of the children's reading culture, in the formation and development of the ability to fully artistic perception of the book. It is known that the perception of artistic works goes to the perception and acceptance of the system of images in it. Training, seminars are important in the correction of reading. Bunda teacher and student collaboration is a decisive factor. Since this factor is fully operational, there is a ideological, moral, aesthetic development in the personality of the reader. The ability to visualize, collaborate creatively, and at the same time the skills and skills, talents and abilities of expressive reading, verbal and written statement of thought are formed. Methodist scientist q.Yoldoshev recommends three main methods of reading an artistic work:

- creative perception (analysis, creative reading, research);
- analysis, interpretation;
- synthesis, unification

Continue their interpretation of the artistic work on readingtirib, the scientist emphasizes creative reading. In addition, expressive and interpretive reading, questioning of the teacher and the pupil, conversation with the pupils, discussion of assignments on the basis of artistic works and vital observations, drawing up questions and plans are the main factors in diagnosing the culture of reading. The method of creative reading is not a novelty for the science of literature. In the lessons of literature, creative reading, expressive reading are often used to refer to the fact that actors read some scenes from plays. It is envisaged that they will be updated, will teach students expressive reading, will teach the teacher to interpret the artistic text (annotated reading) and will ensure their deeper emotional perception of the work methodologist scientist M.A Mirgasimova showed: "literary analysis begins with expressive reading of a poem or prose work". During the reading, the system of thought created by the creator is understood, mastered, discussed, the main attention is drawn to the content, the inner meanings of the image in the process of reading, while the poetic landscape created by the reader or writer is not given in depth

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importance to the visual means used by the poet or writer in creating the But in the process of analysis, all the tools mobilized to express those meanings are studied<sup>1</sup>. The fact that the artistic reading of the work as impressive in the class never leaves students indifferent, penetrates into their psyche and creates a positive impression, which is evidenced by many experiments that interest in the work. In particular, in addition to attracting the attention of students to the works read in the class with an artistic expression, they also educate a sense of reverence to the teacher who studies with art, in each of which there is a tendency to read the work in the same way. Methodist scientist R.Niyozmetova talked about the comments and comments that the teacher gives to the students, telling the reader about his personal, often incomprehensible situations, and sometimes the need to come up with "strange" questions<sup>2</sup>. The study of

interpretation includes not only the interpretation of unfamiliar words and combinations of words, phrases and complex pronouns, names of historical places and symbols of some literary heroes, but also the study of the ideological and artistic features of the work by means of literary aesthetic analysis. Questions and Assignments give the most correct ways of studying the work of art, the text of the work. In the creation of a system of questions and assignments, the analysis of the work of art as a whole is considered as the main rule. Accordingly, it is necessary to use a wide range of questions and assignments aimed at understanding the character of the image personage in the work, to mobilize the reader to the study of the language of the artistic work through a series of questions and assignments, and also to take into account the genre nature of the work under study.

## References:

1. Abdulazizov, A. (2010). *Sociological analysis of the process of formation of a culture of reading in academic lyceums and professional colleges*. SOS. science. candidate disse. (p.25). Tashkent.
2. Ganieva, D. (2008). *Cooperation of librarian and teachers of Educational Sciences in the educational process*. Pedagogical science. candidate disse. (pp.90-108). Tashkent.
3. Yoldoshev, Q. (1997). *Scientific and methodological bases of teaching literature in updated pedagogical thought and secondary schools*. Pedagogical science. doctor disse. (p.256). Tashkent.
4. (2008). *Mashriq ground-storm of wisdom*. Translator, coupler, references and authors of comments: H.Hamidi and M.Hasani. Full. 2-edition. (p.464). Tashkent: "East".
5. Mirqasimova, M. (2006). *Fundamentals of formation and improvement of skills of literature analysis in students*. (p.18). Tashkent: "Science".
6. Narzollaev, A. (n.d.). *The book is a cultural and spiritual heritage of the nation.* / muslim. face/.../ 2328-book-nation-madaniy-and-ma-navij-m
7. Niyozmetova, R.H. (2007). *Theoretical methodological basis of studying Uzbek literature in the system of continuing education*. Pedagogical science. doctor disse. (pp.14-51). Tashkent.
8. Umarov, A. (2004). The culture of reading (whether the book is for man or man is for the book). *Gazetesi "life and law"*, issue 6.
9. Umarov, A.A. (2005). *The role of the vanguard in ensuring socio-cultural development and the formation of a perfect human personality*. SOS. science. doctor disse. (pp.240-241). Tashkent.
10. Husanbueva, Q.P. (2007). *Scientific and methodological bases of teaching students independent thinking in the process of literary education*. Pedagogical science. doctor disse. (p.262). Tashkent.

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## CHARACTERISTICS OF WATER EXCHANGE IN THE PHASE OF WAX MATURATION OF VARIETIES

**Abstract:** it has been learned features of water exchange during the wax ripeness phase of wheat varieties in soil climatic condition in Surkhandarya region.

**Key words:** Wax ripeness, triticum v. growth, development, number of grain, transpiration, ecological factors.

**Language:** English

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**Introduction****UDC 633.113.1**

Water is undoubtedly the most important substance for the life of living organisms. Thanks to water, plants receive the necessary nutrients. Water forms the main part of plants, and they play an important role in life activity. [4]. The role of water in the life of plants, consists of water 70-95% of the content of plant tissues. In all organs of the plant there

will be water: in the Leaf-90%, in the branch-70-80%, in the root-50-60%, in the seed-10%, in the vacuole-98%, in the cytoplasm-80%, in the shell-about 50% water threeraydi. In some wild fruits very much: in the tomato-94%, in the watermelon-up to 92% will be water [1,3].

Proceeding from the above information, we have reaped the water-exchange characteristics of bug'doy varieties, according to their phases of growth and development.

**1.1 table.**

№	Sorts	On leaves			
		total amount of water in %	the intensity of transpiration g/m <sup>2</sup>	water deficit %	ability to hold water %
1	Andijan-1	75,6	23,6	5,33±0,02	6,5±0,01
2	Andijan-2	76,1	22,2	5,26±0,04	6,3±0,04
3	Asr	76,9	21,5	4,41±0,05	6,2±0,05
4	Omad	79,4	21,1	3,87±0,03	6,8±0,04
5	Grom	80,6	19,4	3,65±0,03	5,6±0,01
6	Tanya	83,6	17,6	2,89±0,06	4,5±0,03

From the information presented in the table, it becomes clear that all varieties studied differ from each other in their water-exchange properties. If the total amount of water in the leaves is 75,6% g of top in Andijan 1 variety, 76,1% g of top in Andijan 2

Variety, it was found that it is 0,5% more than in Andijan 1 variety. In the leaves of the century-old Variety, the total amount of water is 76,9% gateng, it was observed that it is 1,3% more than in Andijan 1 variety.

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It was observed that the total amount of water in the leaves of the Andijan variety was 79.4%, compared to Andijan 1 Variety was 3.8%. It was found that the total water content of the Chromium variety is 80.6% and Andijan is 5.0% more than 1. 83.6% of the Tanyaoyoy variety is water, which is 8.0% more than the Andijan 1 variety.

According to this data, it was determined that in relation to the amount of water in the leaves of the Andijan-1 bug'doy variety, water is the most abundant in the leaves of the Tanya navoy variety, and other varieties are intermediate.

The intensity of shrinkage that occurs in plant leaves is also one of the characteristics of plant water exchange. According to the data indicated in the table (table 3.5), if the leaves of Andijan 1 bug'doy varieties were polished 23.6 g of water during 1 hour at the level of 1 m<sup>2</sup> leaves, 17.6 g of water evaporated from the leaves of Tanya navoy varieties within the same period, that is, in the same period Tanya navi polished 6.0 g. The remaining varieties also occupy intermediate places and polished less water than Andijan 1 grade, that is, Andijan 2 grade polished 1.4 g, Century Grade 2.1 g, luck grade 2.5 g, Chrome grade 4.2 g less water. This indicator shows that the varieties also differ sharply from each other in terms of the intensity of spinning.

Bug'd the water shortage in the leaves of the willow varieties also varies depending on the characteristics of the variety. If the water shortage in the leaves of the Andijan 1 Variety is equal to 5.33%, Andijan 2 varieties are equal to 5.26%, which is 0.07% compared to Andijan 1 varieties, 0.92% in the varieties of the century, 1.46% in the varieties of luck, 1.68% in the varieties of chromium and 2.44% in the varieties of Tanya. It was found that there is less water shortage compared to the leaves of Andijan 1 bug'doy variety.

Similar to the water shortage, the water storage capacity of its leaves is also the most important indicator of the degree of drought resistance of plants to harakter. If the water storage capacity of the leaves of Andijan-1 plant is the lowest in comparison with other varieties, and the amount of Water spent during

1 hour is equal to 6.5%, Andijan-2 plant spent 6.3% of water in the same period and the difference between them is equal to 0.2%.

the amount of water consumed from the leaves of cAsr navoy varieties is equal to 6.2%, it is less than 0.3%, if the leaves of the CaSR bug'doy varieties shine 5.8% water in the same term, Andijan shine 0.7% water compared to the 1 variety, Andijan shine 5.6% water in 1 hour, Andijan shine 0.9% water

This data shows that the water storage capacity of the Andijan-loyoy variety is the lowest, the water storage capacity of the Tanya navoy variety is the highest. The remaining varieties occupy an intermediate position in terms of water storage capacity. Thus, based on the water-exchange characteristics of the Andijan varieties, their level of drought resistance can be placed in the following order: Andijan 1 < Andijan 2 < Century < Amen < Chromium < Tanya that is, among the studied varieties, the drought resistance of Andijan 1 is the lowest, the drought resistance of Tanyaoyoy varieties is the highest and the remaining options are located in the

These data obtained in our experiment are described more clearly in 1.1. table.

The amount of water consumed from the leaves of the century-old variety is equal to 6.2%, it is less than 0.3%, if the leaves of the Amasya variety are polished by 5.8% water in the same term, Andijan 1 polished by 0.7%, Andijan 1 polished by 5.6% water in 1 hour, Andijan 1 polished by

This data shows that the water storage capacity of the Andijan-loyoy variety is the lowest, the water storage capacity of the Tanya navoy variety is the highest. The remaining varieties occupy an intermediate position in terms of water storage capacity. Thus, based on the water-exchange characteristics of the Andijan varieties, their level of drought resistance can be placed in the following order: Andijan 1 < Andijan 2 < Century < Amen < Chromium < Tanya that is, among the studied varieties, the drought resistance of Andijan 1 is the lowest, the drought resistance of Tanyaoyoy varieties is the highest.

## References:

1. Vavilov, P. P. (1980). *Silicrylic*. (p.630). Tashkent: Otovci.
2. Amanov, A. A. (2005). Quality of grain of collection samples of wheat. *"Uzbekistan Kishlok khuzhaligi" journal*, no. 3, pp.16-17.
3. Amonov, M. A. (1978). *Stability of wheat in Uzbekistan to unfavorable environmental factors*. (p.92). Tashkent: Fan.
4. (2007). *"O'simliklar fiziologiyasi"* M.T.Sagdiyev, R.A.Alimova. *"Yangiyul Poligraph Service"*, Toshkent-2007 o'quv qo'llanma.



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5. Qodirova, D.N. (2020). The impact of the environment on growth and development of ginger (*zingiber officinale*) in the soil and climate conditions of surkhandarya. *Nauka i mir*, № 9 (85), Tom 1.
6. Jabborova, D., et al. (2020). Isolation and characterization of endophytic bacteria from ginger (*Zingiber officinale* Rosc.) *Annals of Phytomedicine* 9(1): 116-121.
7. Egamberdieva, D., Jabborova, D., & Berg, G. (2016). Synergistic interactions between *Bradyrhizobium japonicum* and the endophyte *Stenotrophomonas rhizophila* and their effects on growth and nodulation of soybean under salt stress. *Plant and Soil*, 405(1):35-45.
8. Egamberdieva, D., Jabborova, D., & Hashem, A. (2015). *Pseudomonas* induces salinity tolerance in cotton (*Gossypium hirsutum*) and resistance to *Fusarium* root rot through the modulation of indole-3-acetic acid. *Saudi J. Biol. Sci.*, 2: 17-22.
9. Egamberdieva, D., Jabborova, D., & Wirth, S. (2013). *Alleviation of salt stress in legumes by co-inoculation with Pseudomonas and Rhizobium*. In: *Plant-Microbe Symbiosis-Fundamentals and Advances*, Editor: Arora, N. K. Springer, India, pp.291-301.
10. Egamberdieva, D., Jabborova, D., Stephan, W., Pravej, A., Alyemeni, M.N., & Parvaiz, A. (2018). Interaction of magnesium with nitrogen and phosphorus modulates the symbiotic performance of soybean with *Bradyrhizobium japonicum* and its root architecture. *Frontiers in Microbiol*, 9: 1-11.

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## THE POPULATION BANDHINI TAMINES, TURMUS OF REGINE OSHIRILDI HUMILIATION TAGIROVA AND USING UZBEKISTANA CHARACTERISTIC

**Abstract:** The article presents successful world experience in the implementation of housing policy. The issues of state participation in supporting the acquisition of residential real estate by the population affecting the allocation of social housing and the provision of benefits are considered. The essence of market mechanisms for attracting private capital in housing construction is also revealed: a system of building savings, mortgage lending and leasing. Their advantages are noted and shortcomings are revealed. Taking into account the analysis of foreign practice in the framework of implementing national priorities in terms of providing citizens with affordable and comfortable housing, the main directions for improving the existing approaches in Belarus to attract extra budgetary funds in housing construction are outlined.

**Key words:** housing policy; social housing; rent; mortgage; housing leasing; housing savings system; bank loans; government support.

**Language:** English

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### Introduction

In almost every country, special attention is paid to housing in order to ensure the social stability of society. The strategic objective of its operation is to create conditions for a sustainable and efficient turnover of the housing stock, when the needs of the population for housing are fully met, and the quality standards of its construction and operation are maintained and improved. Uzbekistan is no exception in this regard. However, at present, the issue of rational use of funds for these purposes is also relevant for our country. There is a problem of increasing the return on budget investments and finding extra-budgetary sources of financing for the construction of residential buildings, which is reflected in the National strategy for sustainable socio-economic development of the Republic of Uzbekistan for the

period up to 2020 and in the State program "housing Construction" for 2016-2020. Both documents define the development of housing construction with the primary use of extra-budgetary funds and long-term forms of lending to Belarusians as the most important priority of the national economy [1; 2].

To develop effective ways to achieve these goals, it will be advisable to refer to the world experience. Analysis of the long-term successful practice of targeted housing policy in different countries will make it possible to determine promising areas for improving its effectiveness in Uzbekistan.

According to the results of the research, it can be stated that in developed countries, the housing sector is regulated by market forces. Numerous organizations of various forms of ownership offer their services. Consumers have the opportunity to

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choose those that provide high quality construction and offer the most favorable payment terms. However, it should be noted that the state in one way or another interferes with the functioning of the housing market. The countries where this is most pronounced are the Netherlands, Sweden, and the United Kingdom, while Germany and the United States are the least intense [3].

Such intervention in its most General form is the implementation of measures that can be divided into two categories: direct government spending and tax instruments. At the same time, the patterns of state participation in solving the housing problem of its citizens vary significantly, including due to country differences in the concepts of ensuring universal welfare. For example, in Spain, housing construction is encouraged, on the one hand, to promote home ownership as a priority form of land ownership, and on the other, to develop the real estate sector as a catalyst for economic growth. This approach is not supported by all countries [3].

In General, the housing policy of developed countries is aimed at solving at least three major tasks:

- providing the population with housing that meets their needs and financial capabilities;
- promoting social diversity in response to the problem of concentration of certain social groups in disadvantaged areas;
- maintaining an appropriate environmental environment [3].

The authorities are making a lot of effort to implement them. In particular, programs are being developed and implemented to create a municipal rental housing stock. This trend is quite common in Europe (in the UK, Germany, Sweden, etc.). Theoretically, people who have the citizenship of a particular country or legal immigration status can use the right to receive this type of housing. However, the authorized body must make sure that the applicant for housing and his family members will be conscientious tenants, and their habits and actions will not have a negative impact on the surrounding environment and will not cause inconvenience to neighbors. In addition, additional conditions are set. For example, to rent municipal housing in Sweden, in most cases you need to wait in line for several years, so many Swedes join the queue as soon as they turn 18 [4].

The cost of living for each tenant is calculated individually depending on the level of their earnings, but in any case it is much lower compared to what the market dictates. For example, in Finland in 2018, the cost of renting 1 m<sup>2</sup> of a municipal apartment was 11.6 euros, while its market value was 14 euros per 1 m<sup>2</sup> per month [5].

In most developed countries, the practice of allocating social housing to those citizens who are officially recognized as unable to solve their housing problems on their own is enshrined in law. This type of assistance is provided to large families, single

mothers, the elderly, the disabled, and the main criterion is low income. In particular, in France in 2016, applicants for social housing in Paris could be adults whose financial income did not exceed 1,926 euros per month, as well as families of three people with one child, provided that their total income is less than 2,880 euros per month. Of course, these figures are much smaller in the periphery [4].

— As in the case of municipal housing, social housing is provided on a paid basis. Its marginal cost, as a rule, is established by the city administrations. On average, it ranges from 4 to 6.2 euros per 1 m<sup>2</sup> [7].

— In the world community, the state is widely involved in solving the housing problems of its citizens by allocating targeted budget allocations. Among them are:

- preferential interest rates on residential mortgage loans granted on market terms;
- provision of residential mortgage loans at below-market rates at the expense of special funds;
- creating conditions for reducing the interest rate on residential mortgage loans by using the benefits associated with the payment of interest on a mortgage loan when collecting income tax;
- support for housing savings programs;
- credit risk insurance for residential mortgage lending (mortgage insurance);
- providing a one-time payment for the initial mortgage payment (advance subsidies);
- housing Finance through state-owned banks [8].

In other words, the role of the state in solving the housing problem abroad is very large. However, the actions of the state apparatus are not aimed at replacing the market mechanism, but at maintaining it when the flow of private capital to this area slows down. It should be noted that in developed countries there are effective levers for attracting extra-budgetary sources of housing construction financing. Their content and specifics depend on the level of development of the insurance and stock markets in each particular country, as well as on the stability of the national currency exchange rate, the intensity of inflationary processes, the ability of the population to pay, and other factors that determine the overall background and dynamics of economic growth. At the same time, completely different schemes for solving the issue can often be implemented simultaneously, which together allow you to get the best result. From the point of view of the acceptability of successful experience for Uzbekistan, it is important to consider the system of construction savings, mortgage lending and housing leasing [8].

The construction savings system is understood as a set of institutional and organizational and legal conditions that allow citizens to make targeted savings and then receive housing loans based on them. Such savings are made in specialized savings institutions or in General banks that have permission to conduct

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these operations and are interested in mobilizing long-term resources. In turn, the concentration of the latter within the activities of individual financial organizations forms a partially or completely closed cycle of their movement, which makes it possible to achieve the maximum positive effect for both the

depositor and the lender. The allocation of loans is usually made on a first-come, first-served basis, but this disadvantage is covered by the lower interest rate compared to the loan capital market. At the same time, the procedure itself is much easier than when applying for a loan on a General basis [4].

**Table 1. Comparative characteristics of the French and German models of building savings**

Indicator	French model (open) of construction	German model (closed) of construction
Source of financing	Contributions from a wide range of individuals; Cash flow from active	Targeted contributions from system participants; Cash flow from active
Interest rate on loans	Floating	Fixed, preferential
Interest rate on deposits	High; is focused on raising funds from a wide range of individuals	Fixed, low
State support	Increase in the interest rate on deposits from the budget; exemption of the full interest received by the depositor from taxation	Tax benefits program; Housing savings

*Note. Compiled by authors based on [9, c. 17; 10; 11].*

In the world practice, two main models of construction savings have been developed, which each country, taking into account national priorities and cultural values, implements in its own scenario - German and French. Both are focused on expanding the volume of housing construction and increasing the level of housing, but they are different. In France, the system of construction savings is open, and in Germany - closed (table 1) [10].

The open model assumes that savings can be used to lend to entities that are not involved in them, and funds from non-members of the system can be used for mortgage lending. At the same time, the closed system is more transparent and easier to monitor. It involves the establishment of fixed interest on loans and savings over the life of the contract, thus making it relatively independent from financial market fluctuations. This allows it to accumulate relatively cheap resources, which in the future makes loans more affordable. In order to increase the public's interest in deposits of this kind, premiums in the form of government subsidies are provided. In turn, the open system of construction savings uses flexible interest rates, and on deposits, for their greater attractiveness (including for those who do not need a home loan), they significantly exceed the similar rates applied in the closed system, which is achieved

through budgetary support. In addition, everything that the depositor receives is exempt from taxation [10; 11].

Currently, housing construction savings systems operate in North and Latin America, in Asia. They have gained special popularity in Eastern Europe. For example, the Czech Republic and Slovakia introduced them in 1992, Poland, Hungary and Croatia in the second half of the 2000s, and Romania in 2004. The attractiveness of such systems largely depends on their budget support, in government premiums for deposits. In the country, these indicators, like many of these, are also differentiated, but everywhere they are focused on exceeding the level of inflation, which helps to smooth its negative impact at the fundraising stage (table 2) [11; 12; 13].

In general, in the current realities of economic development, savings systems operating abroad allow to finance about 30% of the cost of housing construction [11].

World experience shows that mortgage lending is no less common form of housing solution. As a rule, a mortgage loan is issued for a period of 15 to 40 years, although it can vary considerably by country. However, everywhere the interest on it is much lower than for other types of bank loans [14; 15; 16].

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**Table 2. particular from magnitude The ratio of the size of the state premium to the contributions of participants in the system of construction savings and the level of inflation in some countries, 2018.**

Country	The size of the state premium on the deposits of participants in the system of construction savings, % of annual	Inflation, %
Hungary	До 10	2,85
Czech republic	До 25	2,15
Slovakia	До 25	2,51
Kazakhstan	До 30	5,3

*Note. Compiled by authors based on [12; 13].*

The specific size of the mortgage rate depends on the level of economic development and the state's participation in its benefits. The creditors are mainly mortgage banks, which have intermediary and transformational functions, although there are exceptions. For example, in Spain, almost any bank can engage in this type of activity. The task of such structures, as well as financial institutions dealing with the construction of savings, is to attract free private capital. However, mortgage banks use not only deposits and their own resources to issue loans, but also funds raised by issuing special mortgage bonds, so-called "mortgage sheets". Their release can not be carried out by any other entity, except those named in the legislation. They are applied both in domestic and international markets, are listed on leading exchanges and make up a significant share in the investment portfolios of insurance companies and other organizations [5; 7].

Mortgage bonds are considered highly reliable and liquid securities. In Denmark, in particular, none of the mortgage bond buyers lost because of the issuer's insolvency. The reason is that the legal field of most countries contains rules aimed at limiting the risk of potential losses of mortgage banks in the absence of the borrower's obligations and, accordingly, the risk on issued bonds. Here we can mention the mechanism of forced sale (alienation) of housing in cases where the borrower has not paid and has not repaid the loan. This enables the lender to quickly take possession of the property and profitably sell it [5; 6].

As a tool to pre-empt the financial risks of lenders is also the fixation in the mortgage contract requirements regarding the operation of real estate. They are aimed at maintaining the appropriate level of the market price of the object, which determines its cadastral value, and then - the amount of credit. In practice, the value of real estate on the inventory is about 75% of the market value. At the same time, it is indexed annually by the amount of inflation and every 5-6 years it is re-evaluated. However, there are cases where, due to the physical depreciation or moral aging of the dwelling, its cadastral value was lower than the amount of the loan issued, which led to losses of banking structures and prompted them to keep the

issue under control [4].

Mortgage banks have the right to make some non-core transactions, including investments in investment projects, securities management, equity participation in various enterprises, placement of free funds in other financial institutions, etc. [4].

In world practice, as with construction savings systems, there are two standard mortgage models: European (single-level) and American (two-tier) [3].

The first is based on the financing of loans issued by issuing mortgages, which are subsequently sold on the primary stock market, closing the process of recourse at the same level. The functions of the lender and investor are performed by one person - a mortgage bank, which is guided solely by its own interests and the prevailing economic situation. The main advantages of such a model are the low cost of its organization, ease of control and the lack of costs for the payment of remuneration to service agencies. At the same time, real estate is perceived by Europeans as a single and unique commodity, so each mortgage is individualized. This prevents a quick decision on its purchase [3].

In turn, the American mortgage model is unified. The prevailing credit is a fixed-rate loan, which is paid at equal intervals in the same shares and provides for the possibility of early repayment. However, the functioning of the two-tier model involves the involvement of intermediaries. Loans issued in the primary market are transferred to specially created agencies, which can then re-concede them to other entities in the form of indivisible pools or voting rights. The pool usually collects loans that coincide with the period and payment scheme, the category of borrowers and the type of mortgaged real estate, and their sale is carried out on the basis of the securitization of transferred mortgage securities. The latter are significantly different from standard financial instruments. The frequency and amount of payments on them will be determined by the receipts in the account of mortgage liabilities. Payments are transferred from the borrower to the final investor minus the fees of intermediary structures. But due to the possibility of reducing the period of repayment of the debt, the owner of the transfer paper does not know in advance the size of his monthly income [3].

## Impact Factor:

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Many experts argue that in terms of economic progress, the classic American model looks the most effective, as it provides unlimited growth of "mortgage" capital. And in general, the world experience shows that the value of a mortgage loan is quite high for all its participants: for the borrower - it is an additional opportunity to receive large funds for long periods in order to solve the housing problem; for a credit institution it is a stable work for several decades with a stable income and a guarantee of loan repayment; for the state it is a constant investment in the housing sector, the development of the construction industry and a way to pre-empt a number of social problems [5; 7].

In many countries, leasing, i.e. foreclosure leases, plays an important role in financing the cost of purchasing residential property. From the state's point of view, it is seen as a new, complementary form of fixed capital investment, where, among other things, elements of collateral financing and debt payments are involved. For the population, leasing is a promising way to buy a home with a long installment payment. At the same time, the leaseholder immediately improves housing conditions according to their physical needs and financial capabilities. In turn, since the subject of leasing before the buyout is owned by the leaseholder, leasing companies may feel protected from unscrupulous payers. This allows them to lower leasing rates, making home purchases more affordable [3].

Studies show that the rental of residential real estate and its subsequent foreclosure is actively used in the hotel sector. Here one person combines the functions of both the buyer and the leaseholder, who buys from the developer (i.e. the leaseholder) housing and transfers it to the management. The buyer lives there for several weeks a year, and the rest of the time it is rented on the principle of hotel or serviced apartments. The leasing recipient has a profit from the lease, at the expense of which he pays leasing payments. Usually the value of real estate pays off for 15 years, although sometimes the term increases to 20 years. The buyer can then either live in the dwelling purchased in this way or continue to rent it out [2].

Leasing housing is developed in the U.S. and Australia, but it has gained particular popularity in Europe. In some countries (mostly with large sea and ski resorts) it occupies a rather impressive segment of the market - from 25 to 60%. Of particular interest is the experience of Spain, where about 50% of the population buy apartments and houses for leasing. One of the largest leaseholders here is the State Society for Renting Real Estate (more - SPA). Until 2006, it specialized exclusively in renting out housing, but then began to lease it with subsequent foreclosure. In making agreements with a real estate agency, as

well as local banks and private landlords, the SPA took over the functions of selling its residential premises to the property of citizens. This organization sends in the hiring of individuals housing for a period of 7 years with the possibility of early termination of the transaction, but with the obligatory compliance with the conditions of advance notice of this. At the same time it was stipulated that the right to purchase a rented apartment appears at the tenant only after 18 months of living in it. The average cost of the objects is initially about 105 thousand euros. Subsequently, it is reduced by a percentage of the amount of payments made [7].

It should be noted that the development of real estate leasing in Europe is due to the stability of housing policy and the presence of restrictions on hereditary property. Analysis of the laws of the leading economies of the region shows that their regulations gave a clear definition of the concept of "leasing", listed its characteristics, formulated the requirements to which the parties of the contract must meet, as well as established a ratio between the lease term and the normative life of the property, regulated the relationship between the leaseholder, the leaseholder and the seller of the property, etc. [19].

World experience shows that the advantages of the method of buying a home in question can be attributed to the less stringent requirements for leasing recipients compared to the requirements for mortgage recipients and the construction of savings, including those related to the terms of payment. Its undeniable advantage is also the savings of the leaseholder on taxes. It has the right to attribute to the cost of all payments under the leasing transaction or to reduce the taxable profit on the cost of wear and tear of the object, calculated on the basis of increasing rates of its write-off [6].

The list of advantages of leasing housing is replenished by the possibility of the leasing recipient to resort to bank loans if necessary. In addition, the practice of foreclosure rental allows the owner of the property to create an optimal and transparent structure of the property by keeping it accounted for at the real market price, to preserve working capital, as well as to save significantly on the purchase of constantly expensive property. [5].

In order for these mechanisms to work fully in our country, additional efforts must be made. Further improvements in their regulatory, economic and institutional support are needed. It is advisable to solve the issues of accruing the state's premium on deposits of the system of savings system; Support for leaseholders in need of better housing conditions; review of the taxation of the income of citizens who have taken out a mortgage; competition between the banking structures involved in housing finance, etc.

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## References:

- (2016). *Rents increased by 1.1 per cent over the year* [Electronic resource]. - Date of access: 15.08.2019.- Retrieved from [http://www.stat.fi/til/asvu/2018/asvu\\_2018\\_2019-03-07\\_tie\\_001\\_en.html](http://www.stat.fi/til/asvu/2018/asvu_2018_2019-03-07_tie_001_en.html)
- Khatamov, O. K., & Ortikov, S. M. (2019). Use from the international experiences in employment the population in Uzbekistan. *ISJ Theoretical & Applied Science*, 11 (79), 364-371.
- Ortikov, S. M. (2019). *International Journal of Research in Management & Business Studies (IJRMBS 2019) Vol. 6 Issue 3 July - Sept. 2019* 88-92.
- Ismatov, S. A. (2019). Determination of the relationship of the quality of life with the living standard of the population. *ISJ Theoretical & Applied Science*, 10 (78), 501-505.
- Raximova, G. M. (2020). Problems of accounting and audit of fixed assets. *ISJ Theoretical & Applied Science*, 05 (85), 726-729.
- Raximova, G. M., Abdulyayeva, S., & Pirmkulov, O. M. (2020). Features of audit of small and medium-sized enterprises. *ISJ Theoretical & Applied Science*, 06 (86), 101-105.
- Rahimova, G. M. (2020). Praktika ucheta i audita osnovnyh sredstv. *Problemy sovremennoj nauki i obrazovanija.*, 7 (152). <https://cyberleninka.ru/article/n/praktika-ucheta-i-audita-osnovnyh-sredstv>
- Ilxamov, Sh.I. (2017). Concept of the use of the system of internal control of enterprise. *International journal of advance research and innovative ideas in education*.
- Ilxamov, Sh.I. (2017). «East West» Development of auditing methods in accordance with international criteria and standards. *European Journal of Economics and Management Sciences*, № 1.
- Ilxamov, Sh.I. (2019). 44(5) 48-61. <http://intercienciajournal.com/index.html>
- (n.d.). *Social housing* [Electronic resource] // ScienceDirect. Date of access: 15.08.2019. Retrieved from <https://www.sciencedirect.com/topics/social-sciences/social-housing/>.

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## ACCOUNTING MODELS

**Abstract:** The article describes the international models of accounting and their features. On the basis of accounting models, it has been highlighted the occurrence of tax accounting. The content and necessity of the tax account is revealed taking into account scientific discussions and recent changes in the legislation.

**Key words:** accounting, model, accounting model, taxes, tax accounting, tax reporting, tax payments, taxpayers, tax liability.

**Language:** English

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### Introduction

In order to reveal the essence of tax accounting, which is a new direction of accounting, it is necessary to scientifically study the models used in the world practice of accounting. In general, in the study of accounting models, it is necessary to distinguish between "account model", "national model of account", "international model of account".

The Model is understood as a system envisaged on the basis of material or thinking, as a means of obtaining information about another system.

The Model is to visualize according to a specific feature of the systems in operation and function in progress.

In relation to the national system of Accounting, its model is widely understood. Models of national accounts differ from each other in the features of economic, political, social and other processes carried out in countries. Proceeding from the scientific essence of the accounting model, he was one of the first and was created by the Italian mathematician Luke Pacholi. This model was called "double entry" and is considered the basis of the current accountancy.

Since the second half of the twentieth century, economists conducted scientific research on account models and analyzed them according to several criteria. On their basis, two types of views: deductive and inductive views were distinguished.

In a deductive view, the influence of external factors on the formation and development of accounting model is studied. Also in several countries,

economic, political, social and other conditions are similar, which have an impact on the accounting system.

The founder of the detective look is g.RBeing a Hetfield, he described accounting in Western countries as three methods: American, British, continental and gave them explanations.

Many Chinese economists, including professors Lee Sinhe (Nanjing University) and tan Yunwei (Shanghai University) and others, have acknowledged in their research that the accounting system is influenced by the following omillarni:

- 1) political factors;
- 2) legal factors;
- 3) economic factors;
- 4) international factors;
- 5) cultural factors;
- 6) factors related to education;
- 7) factors related to the professionalism of accounting.

In Chinese studies, there is also the concept of "mogo" or "native state", which means that in addition to economic, political and cultural cooperation of certain states, it has a great influence on its legal base, including on the accounting system.

The researchers noted the following as the "native state": - the United States, its Model influenced the model and system of accounts of the countries of Mexico and South America; - Great Britain, its model forms the basis of the principles of accounts of the countries of Australia and India; -



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France adopted the civil codes of the countries of Southern Europe, South America on the basis of

On a global scale, the accounting system is divided into the following major models:

- continental (European model);
- British-American model;
- South American model;
- Islamic model of accounting.

Classification of three models of accounting system in Russia g.Miik, G.Mueller, X.Created by gernons. Bunda shows the following main models:- English - American model (USA,UK, Netherlands, Australia, Canada, etc.); - continental model (Germany, France, Austria, Belgium, Gresia, Denmark, Spain, Russia, Switzerland, Japan, etc.); - South American model (Argentina, Brazil, Chile, Ecuador, Paraguay, Peru, etc.).

In the continental model, the main purpose of accounting is not to satisfy the interest of investors,

but to determine, calculate the tax base in accordance with mandatory state norms.

Also bunda has a printsiplal character of legal norms and rules. The executive body of the accounting system is controlled by the government. An inductive view is an alternative (alternative) to a deductive view, which relies mainly on statistical techniques of Economic Analysis. Research in this regard is conducted by major international companies (KMPG, Price Waterhouse Coopers, Ernst & Young, Deloitte & Touche Tohmatsu).

Z.N.Y.In his scientific work, Gurbanov expressed the following points about the continental model: "in the continental model, the accounting system is formed and maintained on the basis of principles, rules of direct taxation. When this model is established, the indicators of the tax account with the financial accountant account are compatible.

Therefore, the "continental" model is sometimes also referred to as the "tax" model."

**Table 1. Accounting models**

<b>Models</b>	<b>Specific features</b>
<b>Britain-America</b>	Focused on the interests of investors, creditors and shareholders
<b>Continental</b>	High level of interference of the state in the accounting policy of enterprises
<b>South America</b>	It is aimed at maintaining the fiscal policy of state bodies
<b>International</b>	It is aimed at the interests of transnational corporations and foreign participants of the international currency market
<b>Islam</b>	Religious factors are high, as well as prohibits speculative income and other activities

On the basis of the study of scientific works and economic literature, we came to the conclusion that there are British-American, continental, South-American, Islamic and Internasional models of accounting, and their characteristics were presented in Table 1.

As a result of the analytical and comparative research carried out in the field of modeling accounting in the late twentieth century, the need for the formation of new models of accounting appeared. New methodological approaches are being prepared to the development of new models of accounting accounting, which correspond to the requirements of the globalisation and information process taking place in the world.

I.V.Kiseleva, N.V.Laughing at the fact that we can call the new model of Accounting an integrated-technological model, the essence of which is that the direction of economic subject information to a single field of information with the help of new information technologies.

The main objective of the study of accounting models was to determine its types or components. In the international standards of financial accounting,

where financial and Managerial Accounting is recorded as a component of accounting, in the subsequent period, the concepts of "tax accounting" or "tax accounting" in the economic literature are covered as a subsystem of accounting.

In this regard, Economist scientists recognize financial, management and tax accounting as a separate type and subsystem of accounting.

Including, O.N.Y.Volkova wrote that "as a result of the development and complication of the tax system in developed countries, there was a need to accurately calculate the tax base. Both the state and the proprietor and the stewards knew that for such calculations, the only and the only information is the account information that is collected in accordance with these generally accepted principles. This is how the tax account appeared."

Eat it.V.Sokolov, V.Eat it.Sokolovs noted that "the single accountancy was divided into financial and managerial accounts. From it, the account of small enterprises was separated. Since 2002 year, the tax account has been officially announced in our country. Also, they wrote, "the current (from 1950 year) stage brought about the development of the balance in terms

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of dynamic and statistical interpretation of views. While the dynamic interpretation and evolutionary techniques of calculus led to the birth of the management account, the statistical interpretation - led to the emergence of the international standards of financial reporting (IFRS) and the national system of charters. These two interpretations affected the formation of a tax account.

I.V.Kiseleva, N.V.Kulishlar expressed the following views on the formation of the tax account: "as a result of the improvement of tax legislation in economically active countries, as well as the requirements for transparency and completeness of information in financial statements, a special new type of account appeared – Tax Accounting, its own methods, types of assessments and records, as well as a system of rules."

Z.N.Y.According to Kurbanov, " the origin of the tax account is the result of the intersection of the system of taxation with the accounting (financial) account, that is, their interrelation.

There are three types of accounts, depending on the interest of users of data, these are financial, managerial and tax accounts. Each of these has its own purpose, function, object, subject and method."

Under current conditions, accounting is developing towards integration rather than differentiation. The emergence of new types of accounts, including tax accounts, is the result of the progressivization of scientific thought.

The result of scientific research shows that the concept of tax accounting is interpreted differently in normative documents, by economist scientists and practitioners.

In particular, in paragraph 25 of Article 313 of the tax code of the Russian Federation, the tax account is defined as follows: "tax account is a generalized system of information grouped in accordance with the procedure established by the tax code for determining the tax base on profit tax on the basis of initial documents".

In Article 39 of the tax code of the Republic of Uzbekistan "identification of objects of taxation and objects related to taxation and their accounting", the tax account is recognized as follows: "the object of taxation and objects related to taxation in each type of tax and other mandatory payment shall be determined in accordance with a special part of this code.

The income of taxpayers, as well as the corresponding discounts on them for the calculation of taxes and other mandatory payments, are reflected in the reporting period in which they are recorded (calculated method), regardless of the time of payment and the date of receipt of money.

Accounting of property is carried out in accordance with the legislation on accounting".

Also in Article 43 of the tax code, the concept of " tax report "is described as follows:" the tax report is a document of the taxpayer, which includes calculations and tax returns, as well as applications for calculations and tax returns on each type of tax and other mandatory payment or on paid income, which is compiled in the form approved by the state "Z.N.Y.Kurbanov described the "tax account" as follows: "tax account – this is a system of accounting information necessary for the determination of the taxation base on taxes and other mandatory payments paid by economic entities and the compilation of tax reports.

## References:

1. Shodiyev, A. A. (2020). Accounting in Uzbekistan (accounts). *ISJ Theoretical & Applied Science*, 11 (91), 55-58.
2. Kiseleva, I.V., & Laugh, N.V. (2017). Evolyusiya modeley accountancy uchyota. *Ekonomicheskie nauki*, №58-2, 11.01.2017.
3. Guan, K. (2006). *Analysis I ustraystva informacianniy system*. (p.17). Beijing: University Of Tsinghua.
4. Lyo, I. (2006). *O Printsipe kontrolya matericheskoy strani V zakonodatelstve es o finansovix uslugax*. (p.132). Vaprosi yurisprodsentsii.
5. Pacholi, L. (2009). *Traktat o schetax i zapisyax*. Pod Red. Prof. M.I. Gotera.- M.: Finance I statistics; Krasnodar: Prosvetshenie-Yug.
6. Sakalav, Ya.V., et al. (2005). *Ucheta accounting in hysteria*. Uchebnik. (p.122). Moscow: Finance I statistics.
7. (2005). *The question of Suan, Vliyanie vneshnikh faktorov na accountant uchets V KNR*. Ekonomicheskoe I nauchno-technicheskoe sotrudnichestvo, p.45.
8. (1996). *Uchet: Mejdunarodnaya perspective g.Miik, G.Mueller, X.Gernon*. (p.135). Moscow: Finance I statistics.

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9. Qurbanov, Z.N.Y. (2012). Tax accounting and audit. *Training manual*. Tashkent: 2012, p.176. (21). 13. <https://www.mf.uz/media>
10. Raximova, G. M., Abdulkayeva, S., & Pirmkulov, O. M. (2020). Features of audit of small and medium-sized enterprises. *Theoretical & Applied Science*, №. 6, pp. 101-105.
11. Raximova, G. M. (2020). Problems of accounting and audit of fixed assets. *International Scientific Journal ISJ Theoretical & Applied Science Philadelphia, USA*, №. 05.
12. Rahimova, G. M. (2020). Praktika ucheta i audita osnovnyh sredstv. *Problemy sovremennoj nauki i obrazovaniya*, №. 7 (152).

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## TRANSFORMATION OF A SYSTEM OF EQUATIONS INTO A SYSTEM OF SUMS OF COGNITIVE MEANING OF VARIABILITY OF INDIVIDUAL CONSCIOUSNESS INDICATORS

**Abstract:** For the solution  $A_{66} = \text{diag}(2.5000, 1.0000, 1.0000, 1.0000, 0.3000, 0.2000)$  Optimization Problem (OP):  $A_{66} \Rightarrow (A^+_{66}, C^+_{66})$  and for solution  $A^+_{66} = \text{diag}(1.75, 1.383727, 1.366273, 1.0000, 0.3000, 0.2000)$ ,  $C^+_{66}$  of the Inverse Spectral Problem  $A_{66} = \text{diag}(2.5000, 1.0000, 1.0000, 1.0000, 0.3000, 0.2000) \Rightarrow (C^{(\ell)}_{66}, R^{(\ell)}_{66}), \ell = \{1, \dots, k_\ell\}$ , the cognitive meanings of 6 selected  $z$ -variations are obtained. Solved 2 problems of cognitive modeling of meanings 6  $z$ -variabilities for given 4 senses of 4 valid variabilities (with dominant variances), 2 systems of equations are developed, each system contains 4 semantic equalities. Each equation of the system contains in the left part the given meaning of valid variability, and in the right part - the sum of the meanings of  $z$ -variability from its subset belonging to the set of 6  $z$ -variability. Visualizations of trends of dynamics of variability of valid and "measured" indicators of individual consciousness and analyses of their adequacy to real trends of variability of indicators of individual consciousness are given.

**Key words:** meanings of variability of indicators of individual consciousness.

**Language:** Russian

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### ТРАНСФОРМАЦИЯ СИСТЕМЫ УРАВНЕНИЙ В СИСТЕМУ СУММ КОГНИТИВНЫХ СМЫСЛОВ ИЗМЕНЧИВОСТЕЙ ПОКАЗАТЕЛЕЙ ИНДИВИДУАЛЬНОГО СОЗНАНИЯ

**Аннотация:** Для решения  $A_{66} = \text{diag}(2.5000, 1.0000, 1.0000, 1.0000, 0.3000, 0.2000)$  Оптимизационной Задачи (ОЗ):  $A_{66} \Rightarrow (A^+_{66}, C^+_{66})$  и для решения  $A^+_{66} = \text{diag}(1.75, 1.383727, 1.366273, 1.0000, 0.3000, 0.2000)$ ,  $C^+_{66}$  Обратной Спектральной Задачи  $A_{66} = \text{diag}(2.5000, 1.0000, 1.0000, 1.0000, 0.3000, 0.2000) \Rightarrow (C^{(\ell)}_{66}, R^{(\ell)}_{66}), \ell = \{1, \dots, k_\ell\}$ , получены когнитивные смыслы 6 выделенных  $z$ -изменчивостей. Решены 2 задачи когнитивного моделирования смыслов 6  $z$ -изменчивостей при заданных 4-х смыслах 4-х валидных изменчивостей (с доминирующими дисперсиями), разработаны 2 системы уравнений, каждая система содержит 4 смысловых равенств. Каждое уравнение системы содержит в левой части заданный смысл валидной изменчивости, а в правой части - сумму смыслов  $z$ -изменчивостей из своего подмножества, принадлежащего множеству из 6  $z$ -изменчивостей. Приведены визуализации трендов динамик изменчивостей валидных и изменчивостей «измеряемых» показателей индивидуального сознания и анализы их адекватностей реальным тенденциям изменчивостей показателей индивидуального сознания.

**Ключевые слова:** смыслы изменчивостей показателей индивидуального сознания.

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### Введение

В статье<sup>1</sup> приведена модель того социального явления, чего не должно быть в развитых странах. «Социолог Питирим Сорокин, впервые применивший термин «отрицательная селекция», ломку личности рвущихся к власти людей связывает с потерей «чувственной культуры»<sup>1</sup>. По его мнению, «потребность в удовольствии настолько нарушает ментальное и моральное равновесие, что разум и нервная система множества людей не могут выдержать огромного напряжения». «Противостоять деградации можно только обладая твердыми убеждениями и моральными принципами. Но если у человека нет нравственного мерил, отсутствуют представления о правах и нормах, то, что тогда может удержать его от пренебрежения интересами других? «Ничего, кроме желаний и вожделения»<sup>1</sup>. «Современные социологи, исследуя феномен отрицательной селекции» власти, приходят к выводу, что это не столько деградация, сколько искусственно проводимая кадровая политика, в свое время успешно апробированная спецслужбами»<sup>1</sup>. Живучесть данного феномена пояснена в статье<sup>1</sup>. В статье [1] введено понятие «собственное отклонение» для неизмеряемых значений  $z$ -изменчивости неизмеряемого показателя индивидуального сознания и Аксиома существования собственного отклонения и шага отклонения. Данные из Таблицы 1 обосновывают применимость термина «длина одного собственного отклонения (шага) для неизмеряемых значений  $z$ -изменчивости неизмеряемого показателя» к нашим задачам. После решения наших задач мы приведем визуализацию зависимых  $z$ -изменчивостей для  $j$ -ой  $z$ -переменной. Пусть имеем в  $j$ -ом столбце значения изменчивостей  $(z_{1j}, \dots, z_{mj})^T$ . Если среднеквадратическое значение  $s_j^2$  этих элементов равно 1, то ряд  $(z_{1j}, \dots, z_{mj})^T$  называется рядом значений  $j$ -ой  $z$ -переменной (стандартизированной), если  $s_j^2=1$ . Если  $s_j^2 \neq 1$ , то ряд значений называется рядом значений  $z$ -изменчивостей для  $j$ -ой переменной. Для значения  $s_j^2$  вычисляется одно значение  $+s_j = \sqrt{s_j^2}$ , определяющее длину (положительную) отклонения, присущей ряду  $(x_{1j}, \dots, x_{mj})^T$ . Величина  $z_{ij} = (x_{ij}^0 - x_{ij}^{me}) / s_j$  определяет сколько штук  $s_j$  содержит в себе отклонение  $(x_{ij}^0 - x_{ij}^{me})$ . Иначе говоря, величина  $z_{ij}$  равна количеству собственных отклонений  $s_j$   $j$ -ой  $x$ -переменной в отклонении  $x_{ij}^0$  от среднего значения  $x_{ij}^{me} : (x_{ij}^0 - x_{ij}^{me})$ . Ряд значений  $z$ -изменчивостей соответствует  $j$ -ой централизованной (нестандартизированной)  $x$ -

переменной с показателем  $s_j$ :  $(z_{1j}, \dots, z_{mj})^T \Rightarrow (x_{1j}, \dots, x_{mj})^T \Rightarrow s_j$ . Показатель  $s_j$  – единичный шаг отклонений, величина  $z_{ij}$  равна количеству собственных отклонений  $s_j$  влево или вправо от числа 0, равного средней арифметической для  $m$  значений  $z_{1j}, \dots, z_{mj}$ :  $(1/m)(z_{1j} + \dots + z_{mj}) = 0$ . Отклонение числа  $z_{ij}$  от числа 0, (равное отклонению измеренного значения  $x_{ij}^0$  от средней  $x_{ij}^{me}$ , деленному на собственное отклонение  $s_j$ :  $(z_{ij} - 0) = (x_{ij}^0 - x_{ij}^{me}) / s_j$  назовем  $z$ -изменчивостью измеряемого  $j$ -ого показателя. Заметим, что изменчивость равна частному от деления двух отклонений  $(x_{ij}^0 - x_{ij}^{me})$  и  $s_j$ , имеющих единицы измерения одинакового смысла. Единицы измерения могут быть метрическими или другими, измеряемыми в шкале отношений.

Для показателей моральных «ценностей», [2,3] когнитивно сконструированных ниже, для показателей со смыслами, характеризующих морально-этические принципы индивидов, показателей чувственной культуры П. Сорокина [4] можно применять в качестве единицы измерения «проценты». Проявление честности может быть равно 99%, 70%, 50%, 30%. В статьях [5-16] не измеряемые, но моделируемые показатели определены двояко: определены их имена-смыслы и смоделированы значения их  $z$ -изменчивости.

Ниже показано: в моделях, методах, алгоритмах инновационного интеллектуального анализа данных исходным объектом является матрица  $Z_{mn}$  значения  $z$ -изменчивостей  $n$  показателей. Обоснована идентичность смыслов 6 изменчивостей в двух системах смысловых уравнений демонстрирует важность матрицы индикаторов и безразличие к данной разнице в значениях доминирующих дисперсий валидных переменных. Разница в 2-х множествах дисперсий: (1.75, 1.383727, 1.366273, 1.0000 (2.5000, 1.0000, 1.0000, 1.0000) не влияет на их общие смыслы. На суть 6 смыслов существенно влияют расположение индикаторов присутствия знаний в матрицах  $C_{66}$  и  $C_{66}^{(l)}$ . Визуализации трендов динамик изменчивостей валидных и изменчивостей «измеряемых» показателей индивидуального сознания и анализа их показывают адекватности реальным тенденциям изменчивостей показателей индивидуального сознания.

Данное исследование является продолжением результатов статей [1,2]. Мы используем в качестве исходной информации статью<sup>1</sup> П. Сорокина. Это социологическое явление формализовано с применением соотношений из ПМ АИКП [17-18] и равенств из

<sup>1</sup> <https://knews.kg/2019/09/21/otritsatelnava-selektsiya-pochemu-elitoy-stanovyatsya-hudshie/>

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теоремы [19]. Когнитивная Модель Изменчивостей Показателей Отрицательной Селекции [4] формализует социологическую «принцип отрицательной селекции» П.Сорокина.

Ниже приведем результаты нового исследования и наглядные графические иллюстрации динамик модельных значений показателей сознания индивида. На Рисунке 1 визуализированы взаимные динамики 6 рядов собственных изменчивостей. Новые отношения «власть-гражданское общество», модернизация индивидуального и общественного сознания актуализируют вопросы формализации предметной области «индивидуальное сознание», рассматриваемой в данной статье. Существуют разные способы профилактики, борьбы с такими проявлениями. Но обличительный задор борцов всегда направлен на личности, они вызывают у индивида страх, стремление обмануть «систему менеджмента «shnaiy ondru-kondru-aldau-korkyту» [2,3].

Групп факторов, которых можно назвать «главными», определяющими существует очень много. Рассмотрим те факторы, которые в последнее время болезненно воспринимаются на бытовом уровне («на кухне»). Среди мнений, «проясняющих» нашу действительность, существуют такие как «если бог даст, то...», «жизнь наша - театр», «кругом обман и ...», «...заставят-никуда не денешься». Даже в поэзии звучат слова про угрозы, устрашения, запугивания «...бессердечных и бездушных что запугали чем-то полстраны»<sup>2</sup> С телеэкранов в сюжетах фильмов разного жанра отчетливо внушаются существование не столько добра и зла, но и «менеджмент» их способов проявлений. Та или иная лож выдается за правду. Затронутые ассоциации, верования, а также технологии достижения целей исследованы и доступны научно сообществу [2-9].

Излагаемый ниже подход позволяет иметь модели, раскрывающие в наибольшей степени, суть социального явления. В текстах [1-8,10-19] изучаются смысловые<sup>3</sup>, специальные, измеряемые факторы. Широко представлены зависимости между политическими, экономическими, социальными, индивидуальными свойствами, факторами, событиями. Но мало разработок по формализации [1-8,9-20]. Рассмотрим легко воспринимаемые индивидом скрытые факторы. Еще раз подчеркнем -мы утверждаем, что рассматриваемые факторы являются одними из многих, не являются определяющими в жизни общества. Будем считать источником проявлений

3-х из 4-х рассматриваемых факторов наличие дисбалансов между возможностями и потребностями, между возможностями и ответственностью.

### Скрытые социально-экономические факторы

Известно, что существуют скрытые факторы, значения которых не измеряются, но они вычисляются как значения переменных, равных линейным комбинациям фактически измеряемых показателей. Например, в работе [10] применяемые нами ниже главные компоненты (principal components) называют «смысловыми» (semantic variables). Смыслы их передаются в фразах «статус родителей», «средняя школьная оценка за устную речь». Другие фразы, передающие иные смыслы, приведены, например, в работах [11-14]. Число таких фраз равно  $\ell=2,3,4$ . Наши  $\ell < n$  главные компоненты будем интерпретировать как главные содержательно имеющие экономический или иной смысл факторы. Им поставим в соответствие  $\ell$  у-переменные. В модели число у-переменных полагаем равным числу  $n$  измеряемых показателей (представленных в модели через  $n$  z-переменные) реального объекта, но будем придавать названия только тем z-переменным, которые имеют веса, превышающие порог «умеренного» проявления (восприятия индивидом) коррелированных показателей индивидуального сознания индивида.

В нашей модели будем учитывать значения весов  $\ell=4$  факторов  $\lambda_1, \dots, \lambda_4$  (значения только  $\ell$  из  $n$  у-переменных), будем определять названия, значения  $n$  коррелированных z-переменных  $Z_1, \dots, Z_n$ .

Эту задачу схематично изобразим так:  $\Lambda_{\ell\ell} \Rightarrow (y_1, y_2, \dots, y_\ell) \Rightarrow (R_{nn}, C_{nn}, Z_{mn})$ .

Матрица «весов»  $C_{nn}$  должна в первых  $\ell$  столбцах индикаторы присутствия знаний. На это указывает значение числа весов  $\ell=4$  доминирующих собственных чисел из  $\Lambda_{\ell\ell}$   $\Lambda_{nn} = \text{diag}(\lambda_1, \dots, \lambda_\ell, \dots, \lambda_n)$  Для численного моделирования матрицы «весов»  $C_{nn}$ , матрицы безразмерных значений z-переменных  $Z_{mn}$  будем применять ОМ ГК [21], апробированная в других предметных областях [1-8,10-21].

Но в предметных областях «работают» разные целевые критерии. Поэтому мы будем использовать только формальные уравнения из модели (из ПМ АГК), но будем решать смысловую задачу для задачи, решенной в ОМ АГК:  $(y_1, y_2, y_3, y_4) \Rightarrow Z_{mn}$ . Здесь  $Z_{mn}$  -таблица (матрица) размерности  $m$ -на- $n$ , где  $n$  – число моделируемых

<sup>2</sup> <https://www.inpearls.ru/>

<sup>3</sup> Мостеллер Ф., Тьюки Дж. Анализ данных и регрессия: в 2-х выпусках, вып. 2. - М.: Финансы и статистика, 1982. - 239 с.

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нами изменчивостей показателей. Их динамики адекватны динамике реальных неизмеряемых показателей, характеризующих рассматриваемую систему валидных показателей {«правильно», «принудительно», «с обманом», «под страхом»}. Фиксированные значения дисперсий от значений этих 4 факторов обозначим как  $\lambda_1, \dots, \lambda_4$ . Соответствующие параметры, переменные, уравнения ограничений, целевая функция разработаны, опубликованы в [2-3].

Для реализации нашей модели необходимо реализовать схему:  $(\lambda_1, \dots, \lambda_n) \Rightarrow (y_1, y_2, y_3, y_4) \Rightarrow Z_{mn}$ . Суть этой модели - в выборе смыслов 4-х главных факторов, определяющих  $m > n = 6$  значений  $n > 4$  коррелированных показателей, характеризующих нашу систему {«правильно», «принудительно», «с обманом», «под страхом»}. Рассмотрим систему из четырех некоррелированных  $y$ -переменных  $y_1, y_2, y_3, y_4$ . Им в соответствие поставим 4 фактора проявлений индивидуального сознания, их проявления полагаем независимыми. Поставим в соответствие этим 4 неизмеряемым показателям (обобщенным факторам) теоретические случайные величины  $\xi_1, \xi_2, \xi_3, \xi_4$ . Это позволит нам формализовать динамику, взаимосвязи, присутствие реальным значениям наших 4 факторов.

Будем рассматривать безразмерные значения всех анализируемых переменных, включая переменные  $y_1, y_2, y_3, y_4$  и переменные (будем моделировать изменчивости для  $y$ - и  $z$ -переменных), образующие линейные комбинации  $y_1 = z_1 c_{11} + \dots + z_n c_{n1}, y_2 = z_1 c_{13} + \dots + z_n c_{n3}, y_3 = z_1 c_{13} + \dots + z_n c_{n3}$ ,  $y_4 = z_1 c_{14} + \dots + z_n c_{n4}$ . Значения остальных модельных факторов  $y$ -переменных  $y_5, \dots, y_n$  моделируются, их значения удовлетворяют соотношениям  $y_j = z_1 c_{1j} + \dots + z_n c_{nj}, j = 5, \dots, n$ , но их дисперсии пренебрежимо малы  $\lambda_4 < \lambda_0, \dots, \lambda_n < \lambda_0$ , причем значение  $\lambda_0$  удовлетворяет критерию приближенного равенства нулю дисперсий  $y$ -переменных  $y_5, \dots, y_n$ .

Это означает с точки зрения математической статистики равенство нулю парных коэффициентов корреляции:  $\text{corr}(y_1, y_2) = c_{12} = 0$ ,  $\text{corr}(y_1, y_3) = c_{13} = 0$ ,  $\text{corr}(y_2, y_3) = c_{23} = 0$ . Доказательство факта о том, что матрица  $C_{66}$  собственных векторов является несимметричной корреляционной матрицей коэффициентов парной корреляции  $(y, z)$ -переменных, имеются в [23].

### Нахождение смыслов скрытых факторов моральных «ценностей»

Названные скрытые факторы моральных «ценностей» назначим валидными переменными, главными компонентами в используемых моделях индивидуального сознания.

Рассмотрим 4 скрытых обобщенных факторов индивидуального сознания, которые существенно влияют на индивиды, не

подверженные влиянию социального расизма, в обществе. Назовем их обобщенно (shnaiy ondru, kondru, aldau, korkyту). В казахскоязычной среде эти термины легко воспринимаются и ассоциируются однозначно. Перевод на русский язык не сможет отразить указанных ассоциаций, даже скрупулезный подбор слов не сможет помочь. «Правильнее будет так...» - часто звучащие фразы при дискуссиях. Но сделаем хоть плохой, но перевод. Этим четверке слов соответствуют на русском языке слова «по правде (правильно) поступать», «принудить к...», «обмануть, чтобы...», «страху нагнать...».

Пусть  $\lambda_1/n, \dots, \lambda_n/n$  - веса наших факторов (валидных переменных), где элементы суммы  $\lambda_1/n + \dots + \lambda_n/n$  подчиняются условию нормировки  $\lambda_1/n + \dots + \lambda_n/n = 1$  для фиксации в %-ах доли каждого слагаемого. Мы выше зафиксировали  $\ell = 4 < n$ . Число  $n$  факторов должно быть больше числа  $\ell$  скрытых обобщенных факторов, смыслы которых считаем известными. Пока мы рассмотрим ли  $\ell = 4$  таких факторов. Элементы  $\lambda_1, \dots, \lambda_n$ , удовлетворяющие условию  $\lambda_1 + \dots + \lambda_4 = f_4 * n$ , где  $f_4$  - доля суммы 4-х элементов  $\lambda_1, \dots, \lambda_4$  в сумме  $n$  элементов  $\lambda_1 + \dots + \lambda_n = n$ . Элементы  $\lambda_1, \dots, \lambda_n$  являются параметрами из другой модели [11]. Они являются элементами спектра  $\Lambda_{nn} = \text{diag}(\lambda_1, \dots, \lambda_n)$ .

Далее в отличие от модели из [23] спектр  $\Lambda_{nn} = \text{diag}(\lambda_1, \dots, \lambda_n)$  неизвестной корреляционной матрицы  $R_{nn}$  назначим входным объектом ОМ ГК [21]:  $\Lambda_{nn} \Rightarrow (C_{nn}^{(t)}, R_{nn}^{(t)}, Y_{mn}^{(t)}, Z_{mn}^{(t)})$ ,  $t = 1, \dots, k_t$ ,  $\ell = 1, \dots, k_\ell$ . Элементы  $R_{nn}, C_{nn}, \Lambda_{nn}, Y_{mn}$  прямой модели главных компонент (ПМ ГК)  $Z_{mn} \Rightarrow (R_{nn}, C_{nn}, \Lambda_{nn}, Y_{mn})$ , применяемые в модели из [12], могут быть элементами и ОМ ГК.  $\Lambda$ -выборка  $Z_{mn}^{(t)} = Y_{mn}^{(t)} C_{nn}^{(t)T}$  моделируется в нашей модели цифровизации (оцифровки) показателей индивидуального сознания. Интересные свойства данной  $\Lambda$ -выборки доказаны в [21, 24].

Разработаем общую методик для разных задач трансформации системы уравнений в систему сумм когнитивных смыслов изменчивостей показателей индивидуального сознания.

Рассмотрим нашу систему из четырех факторов моральных «ценностей». Им соответствуют 4  $y$ -переменные  $y_1, y_2, y_3, y_4$ , значения которых мы будем моделировать ниже. Число значений в каждой из 4-х  $y$ -переменных равно  $m > n$ , соответствует матрица собственных векторов  $C_{66} = \{c_{ij}\}$ . Матрице  $C_{66}$  соответствует матрица весов  $C_{66}^2 = \{c_{ij}^2\}$ , [18-22]  $i = 1, \dots, 6$ ;  $j = 1, \dots, 6$ . Элементы  $c_{ij}$  равны коэффициентам корреляции  $c_{ij} = \text{corr}(y_i, z_j)$  между  $i$ -ой  $y$ -переменной и  $j$ -ой  $z$ -переменной. Значение коэффициента парной корреляции между двумя  $z$ -переменными  $r_{ij} = \text{corr}(z_i, z_j)$  является константой (коэффициентом пропорциональности) линейной связи между значениями двух  $z$ -

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переменных [11,15]:  $z_{kj} = r_{ij} \times z_{kj}$ ,  $k=1, \dots, m$ ,  $i=1, \dots, n$ ,  $j=1, \dots, n$ . Так как  $c_j^T c_j = 1$ ,  $c_j = (c_{1j}, \dots, c_{nj})^T$ ,  $c_{1j}^2 + \dots + c_{nj}^2 = 1$ , то значения чисел  $c_{1j}^2, \dots, c_{nj}^2$  в сумме равных 1, являются весами при значениях  $z$ -переменных  $z_1, \dots, z_n$ . Ниже используется степень коррелированности  $c_{ij} = \text{corr}(y_i, z_j)$ , превышающий пороговое значение, а специалистам по индивидуальному сознанию более привычен термин «вес». Поэтому всюду ниже значение  $c_{ij} = \text{corr}(y_i, z_j)$  будем называть «вес», а значение  $c_{ij}^2$  – вес  $i$ -ой  $z$ -переменной  $z_i$ .

Математической моделью новых смысловых переменных являются функции вида  $y_{ij} = z_{i1} c_{1j} + z_{i2} c_{2j} + \dots + z_{in} c_{nj}$ ,  $i=1, \dots, m$ , которые определяются используемой теоретической моделью [18]: ПМ ГК – как метода вычисления единственной матрицы  $Y_{mn}$ , состоящей из  $m$  значений некоррелированных  $n$   $y$ -переменных с ограничениями на веса  $c_{1j}^2 + c_{2j}^2 + \dots + c_{nj}^2 = 1$ , на компоненты собственных векторов:  $c_{11} c_{k1} + \dots + c_{n1} c_{kj} = 0$ ,  $j \neq 1$ ,  $k=1, \dots, n$ .

При объяснении, присвоении названия  $z$ -переменной используем правило, где осознанность влияния  $z$ -переменной выражается пороговым значением веса  $|c_{kj}| \geq c(j)$ ,  $k \in \{1, \dots, n\}$  для  $j$ -ой  $y$ -переменной,  $j=1, \dots, \ell$ . Их применяем к данным о процессах обучения школьников в муниципальных школах США. В соответствии с нашей целью «что-то увидеть в данных» в [20] использован «когнитивный подход в моделировании, ориентированный на то, чтобы активизировать интеллектуальные процессы исследователя (субъекта) и помочь ему зафиксировать свое представление проблемной ситуации в виде формальной модели».

### Скрытые факторы индивидуального сознания

Индивидуальное сознание есть отражение общественного бытия отдельным человеком через призму конкретных условий его жизни и его психологических особенностей. Это значит, что в сознании индивида сосуществуют (в одних случаях гармонично сочетаясь друг с другом, а в других – находясь в антагонистических противоречиях) различные духовные пласты, верования другие элементы. Индивидуальное сознание – своеобразный сплав общего, особенного и единичного в сознании личности.

Четыре главные компоненты: обозначим их  $U_1, U_2, U_3, U_4$ , полагаем модельно некоррелированными, а соответствующие им факторы индивидуального сознания независимыми. Поставим в соответствие этим 4 измеряемым показателям (обобщенным математическим факторам) теоретические случайные величины  $\xi_1, \xi_2, \xi_3, \xi_4$ . Значения показателей индивидуального сознания имеют

размерности. Их идентификацию проведем в другой статье.

Наличие единицы измерения не удобно при делении или умножении 2-х величин разных размерностей. Например, значению величины  $x$ , равной  $x = 6 \text{га} \times 10 \text{человек} / 7 \text{тракторов} \times 1 \text{Га}$  невозможно назначить название. Лучше иметь дело с безразмерными величиной типа  $x = 6 \times 10 / 7 \times 1$ . Результирующее  $i$ -ое значение  $j$ -го показателя  $x_{ij}^0$  равно сумме 2-х слагаемых:  $x_{ij}^0 = z_{ij} s_j + x_j^{cp}$ ,  $j=1, \dots, n$ ,  $i=1, \dots, m$ , и имеет конкретную размерность. Переменная величина  $z_{ij} = (x_{ij}^0 - x_j^{cp}) / s_j$  очищена от размерности, она является стандартизованной переменной. Моделирование  $z$ -переменной независимо от средней  $x^{cp}$  и дисперсии  $s_j^2$  позволяет придать сумме 2-х слагаемых:  $x_{ij}^0 = z_{ij} s_j + x_j^{cp}$ ,  $j=1, \dots, n$ ,  $i=1, \dots, m$ , заранее заданные свойства: среднее арифметическое значение  $j$ -ой  $x^0$ -переменной равно  $x_j^{cp}$ , дисперсия  $j$ -ой  $x$ -переменной равна  $s_j^2$ . Модельные  $z$ -переменные позволяют нам формализовать динамику изменений значений  $z$ -переменных, их взаимосвязи. А взаимосвязи между парами  $z$ -переменных – выборочные коэффициенты корреляции, смоделировать в точности равными заданным значениям. Последние значения могут быть такими, какими они являются у реальных значений  $z$ -переменных, линейные комбинации которых образуют наши 4  $y$ -переменные  $U_1, U_2, U_3, U_4$ . После окончания этапа моделирования мы присвоим единицы измерения каждому из  $z$ -переменных, веса при которых имеют абсолютные значения, превышающие пороговые значения  $c^0(j)$ ,  $j=1, 2, 3, 4$ .

### Алгоритм моделирования значений показателей индивидуального сознания

Алгоритм состоит из 4 шагов. На 0-ом шаге, если  $n > 4$ , в дополнение к 4 собственным числам моделируем недоминирующие элементы.

Далее, имея полный спектр реализуем модель С.Р. Chalmers-a [25]:  $\Lambda_{nn} = \langle (C_{nn}^{(\ell)}, R_{nn}^{(\ell)}) \rangle$ ,  $n=4$ ,  $\ell=1, \dots, k_\ell$ . Из  $k_\ell$  штук матриц  $C_{nn}^{(\ell)}$  весов отбираем только те матрицы, у которых выделенные элементы удовлетворяют критерию 2. Получаем уравнения для переменных  $U_1, U_2, U_3, U_4$ :

$$y_{i1} = z_{i1} c_{11} + \dots + z_{i4} c_{41}, \quad y_{i2} = z_{i1} c_{12} + \dots + z_{i4} c_{42}, \\ y_{i3} = z_{i1} c_{13} + \dots + z_{i4} c_{43}, \quad y_{i4} = z_{i1} c_{14} + \dots + z_{i4} c_{44} \quad i=1, \dots, m.$$

Обратная спектральная задача (ОСЗ:  $\Lambda_{nn} = \langle (C_{nn}^{(\ell)}, R_{nn}^{(\ell)}) \rangle$ ,  $\ell=1, \dots, k_\ell$ , реализующая алгоритм из работы [21]. В формулировке ОСЗ применяется геометрический объект – конус, в ПСЗ – гиперэллипсоид. Отличие ПСЗ от ОСЗ в том, что в ОСЗ моделируются  $i$ -ые компоненты ( $i=1, \dots, n$ ) всех  $n$  собственных векторов, т.е. моделируются строки  $c_i = (c_{i1}, \dots, c_{in})$ ,  $i=1, \dots, n$ , матрицы  $C_{nn}$  (они имеют номер  $\ell=1, \dots, k_\ell < \infty$ ).



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Компоненты вектор-строки  $c_i$  интерпретируются как координаты  $n$  точек на одной (из бесконечного числа) образующей конуса  $K_{nn}$  [26]. В проекции на плоскость, перпендикулярную основанию конуса (на плоскость, проходящую через вершину конуса перпендикулярно основанию конуса). При этом на боковой поверхности конуса получаются 2 прямые - 2 образующих конуса. По Лемме из [26] угол между ними равен  $\pi/2$ . За одно обращение к программе CORMAT [22] алгоритма моделируются  $n$  образующих конуса, а на каждой образующей моделируются  $n$  точек с координатами  $c_{i1}, \dots, c_{in}$ ,  $i=1, \dots, n$ . Из этих  $n^2$  чисел образуется модельная матрица  $C^{(l)}_{66}$ , у которой мы анализируем только 4 первых столбца. Из матриц  $C^{(l)}_{66}$  с номером  $l=1, \dots, k_l < \infty$ , если мы моделируем  $k_l=100$  матриц  $C^{(l)}_{nn}$ . Ее  $j$ -ый столбец интерпретируется как вектор-столбец собственного вектора, зависящего от собственного числа  $\lambda_j$ ,  $j=1, n$ ,  $c_j \Lambda_{66} c_j^T = 1$ ,  $c_j = (c_{j1}, \dots, c_{jn})^T$ ,  $j=1, \dots, n$ . Эти равенства показывают зависимость  $j$ -го собственного вектора (вектора «весов») от всех собственных чисел. В ОСЗ:  $\Lambda_{nn} = \langle C^{(l)}_{nn}, R^{(l)}_{nn} \rangle$ ,  $l=1, \dots, k_l$ , компьютерную программу CORMAP решения которой мы применяем ( $k_l=200$ ), моделируются не  $n$  компонент  $j$ -ых собственных векторов  $c_j = (c_{j1}, \dots, c_{jn})^T$ , а  $i$ -ые компоненты ( $i=1, \dots, n$ ) всех  $n$  собственных векторов, т.е. моделируются строки  $c_i = (c_{i1}, \dots, c_{in})$ ,  $i=1, \dots, n$ , матрицы  $C_{nn}$ . Так как номер компоненты собственного вектора  $c_j = (c_{j1}, \dots, c_{jn})^T$  равен номеру  $z$ -переменной, то в ОСЗ моделируются последовательно значения весов  $(c_{11}, \dots, c_{1n})$ . Сперва моделируются веса  $(c_{11}, \dots, c_{1n})$  с учетом всех значений  $\lambda_1, \dots, \lambda_n$  весов, затем моделируются веса  $(c_{21}, \dots, c_{2n})$  с учетом всех значений  $\lambda_1, \dots, \lambda_n$  весов, и на  $n$ -ом шаге моделируются веса  $(c_{n1}, \dots, c_{nn})$  с учетом всех значений  $\lambda_1, \dots, \lambda_n$  весов. Это означает, что на каждом шаге моделирования весов сохраняется соответствие номера  $i$   $z$ -переменной к ее смыслу. Программа CORMAP соответствует нашей модели, потебовалась лишь модификация при ее применении.

Применим интерпретации компонент собственных векторов неизвестной корреляционной матрицы с заданным спектром  $\Lambda_{nn} = \text{diag}(\lambda_1, \dots, \lambda_n)$ ,  $n=6$ . При этом в ОСЗ значения собственных чисел (и в ПСЗ)  $\lambda_1, \dots, \lambda_n$  интерпретируются нами здесь и в работах [21, 23, 24] как длины полуосей гиперэллипсоида, а компоненты собственных векторов - как косинусы (синусы) углов между  $i$ -ой  $z$ -переменной и  $j$ -ой  $z$ -переменной  $c_{ij} = \text{сог}(z_i, z_j)$ . Необходимо моделировать и анализировать значения парных коэффициентов корреляции Пирсона, как показано ниже, двух видов:  $r_{ij} = \text{сог}(z_i, z_j)$ ,  $c_{ij} = \text{сог}(z_i, y_j)$ , и одну дисперсию  $\lambda_j = \text{сог}(y_j, y_j)$ . При этом парный коэффициент корреляции Пирсона  $r_{ij}$  служит коэффициентом линейной связи между  $k$ -

ими значениями  $i$ -ой  $z$ -переменной и  $j$ -ой  $z$ -переменной:  $z_{ki} = r_{ij} \times z_{kj}$ ,  $k=1, \dots, m$ ,  $i=1, \dots, n$ ,  $j=1, \dots, n$ . Эта формула позволяет вычислить значения  $i$ -ой  $z$ -переменной с неизвестным смыслом через значения  $j$ -ой  $z$ -переменной с известным смыслом, что облегчает процесс присваивания смыслов всем  $n$   $z$ -переменным.

### Присвоение имен показателям индивидуального сознания

Зафиксируем спектр  $\Lambda_{66} = \text{diag}(2.5000, 1.0000, 1.0000, 1.0000, 0.3000, 0.2000)$ . Экспертно согласованными значениями являются параметры спектра: если имеем матрицу  $R_{nn}$  или ее спектр  $\Lambda_{nn}$ , то значения их вычисленных  $f$ -параметров попадают всегда внутрь своих интервалов изменения [2, 6, 7]:  $f_1(\Lambda_{nn})/n \leq f_2(\Lambda_{nn}) \leq f_1^2(\Lambda_{nn})$ ,  $f_1^2(\Lambda_{nn}) \geq n \times f_2^{(2/n)}(\Lambda_{nn})$ ,  $f_3(\Lambda_{nn}) \times f_5(\Lambda_{nn}) \leq f_1^{(n/2)}(\Lambda_{nn})$ ,  $f_6(\Lambda_{nn}) \geq (n-1) \times f_3(\Lambda_{nn})^{1/(k-1)}$ ,  $0 \leq f_4(\Lambda_{nn}) \leq 1$ . Будем использовать формулы зависимости дисперсии  $i$ -го вектора весов от взаимного расположения собственных чисел  $\lambda_i$ ,  $i=1, \dots, n$ , друг от друга [21]:

$$\text{var}(c_i) \leq \frac{1}{m} \sum_{\substack{j=1 \\ j \neq i}}^n \frac{\lambda_j / \lambda_i}{(1 - \lambda_j / \lambda_i)}$$

Эта оценка выведена для спектра  $\Lambda_{nn}$  выборочной корреляционной матрицы  $R_{nn}$  многомерной выборки  $Z_{mn}$  из многомерного нормального распределения.

Для каждой корреляционной матрицы  $R^{(l)}_{nn}$ ,  $l=1, \dots, \infty$ , получены модельные многомерные  $\Lambda$ -выборки  $Y^{(l)}_{mn} \in N_s(0, \Lambda)$ , многомерные  $R$ -выборки  $Z^{(t, l)}_{mn} \in N_s(0, R^{(l)})$ ,  $t=1, \dots, k_t$ ,  $l=1, \dots, k_l$ . Случайная  $n$ -мерная выборка объема  $m > n$   $U^{(t, l)}_{mn} \in N_s(0, I_{nn})$ , номер  $t=1, \dots, k_t < \infty$ , с выборочной корреляционной матрицей  $I_{nn}$  и с неизвестным законом распределения с помощью случайных линейных преобразований  $C^{(l)}_{66}$ , удовлетворяющих равенству  $C^{(l)T}_{66} C^{(l)}_{66} C^{(l)}_{66} C^{(l)T}_{66} = I_{66}$ , многомерные выборки  $Y^{(l)}_{mn} \in N_s(0, \Lambda)$  превращаются в многомерные выборки  $Z^{(t, l)}_{mn} \in N_s(0, R^{(l)})$ ,  $t=1, \dots, k_t$ ,  $l=1, \dots, k_l$

Для нашего спектра  $\Lambda_{66} = \text{diag}(2.5000, 1.0000, 1.0000, 1.0000, 0.3000, 0.2000)$  реализуем вариант №3

ОМ ГК:  $\Lambda_{66} = \langle C^{(l)}_{66}, R^{(l)}_{66}, Y^{(l)}_{20,6}, Z^{(t, l)}_{20,6} \rangle$ ,  $t=1, \dots, k_t$ ,  $l=1, \dots, k_l$ . Значения  $f_1=6$ ,  $f_2=9,38$ ,  $f_3=12,5$ ,  $f_4=0,916666667$ ,  $f_5=0,15$ ,  $f_6=9,333333333$ . Значение одного из главных  $f$ -параметров спектра  $f_4=0,916666667$  свидетельствует о том, что значения дисперсий 4-х факторов отражают 92% информации, содержащихся в 4-х  $z$ -переменных или содержащихся в 6  $z$ -переменных. Восемь процентов (8%), содержащихся в 2-х неучтенных  $z$ -переменных, наша модель, наше когнитивное моделирование не использует, из-за нашей

**Impact Factor:**

<b>ISRA (India) = 4.971</b>	<b>SIS (USA) = 0.912</b>	<b>ICV (Poland) = 6.630</b>
<b>ISI (Dubai, UAE) = 0.829</b>	<b>ПИИЦ (Russia) = 0.126</b>	<b>PIF (India) = 1.940</b>
<b>GIF (Australia) = 0.564</b>	<b>ESJI (KZ) = 8.997</b>	<b>IBI (India) = 4.260</b>
<b>JIF = 1.500</b>	<b>SJIF (Morocco) = 5.667</b>	<b>OAJI (USA) = 0.350</b>

ограниченности восприятия нами проявлений только 4-х индивидуальных свойств сознания индивида. Анализ значений других f-параметров аналогичен приведенным в [21, 24].

Результаты статьи [3] дополним следующим образом. Сперва моделируем матрицу 20 значений изменчивостей некоррелированных y-переменных. Количество y-переменных равно 4:  $y_1, y_2, y_3, y_4$ . Они равны 4 линейным комбинациям 6 z-переменных  $y_{i1}=z_{i1}c_{11}+\dots+z_{i6}c_{61}$ ,  $y_{i2}=z_{i1}c_{12}+\dots+z_{i6}c_{62}$ ,  $y_{i3}=z_{i1}c_{13}+\dots+z_{i6}c_{63}$ ,  $y_{i4}=z_{i1}c_{14}+\dots+z_{i6}c_{64}$   $i=1,\dots,m$ . В матричном виде эти эти 4 линейные комбинации 6 z-переменных записываются в виде  $Y_{m4}=Z_{m6}C_{64}$ . Так как  $C_{64}^T C_{64}^T=I_{66}$ , то матрица  $Z^{(t,l)}_{20,6}$  значений изменчивостей 6 коррелированных z-переменных моделируется по формуле  $Z_{m6}=Y_{m4}C_{64}^T$ . Модельные 6 коррелированные изменчивости z-переменных имеют свои смыслы, а динамики пар,

троек изменчивостей имеют адекватные реальным совместные тенденции.

Смоделируем матрицу  $Z^{(t,l)}_{20,6}$ , состоящую из 6 столбцов, где каждый ее j-ый столбец с, состоит из 20 значений изменчивостей j-ой z-переменной,  $=1,\dots,6$ . Здесь не будем анализировать, интерпретировать элементы выборки  $Z^{(t,l)}_{20,6}$ , их результаты будут опубликованы отдельно. Ограничимся анализом только присвоений смыслов z-переменным, имеющим умеренную степень ( $const(j)=0.5191$ ,  $j=1,2,3,4$ ) своих «весов». Выбор этого критерия связан с нашей возможностью придать смыслы z-переменным, влияющих на 4 доминирующие по величине дисперсий y-переменные.

Рассмотрим матрицу «весов»  $C^{(l)}_{66}$  Таблица 4).

**Таблица 1**

	человек	курица	слон	жираф	честность, нагнать страху, обмануть..., правдивость, уровень деспотизма, любознательность, уровень стресса, моральные ценности и т. д.				
движение					проявление...				
$S_{max}=(m)$	600	60	500	750	100%	100%	100%	100%	100%
Длина шага(m)	0.6	0.1	0.5	1.5	1%	1%	1%	1%	1%
$Откл_{шаг}=1000(ш)$	100	600	1000	500	1/100=0,01	1/100=0,01	1/100=0,01	1/100=0,01	1/100=0,01
$Откл_{шаг}^* S_{шаг}$ (Длина шага)	600*0.1м	600ш*0.1м	1000*0.5=500	500*1.5=750	100%*1%=100%	100%*1%=100%	100%*1%=100%	100%*1%=100%	100%*1%=100%
Собственное отклонение	600м/(100*0.6м)=1	60м/(600*0.1м)=1	500/500=1	750/750=1	100%/100%=1(1/%)	100%/100%=1(1/%)	100%/100%=1(1/%)	100%/100%=1(1/%)	100%/100%=1(1/%)
изменчивость собственного отклонения	- $3 < z_{ij} < 3$	$z_{ij}$	$z_{ij}$	$z_{ij}$	$z_{ij}$	$z_{ij}$	$z_{ij}$	$z_{ij}$	$z_{ij}$
Сумма изменчивостей	$z_{1j}+\dots+z_{mj}=0$	$z_{1j}+\dots+z_{mj}=0$	$z_{1j}+\dots+z_{mj}=0$	$z_{1j}+\dots+z_{mj}=0$	$z_{1j}+\dots+z_{mj}=0$	$z_{1j}+\dots+z_{mj}=0$	$z_{1j}+\dots+z_{mj}=0$	$z_{1j}+\dots+z_{mj}=0$	$z_{1j}+\dots+z_{mj}=0$

**Таблица 2**

ROW 1	1	-0,634	-0,6218	-0,3511	0,0754	-0,3236
ROW 2	-0,634	1	0,334	0,264	0,0911	0,0115
ROW 3	-0,6218	0,334	1	0,2341	0,2373	0,6314
ROW 4	-0,3511	0,264	0,2341	1	0,0326	0,3803
ROW 5	0,0754	0,0911	0,2373	0,0326	1	0,1053
ROW 6	-0,3236	0,0115	0,6314	0,3803	0,1053	1

<b>Impact Factor:</b>	<b>ISRA (India) = 4.971</b>	<b>SIS (USA) = 0.912</b>	<b>ICV (Poland) = 6.630</b>
	<b>ISI (Dubai, UAE) = 0.829</b>	<b>ПИИЦ (Russia) = 0.126</b>	<b>PIF (India) = 1.940</b>
	<b>GIF (Australia) = 0.564</b>	<b>ESJI (KZ) = 8.997</b>	<b>IBI (India) = 4.260</b>
	<b>JIF = 1.500</b>	<b>SJIF (Morocco) = 5.667</b>	<b>OAJI (USA) = 0.350</b>

Таблица 3. Модельная матрица выделенных индикаторов наличия извлекаемых знаний из пары матриц ( $\Lambda^{+66}, C^{+66}$ )- решений ОЗ [1]-

ROW 1	<b>0.4971</b>	-0.3084	<b>-0.5739</b>	-0.2884	-0.1500	-0.4720
ROW 2	0.0736	<b>-0.4618</b>	-0.0668	0.3923	-0.6613	0.4309
ROW 3	<b>0.4481</b>	-0.3032	-0.0492	0.4155	0.6819	0.2592
ROW 4	0.2227	<b>-0.6303</b>	.2150	<b>-0.6420</b>	0.1770	0.2519
ROW 5	<b>0.5191</b>	<b>0.4397</b>	-0.0281	-0.4220	-0.1139	0.5876
ROW 6	<b>0.4771</b>	-0.0953	<b>0.7854</b>	0.0093	-0.1756	-0.3399

Таблица 4. Матрица случайных индикаторов наличия извлекаемых знаний из пары матриц ( $\Lambda_{66}, C^{(66)}$ ) – решений ОСЗ [2]

ROW 1	<b>0,3909</b>	<b>-0,3084</b>	<b>-0,5739</b>	-0,2883	0,0000	-0,5828
ROW 2	<b>0,5233</b>	<b>-0,4618</b>	0,0000	<b>0,3923</b>	0,0000	0,5992
ROW 3	<b>0,5191</b>	<b>-0,3032</b>	0,0000	<b>0,4155</b>	0,6826	0,0000
ROW 4	0,0000	<b>-0,6303</b>	0,0000	<b>-0,6420</b>	0,0000	0,4365
ROW 5	<b>0,4481</b>	<b>0,4397</b>	-0,2319	<b>-0,4220</b>	-0,6116	0,0000
ROW 6	<b>0,3212</b>	-0,0953	<b>0,7854</b>	0,0091	0,0000	-0,5204

**Когнитивная модель присвоений имен и смыслов изменчивостям z-переменных для пары матриц ( $\Lambda^{+66}, C^{+66}$ )- решений ОЗ**

Введем обозначения. Смысл z-переменной  $z_1$ , входящей в валидную переменную (y-переменную)  $u_3$ , обозначим так: *смысл*( $u_3, z_1$ ). Заданный заранее *смысл* валидной j-ой переменной (y-переменной)  $y_j$ ,  $j=1, \dots, \ell$ , обозначим *смысл*( $y_j$ ). Перечень *смыслов* *смысл*( $y_j$ ),  $j=1, \dots, \ell$ , приведен в столбце 2 Таблицы 2. «Веса» валидных переменных, вычисленных при реализации модели, приведены в столбце 1 Таблицы 2. Веса» валидных переменных из матрицы  $\Lambda^{+_{nn}} = \text{diag}(\lambda^+_1, \dots, \lambda^+_n)$ , согласованную с матрицей  $C^{+_{nn}} = [C^+_1, C^+_2]$  с новыми значениями  $c^+_{kj}, j=1, \dots, \ell$ ,  $k \in \{1, \dots, n\}$ ). Каждая матрица из новой пары матриц ( $C^{+_{nn}}, \Lambda^{+_{nn}}$ ) удовлетворяет требуемым равенствам из ПСЗ и ОСЗ:  $C^{+T}_{nn} C^{+}_{nn} = C^{+}_{nn} C^{+T}_{nn} = I_{nn}$ ,  $C^{+}_{nn} \Lambda^{+}_{nn} C^{+T}_{nn} = R^{+}_{nn}$ ,  $\lambda^+_1 + \dots + \lambda^+_n = n$ ,  $c^+_j \Lambda^{+}_{nn} c^{+T}_j = 1$ ,  $c^+_i \Lambda^{+}_{nn} c^{+T}_j = r^+_{ij}$ ,  $r^+_{ij} = r^+_{ji}$ ,  $i=1, \dots, n$ ,  $j=1, \dots, n$ ,  $C^{+_{nn}} = [C^+_1, C^+_2]$ , где корреляционная матрица  $R^{+}_{nn}$  имеет новую матрицу собственных векторов  $C^{+}_{nn}$  и новые собственные числа  $\Lambda^{+}_{nn} = \text{diag}(\lambda^+_1, \dots, \lambda^+_n) = n, \lambda^+_1 + \dots + \lambda^+_n = n, \lambda^+_1 \geq \dots \geq \lambda^+_n, \Lambda^{+_{n\ell}} = \text{diag}(\lambda^+_1, \dots, \lambda^+_l) = \text{diag}(1.75, 1.383727, 1.366273, 1.0000)$ .

Для матрицы  $\Lambda^{+_{\ell\ell}} = \text{diag}(\lambda^+_1, \dots, \lambda^+_l) = \text{diag}(1.75, 1.383727, 1.366273, 1.0000)$  и пары матриц ( $\Lambda^{+_{66}}, C^{+_{66}}$ ) [3] продолжим когнитивный анализ присвоения имен к каждой из 4-х выделенных z-

переменных. Формула валидной переменной равна  $y_{i1} = z_{i1}c_{11} + \dots + z_{i4}c_{41}$ ,  $y_{i2} = z_{i1}c_{12} + \dots + z_{i4}c_{42}$ ,  $y_{i3} = z_{i1}c_{13} + \dots + z_{i4}c_{43}$ ,  $y_{i4} = z_{i1}c_{14} + \dots + z_{i4}c_{44}$   $i=1, \dots, m$ .

Подставим значения выделенных индикаторов из матрицы индикаторов  $C_{66}$  наличия извлекаемых знаний Таблица 2 [3].

Первая система имеет 4 модельных равенств, пригодных для когнитивного моделирования смыслов 6 выделенных z-переменных:

$$y_{i1} = z_{i1} \mathbf{0.4971} + z_{i3} \mathbf{0.4481} + z_{i5} \mathbf{0.5191} + z_{i6} \mathbf{0.4771},$$

$$y_{i2} = z_{i2} \mathbf{-0.4618} + z_{i4} \mathbf{-0.6303} + z_{i5} \mathbf{0.4397},$$

$$y_{i3} = z_{i1} \mathbf{0.5739} + z_{i6} \mathbf{0.7854}, y_{i4} = z_{i1} \mathbf{-0.6420},$$

$$i=1, \dots, m.$$

Для когнитивного моделирования смыслов 6 выделенных z-переменных имеем систему из 4 смысловых равенств с 4 известными левыми частями и 6 неизвестными смыслами 6 z-переменных в правых частях. Они получены после решения Оптимизационной Задачи (ОЗ):  $\Lambda_{66} = \text{diag}(2.5000, 1.0000, 1.0000, 1.0000, 0.3000, 0.2000) \Rightarrow (\Lambda^{+_{44}} = \text{diag}(1.75, 1.383727, 1.366273, 1.0000), C^{+_{66}})$ . Цель решения ОЗ: получение новой матрицы индикаторов  $C^{+_{66}}$  с выделенными индикаторами (обозначены красным цветом) и новых дисперсий (1.75, 1.383727, 1.366273, 1.0000) для 4 валидных переменных. Система из 4 смысловых равенств с 6 неизвестными смыслами 6 z-переменных имеет вид: *смысл*( $y_{i1}$ ) = *смысл*( $z_{i1}$ ) **0.4971** + *смысл*( $z_{i3}$ ) **0.4481** + *смысл*( $z_{i5}$ ) **0.5191** + *смысл*( $z_{i6}$ ) **0.4771**,

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$\text{смысл}(y_{i2}) = \text{смысл}(z_{i2}) * (-0.4618) + \text{смысл}(z_{i4}) * (-0.6303) + \text{смысл}(z_{i5}) * 0.4397,$

$\text{смысл}(y_{i3}) = \text{смысл}(z_{i1}) * 0.5739 + \text{смысл}(z_{i6}) * 0.7854,$

$\text{смысл}(y_{i4}) = \text{смысл}(z_{i1}) * (-0.6420).$

Когнитивное решение этой неопределенной системы уравнений имеет решение, приведенное в Таблице 6 (столбец 5). Описание процесса подбора 6 когнитивных смыслов приведено в статье [3].

Ниже покажем когнитивное и смысловое совпадение данного решения с другим решением, полученным для системы уравнений с другими параметрами (коэффициентами), с другими неизвестными переменными из того же множества неизвестных. Две линейные системы алгебраических уравнений, но с разными значениями параметров при неизвестных смыслах 6 z-переменных, имеют когнитивно одинаковые смыслы-решения. Иными словами – имея 4 математические равенства для 6 неизвестных z-переменных  $z_1, z_2, z_3, z_4, z_5, z_6$  и 4 известных смысла 4-х валидных переменных  $y_1, y_2, y_3, y_4$  получаем решение в виде когнитивно сконструированных 6 смыслов:

$\text{смысл}(z_{i1}), \text{смысл}(z_{i2}), \text{смысл}(z_{i3}), \text{смысл}(z_{i4}),$   
 $\text{смысл}(z_{i5}), \text{смысл}(z_{i6}),$  которые соответствуют линейным комбинациям этих смыслов, приравненных заданным 4 смыслам валидных переменных  $y_1, y_2, y_3, y_4$ .

Мы реализовали процесс трансформации неопределенной системы равенств в систему сумм когнитивных смыслов изменчивостей показателей индивидуального сознания.

Индивиды с такими показателями сознания встречаются в РБК-подобных странах [3]. Исследований – где, сколько, каких больше, не проводились. В статьях [1-4] рассматриваются индивиды (чиновники), подвергнутые в течение десятилетий «отрицательной селекции» [1] с сонанием «потеря чувственной культуры» [1]. Такая селекция ухудшает показатели сознания, в отличие от положительной селекции, где селекционеры улучшают сорт растения, породу животного. Разных социальных экспериментов с человеческим сознанием проведены много. Мы рассматриваем конкретные случаи, присущие РБК-подобным странам [3].

Нет однозначно трактуемого и общепринятого определения сознания, т.к. многие его базовые критерии однозначно не определены. Формулы ровки понятия сознания различны, порой диаметрально противоположны. Мы придерживаемся мнения, что «Сознание — состояние психической жизни организма,

выражающееся в субъективном переживании событий внешнего мира и тела организма, а также в отчете об этих событиях и ответной реакции на эти события»<sup>4</sup> «Ученые доказали, что дух первичен, а материя вторична»<sup>5</sup> Каскад новейших научных открытий нобелевских лауреатов Пола Дэвиса, Дэвида Бома и Ильи Пригожина показал, что, углубляясь в материю, сталкиваешься с фактами полного ее исчезновения.»<sup>5</sup>

### Когнитивная модель присвоений имен и смыслов изменчивостям z-переменных для пары матриц $(\Lambda_{66}, C_{66})$ – решений ОСЗ

Для пары матриц  $(\Lambda_{66}, C_{66})$  - решений Обратной Спектральной Задачи проводится иная трансформация другой недоопределенной системы равенств в другую систему сумм когнитивных смыслов показателей индивидуального сознания.

Рассмотрим матрицу  $C_{66}^{(i)}$  из Таблица 3 [2]. Она смоделирована при решении ОСЗ:  $\Lambda_{66} \Rightarrow (C_{66}^{(i)} = 1, \dots, k_i)$ , где  $\Lambda_{66} = \text{diag}(2.5000, 1.0000, 1.0000, 1.0000, 0.3000, 0.2000)$ . Система уравнений имеет вид:

$y_{i1} = z_{i1} * 0.3909 + z_{i2} * 0.5233 + z_{i3} * 0.5191 + z_{i5} * 0.4481 + z_{i6} * 0.3212,$

$y_{i2} = z_{i1} * (-0.3084) + z_{i2} * (-0.4618) + z_{i3} * (-0.3032) + z_{i4} * (-0.6303) + z_{i5} * 0.4397,$

$y_{i3} = z_{i1} * (-0.5739) + z_{i6} * 0.7854,$

$y_{i4} = z_{i2} * 0.3923 + z_{i3} * 0.4155 + z_{i4} * (-0.6420) + z_{i5} * (-0.4220), i = 1, \dots, m.$

Для этой новой системы теперь имеем новую систему из 4 смысловых равенств с 4 известными левыми частями и неизвестными смыслами z-переменных в правых частях:

$\text{смысл}(y_{i1}) = \text{смысл}(z_{i1}) * 0.3909 + \text{смысл}(z_{i2}) * 0.5233 + \text{смысл}(z_{i3}) * 0.5191 + \text{смысл}(z_{i5}) * 0.4481 + \text{смысл}(z_{i6}) * 0.3212,$

$\text{смысл}(y_{i2}) = \text{смысл}(z_{i1}) * (-0.3084) + \text{смысл}(z_{i2}) * (-0.4618) + \text{смысл}(z_{i3}) * (-0.3032) + \text{смысл}(z_{i4}) * (-0.6303) + \text{смысл}(z_{i5}) * 0.4397,$

$\text{смысл}(y_{i3}) = \text{смысл}(z_{i1}) * (-0.5739) + \text{смысл}(z_{i6}) * 0.7854,$

$\text{смысл}(y_{i4}) = \text{смысл}(z_{i2}) * 0.3923 + \text{смысл}(z_{i3}) * 0.4155 + \text{смысл}(z_{i4}) * (-0.6420) + \text{смысл}(z_{i5}) * (-0.4220),$

Решим отдельно две системы смысловых уравнений. Найдем 6 смыслов 6 z-переменных для 1-ой системы. По другому проведем «когнитивный поиск» для 2-ой системы, смысловые уравнения которой содержат больше неизвестных смыслов изменчивостей. В результате нам не удалось подобрать новые смыслы. Но удалось учесть смену знака плюс на знак минус при значении изменчивости. Смысл

<sup>4</sup> Лекторский В. А. Сознание // Новая философская энциклопедия / Ин-т философии РАН; Нац. обществ.-науч. Фонд. — 2-е изд., испр. и доп. — М.: Мысль, 2010.

<sup>5</sup> (Ученые доказали, что дух первичен, а материя вторична <https://golosislama.com/news.php?id=16799>)

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«честность» мы поменяли на смысл «античестность». Смысл «антипорядочность» мы поменяли на смысл «антипорядочность» (Таблица 6, Таблица 7). Совокупность из шести неизвестных смыслов 6 z-переменных является решением как 1-ой системы, так и 2-ой системы.

Сравним полученную после решения Обратной Спектральной Задачи ( $\Lambda_{66} \Rightarrow (C_{66}^{(l)}, = 1, \dots, k_l)$ , где  $\Lambda_{66} = \text{diag}(2.5000, 1.0000, 1.0000, 1.0000, 0.3000, 0.2000)$ .) систему из 4 смысловых уравнений с 6 неизвестными смыслами шести z-переменных с аналогичной системой полученной после решения Оптимизационной Задачи [2]. В этих 2-х случаях резко отличаются используемые спектры, а соответствующие им матрицы собственных векторов тоже различаются, но имеют несколько общих элементов. Эти элементы выделены в каждом из 4-х столбцов матрицы  $C_{66}^{(l)}$

Результаты нашего когнитивного моделирования присвоений имен и смыслов z-переменным представлены в Таблице 6.

Решение 2-ой системы. Смысловое уравнение

$\text{смысл}(y_{11}) = \text{смысл}(z_{11}) \cdot 0.3909 + \text{смысл}(z_{12}) \cdot 0.5233 + \text{смысл}(z_{13}) \cdot 0.5191 + \text{смысл}(z_{15}) \cdot 0.4481 + \text{смысл}(z_{16}) \cdot 0.3212$  имеет решение вида:

$\text{смысл}(y_{11}) = \langle \text{лицо низкой социальной активности} \rangle \cdot 0.3909 + \langle \text{низкая зарплата} \rangle \cdot 0.5233 + \langle \text{антипорядочность} \rangle \cdot 0.5191 + \langle \text{честность} \rangle \cdot 0.4481 + \langle \text{стремится обмануть, а не сделать дело} \rangle \cdot 0.3212$ .

Смысловое уравнение вида  $\text{смысл}(y_{12}) = \text{смысл}(z_{11}) \cdot (-0.3084) + \text{смысл}(z_{12}) \cdot (-0.4618) + \text{смысл}(z_{13}) \cdot (-0.3032) + \text{смысл}(z_{14}) \cdot (-0.6303) + \text{смысл}(z_{15}) \cdot 0.4397$  имеет решение вида:

$\langle \text{принудить к...} \rangle = \langle \text{лицо низкой социальной активности} \rangle \cdot (-0.3084) + \langle \text{низкая зарплата} \rangle \cdot 0.4618 + \langle \text{антипорядочность} \rangle \cdot (-0.3032) + \langle \text{проявление деспотизма} \rangle \cdot (-0.6303) + \langle \text{честность} \rangle \cdot 0.4397$ .

Третье Смысловое уравнение  $\text{смысл}(y_{13}) = \text{смысл}(z_{11}) \cdot (-0.5739) + \text{смысл}(z_{16}) \cdot 0.7854$  имеет решение:  $\langle \text{обмануть, чтобы...} \rangle = \langle \text{лицо низкой социальной активности} \rangle \cdot (-0.5739) + \langle \text{стремится обмануть, а не делать дело} \rangle \cdot 0.7854$ .

Четвертое смысловое уравнение:  $\text{смысл}(y_{14}) = \text{смысл}(z_{12}) \cdot 0.3923 + \text{смысл}(z_{13}) \cdot 0.4155 + \text{смысл}(z_{14}) \cdot (-0.6420) + \text{смысл}(z_{15}) \cdot (-0.4220)$  имеет решение вида:  $\langle \text{страху нагнать} \rangle = \langle \text{низкая зарплата} \rangle \cdot 0.3923 + \langle \text{антипорядочность} \rangle \cdot 0.4155 + \langle \text{проявление деспотизма} \rangle \cdot (-0.6420) + \langle \text{античестность} \rangle \cdot (-0.4220$ .

Матрица  $C_{66}^{(l)}$  (при одном из значений номера  $l$ ) и является одной из бесконечного множества матриц. У матриц  $C_{66}^{+}$  (Таблица 2) и  $C_{66}^{(l)}$  (Таблица 3) имеются общие элементы. Эти элементы выделены красным цветом. В матрице  $C_{66}^{(l)}$  к ним (красным) добавились новые индикаторы присутствия знаний в компонентах собственных векторов из матрицы  $C_{66}^{(l)}$  – изменчивости при индикаторах  $c^{(l)}$  наличия знаний (они помечены зеленым цветом в Таблице 3). Изменчивости при остальных элементах матриц  $C_{66}$  и  $C_{66}^{(l)}$  имеют разные незаметные значения, пренебрежимо малые значения. Ниже мы убедимся в том, что когнитивно определенные смыслы 6 z-изменчивостей (переменных) из матрицы  $Z_{20,6}$  не изменились и для элементов матрицы изменчивостей  $Z_{20,6}^{(t,l)}$ . Модельная матрица  $Z_{20,6}^{(t,l)}$  (Таблица 6) отличается от «оптимизированной» матрицы  $Z_{20,6}$ . Но в матрицах  $Z_{20,6}^{(t,l)}$  и  $Z_{20,6}$  z-переменная с номером  $j$  ( $z_j$ ) имеет один и тот же смысл. Несколько значений z-изменчивости в смысловых уравнениях системы 1 поменяли свои знаки на противоположный:  $-x$ ;  $x(-x)$ . Вновь появившиеся индикаторы:  $(x)$ ,  $(-x)$  либо совпадают  $(x(x))$ ,  $(-x)(-x)$ , либо имеют противоположный знак:  $x(-x)$ . Если в таблице обновлений изменчивостей  $Z_{20,6} \rightarrow Z_{20,6}^{(t,l)}$  (Таблице 8) проставлен знак  $x(x)$  или  $(-x)(-x)$ , то значения 2-х z-изменчивостей при индикаторе  $x$  из матрицы  $Z_{20,6}$  и при индикаторе из матрицы  $Z_{20,6}^{(t,l)}$  имеют совпадающие знаки. Если в Таблице 8 проставлен знак  $x(-x)$ , то при индикаторе из матрицы  $Z_{20,6}^{(t,l)}$  меняет знак на минус, смысл z-переменной в системе смысловых уравнений меняется на противоположный.

Когнитивно определенные смыслы 6 z-изменчивостей из матрицы  $Z_{20,6}$  как в 1-ой системе (из 4 смысловых равенств), так и из матрицы  $Z_{20,6}^{(t,l)}$  во 2-ой системе из 4 смысловых равенств. Начнем с 1-ой системы.

Мы когнитивно точно определили смысл для переменной  $z_4$   $\text{смысл}(y_{4,z_4}) = \langle \text{проявление деспотизма} \rangle$ . Как оказалось эти качества дополняет смысл другой переменной  $z_5$  «античестность»:  $\text{смысл}(y_{4,z_5}) = \langle \text{античестность} \rangle$ . С силой связи с валидным показателем «страху нагнать» (мы ему в нашей модели поставили в соответствие y-переменную  $y_4$ ) достаточно тесно связана z-переменная  $z_5$ , которой мы присвоим смысл «античестность»:  $\text{смысл}(y_{4,z_5}) = \langle \text{античестность} \rangle$ .

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**Таблица 5. Таблица (+/-)-изменчивостей индикаторов наличия знаний в 4-х столбцах матриц  $C_{66}$  и  $C^{(l)}_{66}$**

	1	2	3	4
1	<b>z(z)</b>	<b>(-z)</b>	<b>z(-z)</b>	<b>- z</b>
2	<b>z(z)</b>	<b>- z (-z)</b>		<b>(z)</b>
3	<b>z(z)</b>	<b>(-z)</b>		<b>(z)</b>
4	<b>-z</b>	<b>(-z)(- z)</b>		<b>(-z)</b>
5	<b>z(z)</b>	<b>z z</b>		<b>(-z)</b>
6	<b>z(z)</b>		<b>z z</b>	

**Таблица 6. Значения смыслов валидных и z-переменных, коэффициентов корреляции (для решений ОЗ:  $\Lambda_{66} \Rightarrow (\Lambda^+_{66}, C^+_{66})$ )**

Весовая и смысловая характеристика валидных и измеряемых z-переменных				
1	2	3	4	5
«Вес» валидной переменной	Смысл валидной переменной	Обозначение валидной переменной	Значения «весов» z-переменной, линейно входящих в валидную переменную	Смыслы z-переменных, линейно входящих в валидную переменную
$\lambda_1=1,75$	«по правде (правильно) поступать»	у1	согг(y <sub>1</sub> ,z <sub>5</sub> )=c <sub>51</sub> = <b>0,5191</b> согг(y <sub>1</sub> ,z <sub>3</sub> )=c <sub>31</sub> = <b>0,4481</b>	Смысл(y <sub>1</sub> ,z <sub>5</sub> )= «честность» смысл (y <sub>1</sub> ,z <sub>3</sub> )= порядочность
$\lambda_2=1,38372$ 7	«принудить к...»,	у2	согг(y <sub>2</sub> ,z <sub>1</sub> )=c <sub>21</sub> = -0,3084 согг(y <sub>2</sub> ,z <sub>2</sub> )=c <sub>22</sub> = <b>-0,4618</b> согг(y <sub>2</sub> ,z <sub>3</sub> )=c <sub>32</sub> = -0,3032 согг(y <sub>2</sub> ,z <sub>4</sub> )=c <sub>42</sub> = <b>- 0,6303</b> согг(y <sub>2</sub> ,z <sub>5</sub> )=c <sub>52</sub> =0,4397	1,2,3, 4,5 Смысл (y <sub>2</sub> ,z <sub>1</sub> )= «лицо низкой социальной активности», смысл (y <sub>2</sub> ,z <sub>2</sub> )= «низкая зарплата» смысл (y <sub>2</sub> ,z <sub>3</sub> )= антипорядочность смысл (y <sub>2</sub> ,z <sub>4</sub> )= «проявление деспотизма» смысл (y <sub>2</sub> ,z <sub>5</sub> )= «честность»
$\lambda_3=1,36627$ 3	«обмануть, чтобы...»	у3	Согг(y <sub>3</sub> ,z <sub>1</sub> )=c <sub>13</sub> = <b>-0,5739</b> Согг(y <sub>3</sub> ,z <sub>6</sub> )=c <sub>63</sub> = <b>0,7854</b>	1,6 смысл (y <sub>3</sub> ,z <sub>1</sub> )= «лицо низкой социальной активности»,смысл (y <sub>3</sub> ,z <sub>6</sub> )= «стремится обмануть, а не добросовестно сделать что-либо»
$\lambda_4=1$	«страху нагнать»	у4	согг(y <sub>4</sub> ,z <sub>2</sub> )=c <sub>24</sub> = <b>0,3923</b> согг(y <sub>4</sub> ,z <sub>3</sub> )=c <sub>34</sub> = 0,4155 согг(y <sub>4</sub> ,z <sub>4</sub> )=c <sub>44</sub> = <b>-0,6420</b> согг(y <sub>4</sub> ,z <sub>5</sub> )=c <sub>54</sub> = <b>- 0,4220</b>	2,3, 4,5 смысл (y <sub>4</sub> ,z <sub>2</sub> )= «низкая зарплата» смысл (y <sub>4</sub> ,z <sub>3</sub> )= антипорядочность смысл (y <sub>4</sub> ,z <sub>4</sub> )= «проявление деспотизма» смысл (y <sub>4</sub> ,z <sub>5</sub> )= <i>античестность</i>

**Таблица 7. Значения смыслов валидных и z-переменных, коэффициентов корреляции (для решений ОСЗ:  $\Lambda_{66} \Rightarrow (R^{(l)}_{66}, C^{(l)}_{66})$ )**

Весовая и смысловая характеристика валидных и модельных z-переменных				
1	2	3	4	5
«Вес» валидной переменной	Смысл валидной переменной	Обозначение валидной переменной	Значения «весов» z-переменных, линейно входящих в валидную переменную	Смыслы z-переменных, линейно входящих в валидную переменную
$\lambda_1=2,55$	«проявлять правдивость»	у1	согг(y <sub>1</sub> ,z <sub>1</sub> )=c <sub>11</sub> = <b>0,3909</b> согг(y <sub>1</sub> ,z <sub>2</sub> )=c <sub>21</sub> = <b>0,5233</b> согг(y <sub>1</sub> ,z <sub>3</sub> )=c <sub>31</sub> = <b>0,5191</b> согг(y <sub>1</sub> ,z <sub>5</sub> )=c <sub>51</sub> = <b>0,4481</b> согг(y <sub>1</sub> ,z <sub>6</sub> )=c <sub>61</sub> = <b>0,3212</b>	1,2,3, 5,6 Смысл (y <sub>2</sub> ,z <sub>1</sub> )= «лицо низкой социальной активности»,«смысл (y <sub>2</sub> ,z <sub>2</sub> )= «низкая зарплата», <b>смысл (y<sub>2</sub>,z<sub>3</sub>)= «антипорядочность»</b> Смысл(y <sub>1</sub> ,z <sub>5</sub> )= «честность» смысл (y <sub>1</sub> ,z <sub>3</sub> )= порядочность смысл (y <sub>3</sub> ,z <sub>6</sub> )= «стремится обмануть, а не добросовестно сделать работу»

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$\lambda_2=1$	«принудить к...»,	Y <sub>2</sub>	$\text{corr}(y_2,z_1)=c_{21} = -0,3084$ $\text{corr}(y_2,z_2)=c_{22} = -0,4618$ $\text{corr}(y_2,z_3)=c_{23} = -0,3032$ $\text{corr}(y_2,z_4)=c_{24} = -0,6303$ $\text{corr}(y_2,z_5)=c_{25} = 0,4397$	1,2,3, 4,5	смысл (y <sub>2</sub> ,z <sub>1</sub> )= «лицо низкой социальной активности», смысл (y <sub>2</sub> ,z <sub>2</sub> )= «низкая зарплата» <b>смысл (y<sub>2</sub>,z<sub>3</sub>)= антипорядочность</b> смысл (y <sub>2</sub> ,z <sub>4</sub> )= «проявление деспотизма» смысл (y <sub>2</sub> ,z <sub>5</sub> )= «честность»
$\lambda_3=1$	«обмануть, чтобы...»	Y <sub>3</sub>	$\text{Corr}(y_3,z_1)=c_{13} = -0,5739$ $\text{Corr}(y_3,z_6)=c_{63} = -0,7854$	1,6	смысл (y <sub>3</sub> ,z <sub>1</sub> )= «лицо низкой социальной активности», смысл (y <sub>3</sub> ,z <sub>6</sub> )= «стремится обмануть, а не добросовестно сделать работу»
$\lambda_4=1$	«страху нагнать»	Y <sub>4</sub>	$\text{corr}(y_4,z_2)=c_{24} = 0,3923$ $\text{corr}(y_4,z_3)=c_{34} = 0,4155$ $\text{corr}(y_4,z_4)=c_{44} = -0,6420$ $\text{corr}(y_4,z_5)=c_{54} = -0,4220$	2,3, 4,5	смысл (y <sub>4</sub> ,z <sub>2</sub> )= «низкая зарплата» <b>смысл (y<sub>4</sub>,z<sub>3</sub>)= антипорядочность</b> смысл (y <sub>4</sub> ,z <sub>4</sub> )= «проявление деспотизма» смысл (y <sub>4</sub> ,z <sub>5</sub> )= античестность

Сравним полученную после решения Обратной Спектральной Задачи ( $\Lambda_{66}=\text{diag}(2.5000, 1.0000,1.0000,1.0000,0.3000,0.2000)$ )=>( $C^{(0)}_{66}=1, \dots, k_t$ ), систему из 4 смысловых уравнений с 6 неизвестными смыслами шести z-переменных с аналогичной системой полученной после решения Оптимизационной Задачи [1]. В этих 2-х случаях резко отличаются используемые спектры, а соответствующие им матрицы собственных векторов тоже различаются, но имеют несколько общих элементов. Эти элементы выделены в каждом из 4-х столбцов матрицы  $C^{(0)}_{66}$ .

### Анализ трендов динамик изменения валидных и «измеряемых» показателей индивидуального сознания

Мы знаем названия единиц изменения (шага) валидных изменчивостей показателей индивидуального сознания - проценты, единиц измерения ( ) измеряемых показателей, получаемых линейным преобразованием значений z-переменных  $z_1, z_2, z_3, z_4, z_5, z_6$ . Исследование этого проведено в [2-3]. Целью нашего моделирования является выявление трендов изменчивостей  $\{z_{i1}, z_{i2}, z_{i3}, z_{i4}, z_{i5}, z_{i6}\}$ ,  $i=1, \dots, m$ , «измеряемых» (моделируемых) показателей  $z_1, z_2, z_3, z_4, z_5, z_6$ , соответствующих нашим моделируемым z-переменным, показателям индивидуального сознания. Выше мы моделировали матрицу значений z-изменчивостей (не переменных)  $z_1, z_2, z_3, z_4, z_5, z_6$ .  $Z^{(0)}_{m6}=Y_{m6}[C^{(0)}_{66}]^T$ , а в статье [2-3] моделировалась  $Z_{m6}=Y_{m4}[C^+_{11}]^T$ .

Сделаем ряд визуализаций динамик и их анализ значений в соответствии с их смыслами. Рассмотрим тенденции роста и падения значений показателей. Нам важно знать какой тренд наблюдается у показателей, если, например, в мы

в наших данных наблюдаем «падение честности» у, например, 20 индивидов. Какая тенденция – роста или падения, мы видим в наших данных? Рисунок 4 каждая валидная динамика изменчивостей показателей независима друг от друга. Значение валидного показателя с номером j пропорционально величинам компонент  $c^{(0)}_{kj}$ ,  $k=1, \dots, 20$ , делит свой процент информации на 6 измеряемых показателей  $z_1, z_2, z_3, z_4, z_5, z_6$ . На Рисунке 1 и на Рисунке 2 убывающий тренд динамики изменчивостей показателя «проявление правдивости» ( $z_1$ ) сопровождается 2-мя убывающими тредами динамик изменчивостей показателей «проявление обмана» ( $z_3$ ) и «проявление принуждения» ( $z_2$ ). Убывающий тренд ( $z_1$ ) достигается перестановкой строк матрицы  $Z^{(0)}_{m6}, Y_{m6}$ , при котором не изменяются элементы матриц  $\Lambda_{66}, C^{(0)}_{66}$ . Рисунок 3 иллюстрирует наличие сильных корреляций в парах изменчивостей показателей в соответствии с значениями заметных по величине коэффициентах корреляции ( $r_{12}, r_{13}$ ) из матрицы  $R^{(0)}_{66}$  (Таблица 1). Коэффициенты корреляции  $r_{12}, r_{13}$  показывают своим значениями вышеприведенные убывающие тренды динамик изменчивостей  $z_1, z_2, z_3$  (Рисунок 1). Наглядно видна согласованность Рисунков 1 и 4.

Целенаправленные чтения текстов работ [1-9] убедили нас в правильности применении когнитивного [20] восприятия ощущений, восприятий, реакций индивида на принуждение, на «свои страхи», на «обмануть, чтобы...». Не учитывались в нашей Анализ проводился с применением языка описания ситуаций показатель – наименование – значение - единица измерения». В этой статье реализованы первые 2 возможности языка описания ситуаций. Реализации двух остальных возможностей «языка» будут описаны в отдельной статье.

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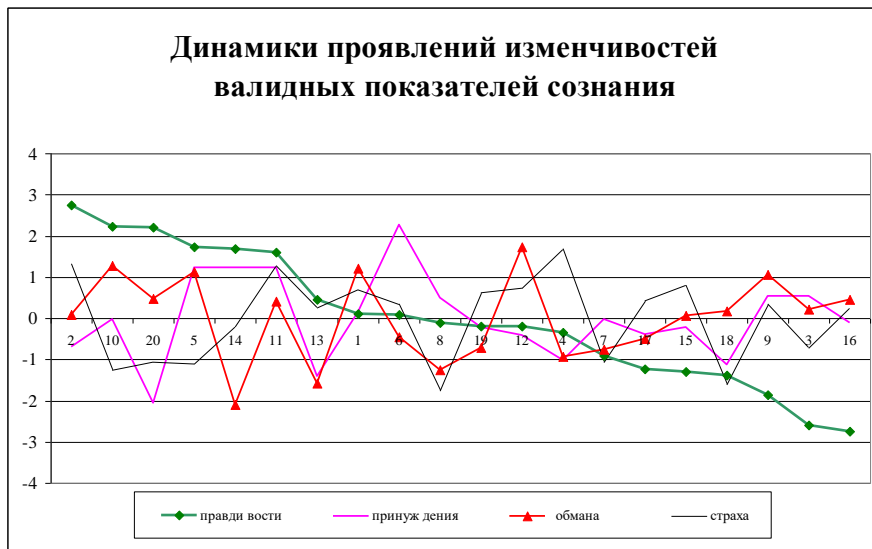


Рисунок 1

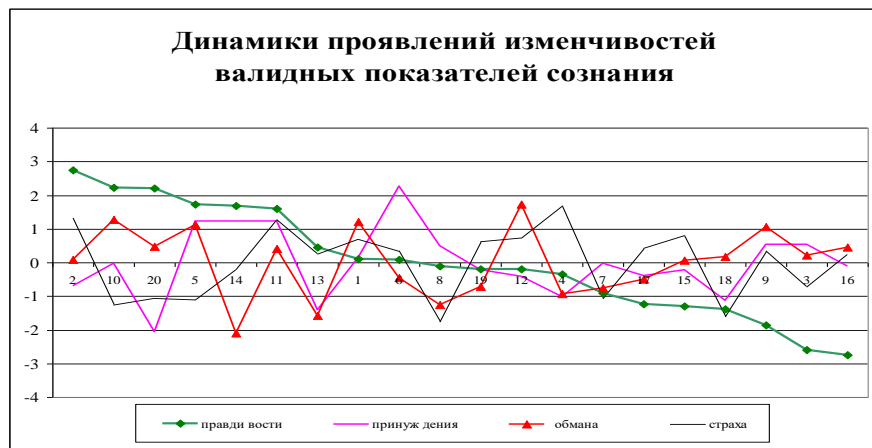


Рисунок 2



Рисунок 3



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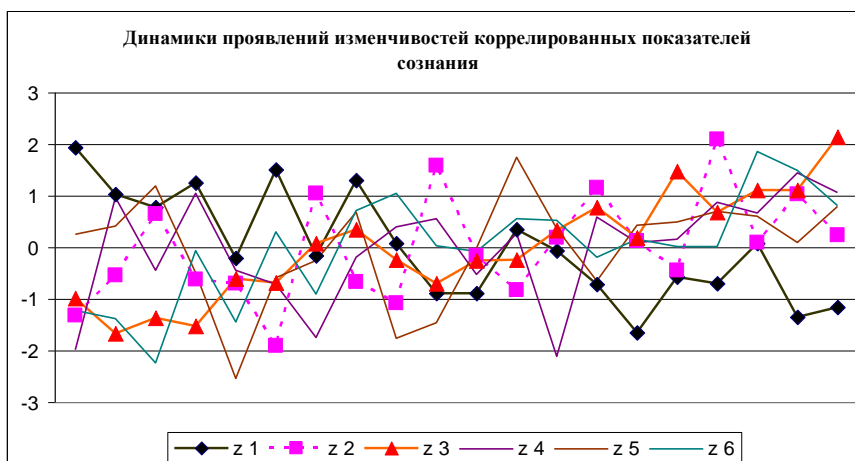


Рисунок 4

### Заключение

Наша цель состояла в том, чтобы показать возможности применения способа описания ситуаций «показатель–наименование–значение–единица измерения», когнитивного моделирования взаимосвязей между измеряемыми показателями индивида и скрытыми неизмеряемыми независимыми факторами воздействия на индивида разработать модель и получить экспертным путем, руководствуясь только цифровыми фактами.

Для решения  $\Lambda_{66} = \text{diag}(2.5000, 1.0000, 1.0000, 1.0000, 0.3000, 0.2000)$  Оптимизационной Задачи (ОЗ):  $\Lambda_{66} \Rightarrow (\Lambda_{66}^+, C_{66}^+)$  и для решения  $\Lambda_{66}^+ = \text{diag}(1.75, 1.383727, 1.366273, 1.0000, 0.3000, 0.2000), C_{66}^+$

Обратной Спектральной Задачи  $(1.75, 1.383727, 1.366273, 1.0000$

$\Lambda_{66} = \text{diag}(2.5000, 1.0000, 1.0000, 1.0000, 0.3000,$

$0.2000) \Rightarrow (C_{66}^{(\ell)}, R_{66}^{(\ell)}), \ell = 1, \dots, k_{\ell}, \ell \in \{1, \dots, k_{\ell}\},$

когнитивно получены смыслы 6 выделенных z-изменчивостей. Решены 2 задачи когнитивного моделирования смыслов 6 z-изменчивостей при заданных 4-х смыслах 4-х валидных изменчивостей (с доминирующими дисперсиями), разработаны 2 системы уравнений, каждая система содержит 4 смысловых равенств. Каждое уравнение системы содержит в левой части заданный смысл валидной изменчивости, а в правой части - сумму смыслов z-изменчивостей из своего подмножества, принадлежащего множеству из 6 z-изменчивостей. Идентичность смыслов 6 изменчивостей в двух системах смысловых уравнений демонстрирует важность матрицы индикаторов и безразличие к данной разнице в значениях доминирующих дисперсий валидных переменных. Разница в 2-х множествах дисперсий:  $(1.75, 1.383727, 1.366273, 1.0000 (2.5000, 1.0000, 1.0000, 1.0000)$  не влияет на их

общие смыслы. На суть 6 смыслов существенно влияют расположение индикаторов присутствия знаний в матрицах  $C_{66}$  и  $C_{66}^{(\ell)}$ .

Визуализации трендов динамик изменчивостей валидных и изменчивостей «измеряемых» показателей индивидуального сознания и анализа их показывают адекватности реальным тенденциям изменчивостей показателей индивидуального сознания.

Полученные смыслы изменчивостей заметных показателей сознания достаточно тесно связаны с изменчивостями скрытых факторов воздействия на сознание индивида. Мы обращаем внимание на полезность применения аппарата системы объяснений фактов и правил для модуля извлечения знаний из данных, при формулировке содержательных выводов при интерпретации цифровых результатов применения модели главных компонент в плохо формализуемой науке-индивидуальное сознание.

Разработанная математическая модель цифровизации показателей индивидуального сознания индивида правдоподобно выявляет части элементов языка описания ситуаций «показатель–наименование–значение–единица измерения». Когнитивный анализ и когнитивное моделирование демонстрировали эффективность применения Обратной Модели Главных Компонент [11]. Иллюстративный пример и дискуссия по приданию названий-смыслов 6 коррелированным показателям индивидуального сознания при заданных 4 скрытых факторах индивидуального восприятия служат обоснованием дальнейших исследований по моделированию значений и выбору единиц измерения n коррелированным показателям индивидуального сознания, оценкам их средних и дисперсий.

При этом практические решения по принятию предыдущего значения и

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последующего предыдущего значения и последующего предыдущего значения и подвергнуты всестороннему анализу. Чтобы осмыслить изучаемые в этой модели процессы необходимо рассмотреть вопросы при переходе от безразмерных значений  $z$ -переменных к значениям  $x^0$ -переменных (измеренных значений показателей) с размерностями. Здесь предстоит иметь дело с значениями средних арифметических  $n$  зависимых переменных  $x^{cp} = (x^{cp}_1, \dots, x^{cp}_n)$ , с их стандартными отклонениями, с эластичностями переменной  $x_j$  по  $x$ -переменным  $x_i \neq x_j$ , где  $x_{ij} = x^0_{ij} - x^{cp}_j$ ,  $i=1, \dots, m$ ,  $j=1, \dots, n$ . Это позволит оценивать приращение значения  $x^0_n$  при заданном приращении значения одной независимой  $x^0$ -переменной.

Предстоит исследовать обнаруженные новые явления, объекты, проявления их свойств и необходимо разрабатывать алгоритмические методы работы с ними, выходить на новые рубежи знаний «на личностном, индивидуальном уровне» на личностном, индивидуальном уровне [1], так как «массовое сознание остается в «домашних рамках» [1]. Мы надеемся, что данное направление исследований будет способствовать преобразованию индивидуального сознания к открытости и восприимчивости. «Открытость и восприимчивость к лучшим достижениям, а не заведомое отталкивание всего «не своего» – вот залог успеха и один из показателей открытого сознания» [1].

## References:

1. Zhanatauov, S.U. (2020). Measurement of variability of unmeasured indicators of individuals. *ISJ «Theoretical & Applied Science»*, №10, vol.90, pp.204-217. [www.t-science.org](http://www.t-science.org)
2. Zhanatauov, S.U. (2018). Model of digitalization of indicators of individual consciousness. *ISJ «Theoretical & Applied Science»*, №6(62): pp. 101-110. [www.t-science.org](http://www.t-science.org)
3. Zhanatauov, S.U. (2016). Modeling eigenvectors with given the values of their indicated components. *International Scientific Journal Theoretical & Applied Science*, №11, vol.43, pp.107-119. [www.T-Science.org](http://www.T-Science.org).
4. Zhanatauov, S.U. (2020). Cognitive model of variability in negative breeding indicators. *ISJ «Theoretical & Applied Science»*, №8, vol.88, pp. 117-136. [www.t-science.org](http://www.t-science.org)
5. Zhanatauov, S.U. (2018). Model of digitalization of indicators of individual consciousness. *Int.Sci.Jour. «Theoretical & Applied Science»*, №6(62): pp.101-110. [www.t-science.org](http://www.t-science.org)
6. Zhanatauov, S.U. (2018). Digitalization of the behavioral model with errors of non-returnable costs. *Int.Sci.Jour. «Theoretical & Applied Science»*. 2018, №8(63):pp.101-110. [www.t-science.org](http://www.t-science.org)
7. Zhanatauov, S.U. (2019). Cognitive model for digitalizing indicators individual consciousness of a civilized entrepreneur. *Int.Sci.Jour. «Theoretical & Applied Science»*, № 8(76): pp.172-191. [www.t-science.org](http://www.t-science.org)
8. Zhanatauov, S.U. (2018). A model of calculation of subjective probabilities in business. *Int.Sci.Jour. «Theoretical & Applied Science»*, №5(61): pp.142-156. [www.t-science.org](http://www.t-science.org)
9. Zhanatauov, S.U. (2018). Unified digital objects. *Int.Sci.Jour. «Theoretical & Applied Science»*, №7 (63): pp.216-223. [www.t-science.org](http://www.t-science.org)
10. Zhanatauov, S.U. (2019). Mathematical model «lower classes do not want, upper circles cannot». *ISJ «Theoretical & Applied Science»*, № 11 (79): pp.565-583. [www.t-science.org](http://www.t-science.org)
11. Zhanatauov, S.U. (2019). Cognitive model of the structure of the municipal body on monitoring the moral environment for subsidies of human resources. *Int.Sci.Jour. «Theoretical & Applied Science»*, № 7(75): pp.301-318. [www.t-science.org](http://www.t-science.org)
12. Zhanatauov, S.U. (2020). Modeling of redundancy-canonical variables with various dispersions. *ISJ Theoretical & Applied Science*, 04 (84), pp.475-492.375-392. [www.t-science.org](http://www.t-science.org)
13. Zhanatauov, S.U., & Seitkamzina, R.B. (2020). Matrices of indicators of recoverable knowledge. *ISJ «Theoretical & Applied Science»*, №3, vol.83, pp.464-475. [www.t-science.org](http://www.t-science.org)
14. Zhanatauov, S.U. (2018). The Theorems of values of relationships between groups of variables. *ISJ «Theoretical & Applied Science»*, №3(59): 239-256. [www.t-science.org](http://www.t-science.org)

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	<b>JIF = 1.500</b>	<b>SJIF (Morocco) = 5.667</b>	<b>OAJI (USA) = 0.350</b>

---

15. Axelrod, R. (1976). *The Structure of Decision: Cognitive Maps of Political Elites*-Princeton.Univ.Press.
16. Zhanatauov, S.U. (2013). *Obratnaja model` glavnyh komponent.* (p.201). Almaty: Kazstatinform.
17. Zhanatauov, S.U. (2019). A matrix of values the coefficients of combinational proportionality. *Int. Scientific Journal Theoretical &Applied Science*, №3 (68), pp.301-319. [www.t-science.org](http://www.t-science.org)
18. Hotelling, H. (1933). Analysis of a complex of statistical variables into principal components. *J.Educ. Psych.*, v.24, pp. 417,441,498-520.
19. Zhanatauov, S.U. (2017). Theorem on the  $\Lambda$ -samples. *International scientific journal Theoretical &Applied Science*, № 9, vol. 53, pp.177-192. [www.T-Science.org](http://www.T-Science.org).
20. Chalmers, C.P. (1975). Generation of correlation matrices with a given eigen-structure. –*J. Stat. Comp. Simul.*, vol.4, pp.133-139.
21. Zhanatauov, S.U. (2018). Inverse spectral problem. *ISJ Theoretical &Applied Science*, №12(68), pp.101-112. [www.t-science.org](http://www.t-science.org)

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## PHONETIC AND GRAMMATICAL ASSIMILATION OF BORROWED WORDS

**Abstract:** This article deals with the theoretical and applied observation of the phonetic and grammatical assimilation of the borrowed words. Loaning words from another language causes some changes in meaning of the word borrowed. When a word is taken over into another language its semantic structure as a rule undergoes great changes.

**Key words:** Phonetic, grammar, borrowed words, changes, consonant, vowel, phoneme groups, borrowed elements, word origin, loan words, semantics, polysemy, language structure.

**Language:** English

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### Introduction

It is now our task to see what changes borrowings have undergone in the English language and how they have adapted themselves to its peculiarities. All the changes that borrowed elements undergo may be divided into two large groups.

On the one hand there are changes specific of borrowed words only. These changes aim at adapting words of foreign origin to the norms of the borrowing language, e. g. the constant combinations [p n], [p s], [t p t] in the words «pneumatics», «psychology», «Ptolemy» of Greek origin were simplified into [n], [s], [t], since the consonant combinations [p s], [p t], [p n] very frequent at the end of English words (as in «sleeps», «stopped») were never used in the initial position.

It is very important to discriminate between the two processes the adaptation of borrowed material to the norms of the language and the development of these words according to the laws of the language.

This differentiation is not always easily discernible. In most cases we must resort to historical analysis before we can draw any definite conclusions.

There is nothing in the form of the words «procession» and «progression» to show that the former was already used in England in the 11<sup>th</sup> century, the latter not till the 15<sup>th</sup> century.

### II. Literature review

The history of these words reveals that the word procession has undergone a number of changes along side with other English words change in declension, accentuation, structure, sounds, whereas the word «progression» underwent some changes by analogy with the word «procession» and other similar words already at the time of its appearance in the language.

Since the process of assimilation of borrowings includes changes in sound-form, morphological structure, grammar characteristics, meaning and usage linguists distinguish phonetic, grammatical and lexical assimilation of borrowings.

### III. Analysis

Phonetic assimilation, comprising changes in sound-form and stress, is perhaps the most

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conspicuous. Sounds that were alien to the English language were fitted into its scheme of sounds.

Familiar sounds or sound combinations the position of which was strange to the English language, were replaced by other sounds or sound combinations to make the words conform to the norms of the language, e.g. German spits [spits] was turned into English [spits].

Substitution of native sounds for foreign ones usually takes place in the very act of borrowing. But some words retain their foreign pronunciation for a long time before the unfamiliar sounds are replaced by similar native sounds.

In words that were added to English from foreign sources, especially from French or Latin, the accent was gradually transferred to the first syllable.

Thus words like «honor», «reason» were accented on the same principle as the native «father», «mother».

Usually as soon as words from other languages were introduced into English they lost their former grammatical categories and inflexions and acquired new grammatical categories and paradigms by analogy with other English words.

If a borrowed word loses its former grammatical categories and inflexions and gets new grammatical categories and paradigms by analogy with other English words we say the word is undergone grammatical assimilation. Sometimes the foreign inflexions are fallen off.

E. g. sputnik, sputniks, sputnik's

Lat. consutare (v) English consult.

However there are some words in Modern English that have for centuries retained their foreign inflexions. Thus a considerable group of borrowed nouns, all of them terms or literary words adopted in the 16<sup>th</sup> century or later, have preserved their original plural inflexion to this day, e.g.

Phenomenon-phenomena

Addendum-addenda

Other borrowings of the same period have two plural forms the native and the foreign, e. g. vacuum-vacua, vacuums, virtuoso-virtuosi, virtuosos.

All borrowings that were composite in structure in their native language appeared in English as indivisible root-words, unless there were already words with the same morphemes in it, e. g. in the word «saunter» the French infinitive inflexion-er is retained, but it has changed its quality, it is preserved in all the other grammatical forms of the word. (saunters, suntered, sauntering), which means that it has become part of the stem in English.

It must be borne in mind that when there appears in a language a group of borrowed words built on the same pattern or containing the same morphemes, the morphological structure of the words becomes apparent and in course of time their word-building elements can be employed to form new words I.G. Koshevaya.

The Borrowed Words Process Development in English. Borrowing as replenishing of the vocabulary Uzbek and English languages. Borrowed words, their properties, studying of borrowed words, their origin and their significance. The problem of assimilation of borrowed words, morphemes from classical languages.

### Borrowed words in the English language.

Background of borrowed words in the English language and their translation. The problems of adoptions in the lexical system and the contribution of individual linguistic cultures for its formation. Barbarism, foreignisms, neologisms and archaic words.

Sometimes in borrowed words foreign affixes are replaced by those available in the English language, e. g. the inflexion - us in Latin adjectives was replaced in English with the suffixes - ous or - al:

Barbarus-barbarous

Botanicus-botanical

Balneus-balneal

## IV. Discussion

Polysemantic words are usually adopted only in one or two of their meanings.

Thus the word «timbre» that had a number of meanings in French was borrowed into English as a musical term only. The words cargo and cask, highly polysemantic in Spanish were adopted only in one of their meanings - «the goods carried in a ship», «a barrel for holding liquids» respectively.

In some cases we can observe specialization of meaning, as in the word hangar, denoting a building in which aero planes are kept and revive, which had the meaning of «review» in French and came to denote a kind of theatrical entertainment in English.

In the process of its historical development a borrowing sometimes acquired new meanings that were not to be found in its former semantic structure.

For instance, the word move in Modern English has developed the meanings of `propose', `change one's flat', `mix with people' and others that the French moveir does not possess.

The word scope, which originally had the meaning of `aim purpose', now means `ability to understand', `the field within which an activity takes place, sphere', `opportunity, freedom of action'.

As a rule the development of new meanings takes place 50-100 years after the word is borrowed.

The semantic structure of borrowings changes in other ways as well. Some meanings become more general, others more specialized, etc.

For instance, the word «terrorist» that was taken over from French in the meaning of «Jacobin» widened its meaning to `one who governs, or opposes a government, by violent means.

The word umbrella, borrowed in the meaning of a sunshade or pares came to denote similar protection from the rain as well.

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Usually the primary meaning of a borrowed word was a retained throughout its history, but sometimes it becomes a secondary meaning.

Thus the Scandinavian borrowings wing, root, take and many others have retained their primary meanings to the present day.

Sometimes change of meaning is the result of associating borrowed words with familiar words which somewhat resemble them in sound but which are not at all related. This process, which is termed folk etymology, often changes the form of the word in whole or in part, so as to bring it nearer to the word or words with which it is thought to be connected, e. g. the French sur (o) under had the meaning of «overflow».

In English r(o)under was associated by mistake with round - думалок and the verb was interpreted as meaning 'enclose on all sides, encircle' Folle - etimologization is a slow process; people first attempt to give the foreign borrowing its foreign premonition, but gradually popular use involves a new pronunciation and spelling.

Another phenomenon which must also receive special attention is the formation of derivatives from borrowed words. New derivatives are usually formed with the help of productive affixes, often of Anglo-Saxon origin.

The role of loan words in the formation and development of English vocabulary is dealt with in the history of the language. It is there that the historical circumstances are discussed under which words borrowed from Latin, from Scandinavian dialects, from Norman and Parisian, French and many other languages, including Russian, were introduced into English. Lexicology, on the other hand, has in this connection tasks of its own, being chiefly concerned with the material and the results of assimilation.

The main problems of etymology and borrowed words as they concern the English language are comprehensively and consistently treated in Professor A.I. Smirnit'skiy deals with these issues mainly in terms of word. Sameness reflecting his methodological approach to word theory.

Here we are going to concentrated our attention on the assimilation of borrowed words as a way of their interrelation with the system of the language as a whole.

The term assimilation of a loan word is used to denote a partial or total conformation to the phonetically, graphical and morphological standards of the receiving language and its semantic system.

Even a superficial examination of borrowed words in the English word-stock shows that there are words among them that are easily recognized as foreign and there are others that have become so firmly rooted in the language, so thoroughly assimilated that it is sometimes extremely difficult to distinguish them from words of Anglo-Saxon origin.

Let's take some examples: «we can easily determine that the words «décolleté», «graffito», «chemistry» are loaned words.

But the words like «pupil», «master», «city», «river» which became part of words used at least once a day are also borrowed words.

In Uzbek language this kind of situation can be also observed. For example: «Kolxoz», «sputnik», «demokratiya», «efir», etc words can be easily recognized as loan words.

But the words like «maktab», «kitob», «muhabbat», «ilm», «badavlat» and etc are not considered to be loan words by ordinary people, because these words are deeply rooted in native lexicon and are commonly used by people.

## V. Conclusion

But according to the etymology of these words they are not native words, they were borrowed from Arabic and Persian languages.

Unassimilated words differ from assimilated words in their pronunciation, spelling, frequency, semantic structure and sphere of application.

However, there is no distinct borderline between the two groups.

So far no linguist has been able to suggest more or less comprehensive criteria for determining the degree of assimilation depends in the first place upon the time of borrowing.

## References:

1. Ilyish, I. (1971). *The structure of Modern English*. (p.128). Moscow: «Просвещение».
2. Koshevaya, I.G. (1982). *The Theory of English Grammar*. (p.40). Moscow: "Просвещение".
3. Kholikova, N.N. (2019). Comparative observation of the peculiarities of English and Uzbek detective genre (in the examples of J.H.Chase's works). *IJITEE* volume-8 issue-9S3. ISSN: 2278- 3075. –India, pp. 365-367.
4. Kholikova, N.N. (2019). Expressions of the English culture, national characters and problems of recreating style of author in the

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**ISRA (India) = 4.971**  
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**OAJI (USA) = 0.350**

- translation. (in the Uzbek translated works of J.H.Chase). *International journal of Business and social sciences*. –India, pp.556-563.
5. Kholikova, N.N. (2019). Translation and its studies (according to the J.H.Chase's uzbek translated works). *International journal of theoretical and applied science*. ISSN: 2308-4944. – Filadelfija. AҚIII, pp.652-655.
  6. Kholikova, N.N. (2019). *Detective criminal dictionary in English, Russian and Uzbek languages*. International online copyright office, Interoco, EC-01-002637 муаллифлик гувоҳномаси. –Germany.
  7. Kholikova, N.N. (2020). *The skill of recreating the style of author in translation (in the examples of J.H.Chase's translated works)*. (p.202). Moscow: Peru edition. ISBN: 978-5-00150-806-9 Monography.
  8. Ahmedova, M.B. (2018). Genetic and Structural Specifications of tge Spirituality Nominative Units in the Uzbek Language. -*Theoretical and Applied Science*, 10 issue, pp.331-333.
  9. Ochilova, N.U., & Ahmedova, M. B. (2019). Reflections on Horse in Uzbek Prose.- *Theoretical and Applied Science*, 10 issue, pp. 86-88.
  10. Sharipova, M.S. (2020). "Philosophical analysis of the hero of Amir Temur". *"International Journal on Integrated Education"* Scientific Journal Impact Factor. (Impact factor 5.083) e-ISSN:26203502 p-ISSN : 2615 3785 Indonesia, Volume 3, Issue III, March 2020, pp.87-89.
  11. Amonova, Z.K., & Sharipova, M. S. (2020). "The Reflection of Nasimi`S Concepts in The Works of Atoi". *International Journal of Psychological Rehabilitation*. (Indexed by Scopus) ISSN: 1475-7192. Volume 24- Issue 9. June 2020, pp.3669-3676.
  12. Fayozova, D.S. (2020). Comment of artistic means used in the novel "Days gone by".- *Theoretical and Applied Science*, 03 issue, pp.104-107
  13. Fayazova, D.S. (2017). Adaptation of authentic material. -*Dostizheniya nauki i obrazovaniya*, N:4, pp.53-54.

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## THEMANTIC SCOPE AND INTERPRETATION OF POETIC IMAGES IN AZIM SUYUN'S POETRY

**Abstract:** Azim Suyun's poems are examples of elegant poetry, both with his art and with the poetic images and metaphors he uses. The article analyzes poetic images and their application in the works of Azim Suyun, the poet's skill in their application. Azim Suyun's poems also emphasize the diversity of themes and demonstrate the poetic skill of the poet.

**Key words:** artistic image, poetic skill, irony, animation, metaphor, allegory, antithesis, oxymoron.

**Language:** English

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### Introduction

Azim Suyun also has a worthy place in the Uzbek youth poetry of the 70s and 80s. All the immortal, eternal themes, which have been passed down as a tradition for centuries, are also embodied in the poet's poetry, providing a basis for ensuring the breadth and variety of the scope of the theme. It is safe to say that the themes of the Motherland, love for Mother Nature, glorification of the Prophet, love are the essence of the poet's poetry. The fact that the scale of the theme of the poet's poems is manifested in this type is, of course, connected with his place of birth, his childhood environment. The poetic images created by the poet are imbued with time, with the global problems of the time, with the motives of peace, freedom and patriotism.

Many (but not all) images are created on the basis of the vast possibilities of artistic language such as: metaphor, allegory, antithesis, oxymoron, hyperbole, paraphrases" (1,116-p).

### II.Literature review

It is well known that metaphor is a type of migration based on commonalities between things and events, trop. The transfer of a property from one object to another is on the basis of the principle of

interdependence, similarity or contrast. Most importantly, it is also an important foundation that provides imagery, creating a poetic image. "In literature, the disclosure of the essence of one thing-event through another thing-event is metaphorical, and the image built on this basis is called a metaphorical image." [5,92-p]

"The work of the world is waiting,  
Go through the eyes of the bride." [6,102-p]  
(A.Suyun)

Comparisons and allegories are also widely used in our classical literature and are an important means of creating imagery. "In the formation of the tashbeeh, there are two things - the concept, the similarity between the two actions and the situation." [5,42-p] According to the real and abstract of what is being compared, it is divided into real and abstract allegory. It is also written in the sources that tashbeeh occurs on the basis of such means as mushabbih, mushabbihunbih, wajhishabih.

"Holy stone, my love, my soul,  
Rejection is a dagger of love." [5, p. 42]

### III.Analysis

Antithesis has long been widely used as a stylistic figure and artistic method based on contrast.



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In general, just as the universe is based on two opposing forces, black and white, good and evil, so this contrast plays an important role in the emergence of imagery. The antithesis, which has great power, such as providing emotionality, enhancing the power of the work, and arousing the emotions in the heart, occurs mainly through antonyms. The following passage from the poet Usmon Azim's "Bukhara Ballad" served to reveal the drama of the lyrical hero's heart and increase the emotional power of the poem and, most importantly, to provide imagery.

Where to go,  
Where to look for salvation?  
Death is ahead,  
Behind me - Life. [7,43-p]

Oxymoron or Oxyurmoron is a Greek word meaning "intellectual ignorance" and is a paradoxical antithesis of a combination of completely opposite concepts. "In Oxymoron, words that express contradictory concepts form an integral unit, coming in a more definite-definite relationship. For example, in the proverb "Be the evil of the good until the good of the bad", in the combinations of "voice of silence", "elegant insult", "false truth", in Otabek's "sweet death" in "Last Days" there is an oxymoron phenomenon. [5.92-p] In the poem "To my heart" by the poet Azim Suyun, the phenomenon of oxymoron served to provide imagery, to strengthen the meaning through contrast.

This is my heart's desire  
It's a mercy that can't be broken anymore.  
All your regrets  
A great reward for me. [3.85-p]

Hyperbola is a stylistic figure and is known as an artistic method based on the exaggeration, magnification of the object or thing, event or situation being depicted. This method, which is especially widely used in folklore, has also been used in our classical literature as a means of exaggeration. In Azim Suyu's poem "Tutar", the inner collection of the lyrical hero, his philosophy of life, the cry of the heart served to provide imagery and emotion through hyperbole.

My fig tree shines in the sky like lightning,  
He turns and grabs me by the throat like an enemy. [3.34-p]

The fact that the fate of the lyrical protagonist is full of bitter oppressions, raises his grief, makes the sky shine like lightning, and this powerful fig catches the enemy's news in his throat. The poet's ability to depict these new spiritual experiences in comparison with natural phenomena shapes the reader's aesthetic taste. It also provides imagery, increasing the impact of the poem and making it more contagious. This testifies to the high poetic skill of the poet.

It can be concluded from the above observations that the poetic image is manifested in poetry through various poetic means and becomes the main tool in revealing the artistic intention of the creator as well as

the psyche of the lyrical hero. Accordingly, a poetic image is a poetic phenomenon that grows from detail to concept, from concept to image level in poetry. In Azim Suyun's poems, images of the same type show their originality in reflecting the poet's concept and lyrical "I" experiences. The theme that is often sung in Azim Suyun's poetry is homeland and patriotism. The concept of homeland has a broad meaning and embodies the motherland where human blood was shed, human duty and devotion, the most cherished people and national values.

Azim Suyun entered the world with a certain life experience, so in his early works, the meaning of life, self-awareness, strong love for life and nature, courage and ambition take precedence. The poet had completed the following verses in one of his first poems. (Later, this poem was included as a genre in a book of poems).

Spring always reveals spring,  
Sunlight breaks through the clouds.  
I saw a lot of puddles,  
Flowing waters find their way.

In a sense, we can call this poem a prophetic poem. After all, as the poet said, Azim Suyun's work later became "flowing water" that penetrated into the hearts and minds of the people and illuminated them with the light of goodness. It should be noted that the poetry of Azim Suyun differs in many respects from the poems of many of his contemporaries, such as Rauf Parfi, Usman Azim, ShavkatRahmon. First of all, it is distinguished by its provocativeness, courageous spirit, international tone and the harmony of the inner with the external content. He understands humanity as a whole with the mother earth and sees it as his destiny. That is why Azim Suyun is famous as a poet who glorifies nature and man and the Motherland.

In the poems of the poet, not only the subject matter is important. His poems are examples of elegant poetry, both in their art and in the poetic images and metaphors they use. In the poems written by the poet in the 70s and 80s, it is felt that he enjoyed the work of his teachers Gafur Gulam, Mirtemir and Abdulla Aripov. At the same time, he makes completely new poetic generalizations on traditional themes. Azim Suyun considers poetry first of all to express the pain of the people, to cure their pain, to serve the nation. In his poem "To the Poet", he likens poetry to a river flowing through the heart of the city.

"In the hearts of the people, you too,  
The river is white as a river." [7.35-p]

That's how you become a real poet, the author continues. However, Azim Suyun does not describe poetry in this way alone. For him, poetry, first of all, should have its own sensitive heart, be an example that loves existence, beauty as a beloved companion, enjoys it and gives great love to this motherland and its people. The leading poetic image in the poem "Poet" is the love of the poet.

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He loves white mountains,  
Loves the intensity of lightning.  
Kuzakeli, green gardens,  
Tanti loves the sun.  
He loves to breathe,  
In love with dewdrops,  
He loves the sound of birds,  
The sky sang a blue song to him ... [6,55-p]

But this is not all, or this love is embodied not only in the beloved bed, but in the whole being, and above all in his love for this sacred motherland, motherland, people and nation. (Oh, greater than the bar, holy // Mother's love for the people.) So it seems that the poet's aesthetic principles about poetry and poetry are clear. Poetry is not an expression of abstract feelings, but an inspirational state in which these feelings emerge as a relation to someone or something (external) and to one's own heart (internal).

### IV. Discussion

As early as the eighties, the poet wrote about the homeland, about farmers, nature and many other topics. At that time, Azim Suyun in a poem dedicated to our native language, written in the spirit of bitter irony, with great courage raised the trampling of values such as patriotism, national pride and identity. The poem begins with a description of a famous contemporary who rose to the level of a blessed, scholar, having attained a high rank in the field of science. This scholar is described on the basis of beautiful poetic means that with his high potential he even captured the hearts of people and became ideal for them. Focusing on the only small flaw of this blessed person, who is "an eyebrow for someone, an eye for someone", the poet writes:

It's time to live  
Glorious and proud  
The statues are erect  
In the hearts of many.  
Only,  
He does not know his own language,  
He can't speak  
In the native language ... [5,92-p]

Written as an epilogue to the poem, these verses resonate as a tragedy of the nation. One of the consequences of Soviet policy was the fact that the most intelligent member of society, an educated man, did not know his native language, his distance from national identity. After all, language is a ravenous, priceless value that reflects the identity of a nation. This tragedy, which was one of the ideological goals of the former Soviet era, was written with great courage by Azim Suyun at the same time. In this poem, which encourages the poet to think, to strengthen the spirit of nationalism, the native language has risen to the level of a poetic image. This poetic image embodies not only the linguistic content, but also the ideas of high patriotism, national pride, honour, which testifies to its ambiguity. In the poem,

the poet's style is completely justified by its simplicity, nationalism and nationalism. This defines the uniqueness of the poet's creative world.

The poet's poem "Letter to Sadridin" also has a special symbolic meaning in the image of "white storks" depicting the centuries-old ancient monuments, places of pilgrimage and the disappearance of the blessings of peace and freedom from our national land. We know that White Storks are a symbol of peace and tranquility. White storks will take refuge in a peaceful and prosperous country. In the poem, the heartfelt feelings and sorrows of the lyrical protagonist are written in the form of a letter to a friend. Expressing the state of the creative process in harmony with the spiritual experiences in a letter to a friend, the poet wrote:

On the wing of inspiration -  
If I hold a pen,  
I remember a unique word  
You fall, my friend [7,111-p]

It begins with verses such as. At the heart of retrospective event-based experiences is the notion of freedom. The poet, who visited the Kalon Minaret to visit the sacred shrines of his ancestors, stared at his friend as he stared at the ancient monuments and asked him about the secret of his justice like a white hat. The flight of the white storks symbolically depicted in the poem is a sign of the tragic atmosphere of the Soviet era.

It is known that even in life, storks, as a peace-loving bird, inhabit quiet and peaceful lands. Through the image of the departure of storks from the Minaret Kalon, the poet symbolically points to the rise of true human qualities among people, such as honesty, kindness, respect for the spirit of ancestors, religion. After all, honouring the age-old values of our nation, remembering the past, honesty are universal values. It is no secret that the collapse of national and universal values is an important factor that led to the crisis of society in the last century. The fact that this case became a leading theme in the poetry of the 80s is one of the peculiarities of the poetry of the period. After our country gained national independence, storks, ambassadors of freedom and peace, returned to our country. In particular, the erection of a monument to storks on the Independence Square of the capital symbolizes the return of true human qualities and, most importantly, freedom, peace and prosperity to our people. On the basis of the art of tashbeh, the poet, who considers poetry to be a master and poetry to be a building, comes to the vital conclusion that the main purpose of life, that is, the building - poetry, should be based on honesty. And most importantly:

No one can fix it,  
Honestly, there is no need,  
The poet is a master,  
Honestly, his heart! [1,51-p]

While glorifying the purity of the heart, purity and honesty find their interpretation in the eyes of the

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poet as the most unique ore and necessary need of all mankind. This honesty and populism is one of the main features of the poet's poetry. The following observations in the article by literary scholar Umarali Normatov "If the word is correct - the hand is correct" also support our opinion. "Whether he writes about the heavenly corners of his homeland, historical events, famous historical figures, the poet always draws attention to the painful points, contradictions, dramatic aspects of the subject, which are written in the first place. , they try to tell the truth, because they know that the people expect the right word from the poet, that the country is "thirsty for the truth." [2,31-p] The poet's poem "The Forest and the Wood", written in this spirit, also expresses the sorrowful cry of the nationalist awakened soul.

Dark ... dark ... dark...

Oh, strike in the mountain forest, -

Who is destroying our country?

Dark ... Dark ... dark...

Who has what it takes,

No, the prison is as quiet as a stub. [2,11-p]

Written in the spirit of provocation and patriotism, this poem creates poetic images of the forest and the woods. In the poem, the forest is the people; the wood is the oil, the enemy. In this poem, which at first glance seems to reflect the social content

through the depiction of the felling of trees in the forest and the woodcutter taking them to the market, the poet actually refers to the plunder of the material and spiritual wealth of our people. He especially likes traitors, cowards, and indifferent people to creatures fleeing from the dark sound of the forest. Such figurative expression not only enhanced the artistic value of the poem, but also enhanced the power of aesthetic influence. The artistic and aesthetic function of the voice "Dark ... dark ... dark ...", which is repeated on the basis of the poetic art of repetition, is expressed in a phonetic anaphora, which warns the troubled psyche of the lyrical hero of restlessness and encourages alertness and vigilance.

## V. Conclusion

In these grassy verses, written in 1978, the landscape of the lyrical protagonist's courageous and patriotic heart is painted in metaphorical colours. This is a testament to the poet's experiences with an awake and restless heart shifted to art. After all, every artist first of all translates his heart, pours it on paper. In this sense, the core of Azim Suyun's creative world is also the poet's heart experiences, spiritual world, and, of course, unique talent.

## References:

1. (2015). *Suyun, Azim. Selected works: 7 books.k.2.* Tashkent: G'.G'ulom.
2. (2015). *Suyun Azim. Selected works: 1 book.k.2.* Tashkent: G'.G'ulom.
3. Oripov, A. (2004). Singing is an independent genre. *Journal of Thought.*
4. Kazakhboy, Y. (2011). *The man of the road.* – Tashkent: "Muharrir" publishing house.
5. Kuronov, D., et al. (n.d.). *Dictionary of Literary Studies.* (p.171). Tashkent: Akademnashr.
6. Suyun, A. (1984). *Imagination.* (p.5). Tashkent: Literature and art.
7. Suyun, A. (1981). *The fate of the ground.* (p.3). Tashkent: Literature and Art Publishing House.
8. Ahmedova, M.B. (2018). Genetic and Structural Specifications of tge Spirituality Nominative Units in the Uzbek Language. -*Theoretical and Applied Science*, 10 issue, pp.331-333.
9. Ochilova, N.U., & Ahmedova, M. B. (2019). Reflections on Horse in Uzbek Prose.-*Theoretical and Applied Science*, 10 issue, pp. 86-88.
10. Sharipova, M.S. (2020). "Philosophical analysis of the hero of Amir Temur". *"International Journal on Integrated Education"* Scientific Journal Impact Factor. (Impact factor 5.083) e-ISSN:26203502 p-ISSN : 2615 3785 Indonesia, Volume 3, Issue III, March 2020, pp.87-89.
11. Amonova, Z.K., & Sharipova, M. S. (2020). "The Reflection of Nasimi`S Concepts in The Works of Atoi". *International Journal of Psychological Rehabilitation.* (Indexed by Scopus) ISSN: 1475-7192. Volume 24- Issue 9. June 2020, pp.3669-3676.
12. Fayozova, D.S. (2020). Comment of artistic means used in the novel "Days gone by".-*Theoretical and Applied Science*, 03 issue, pp.104-107
13. Fayazova, D.S. (2017). Adaptation of authentic material. *Dostizheniya nauki i obrazovaniya*, N:4, pp.53-54

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## INTERPRETATION OF WORLD DRAMATIC ART IN UZBEK THEATRE

**Abstract:** *This article covers the period of new research in the art of Uzbek theatre, creative achievements, creation of unique stage interpretations of unique plays, emergence of professional approach, professional experience and great discoveries in the art of poetry, contributing to further development of skills and talents of artists. According to Professor Teshaboy Bayandiev, the World Theatre Art course should broaden the level of knowledge of actors and directors, enrich their spiritual world, and introduce them to the literary environment in which great artists live and work. get to know unique schools created by scientists in this field, using examples that can serve as role models for young actors and directors, and instil in them a sense of boundless love and devotion to theatre art.*

**Key words:** art, literature, drama, science, knowledge, spirituality, culture, actor, director, theatre.

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### Introduction

Traditions of development in accordance with national identity and spiritual image of the world, a new era in art and culture, transition to new artistic interpretations are being developed. In general, if we look at the history of the Uzbek National Theatre, its roots are related to the social and spiritual life and moral life of the people, over time these traditions have started to change with the people's demand for professionalism. This means that in addition to Uzbek national works, rare examples of world drama must be staged on our theatres.

The Decree of the President of the Republic of Uzbekistan Shavkat Mirziyoev from May 26, 2020 PF-600 "About measures on further increase of a role and influence of culture and art in a society" became the important legal basis for the further development of theatrical activity in the Uzbek national art, a number of reforms and innovations [1].

### II.Literature review

The art of Uzbek theatre is gaining momentum in the era of new research, creative achievements and creation of unique stage interpretations of unique plays. These events further develop the skills and talents of artists and bring the professional approach, professional experience and great discoveries of poetic art to the international level.

It is also good to lay the foundation for these great steps in the educational process. In his article 'The Role of World Theatre in the Training of Actors and Directors', Professor Teshaboy Bayandiev expands the knowledge of actors and directors, enriches their spiritual world, and introduces them to the literary environment in which great artists live and work. he introduces unique schools created by scientists, using examples that serve as role models for young actors and directors, instilling in them a sense of boundless love and devotion to the art of theatre. Why do Nabi Abdurakhmanov, Olimjon Salimov, Validzhon Umarov, Mansur Ravshanov and Karim Yuldashev remember Gershberg, Rakhmonova,

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Berezin, Krikun, Feldman and Rybnik who taught the history of foreign and Russian theatre and praise their knowledge and skills? This is due to the fact that, along with O. Chernova, I. Radun and T. Hodjaev, the teachers who taught the history of theatre art played a significant role in their becoming leading specialists in their fields [2]. Educational initiatives have served as innovations in creative practice over time.

### III. Analysis

In 2018, the Academic Theatre of the Uzbek State Institute of Art and Culture presented a diploma performance by 4th year students of the specialty "Drama Theatre and Cinema". Future actors brought a new interpretation of the tragedy "Hamlet" [3], a masterpiece by William Shakespeare, King of World Drama. Zamira Akhmedova, the head of the course, an experienced teacher, associate professor and consultant, together with Professor Hamida Mahmudova, Honoured Coach of Youth of Uzbekistan, proved that they are worthy successors of the Uzbek school of acting. The performance is unique and intense, with a chessboard on stage. For two days, the number of spectators occupied the entire hall. Dier Sadullayev played the role of Hamlet on the first day, and Begzod Zokirzhonov on the second. The broad plastic possibilities of small, slender young men, unique voice intonations, the ability to burn with pain of the main character and to demonstrate the ability to act - all this led to the creation of Hamlet in a new image. The perfect interpretation of the poem, created many centuries ago, has been revived in the eyes of the audience. Zokirjonov knew how to increase his impact on the public, emphasizing emotional monologues and melodic words.

Gertrude Gulrukh Pirnazarova and Ziyoda Fozilova also spoke. In particular, Fozilova's violent actions and her inner rebellion during a conversation with her son Hamlet about her father shocked the hearts. The roles of Claudius - Dzhakhongir Teshaboev, Sherbek Ruziev - are harmonious, but he lacked the enormous character of a handsome king of the entire kingdom. Talented students Makhliya Rakhmonberdieva and Maftun Shokirov performed the unique beauty of Ophelia in unique interpretations. Rakhmonberdieva's ardent laughter, open face and light movements on stage were natural. Also in the roles of various characters Shahboz Aliyev, Davron Raimov, Toymurad Turaev, Temur Kubayev, Bekhruz Iskandarov, Olimjon Mavlyanov, Abdujabbor Paiziev and others created unique images. The trap scene, designed to reveal all the King's intrigues, came to life as expected. The actors also demonstrated their fencing skills by creating a scene inside the stage. The scenery, costumes, music for the show - everything was mixed up to create a coherent composition. Backstage dance teacher Narziddin Shermatov, Honoured Artist of Uzbekistan and master of stage movement Professor Arsen Ismoilov, teacher

Ragim Dusanov, associate professors Ramzjon Kadyrov, Ernazar Yarbekov, acting teacher Sevara Rajabova, make-up artist Feruza Jalilova, plasticity assistant Sardor Mannonov, his productive work was met with all the applause. The play "Hamlet", which caused a lot of controversy, became one of the most unique works in the history of the Institute.

William Shakespeare is known as a brilliant representative of romantic literature, but his realistic views can be understood in this royal tragedy. Professor Toshpulat Tursunov said: "The aesthetics of romanticism begins to take shape in the process of complex interdependencies and the connection between social reality and artistic research, and critical realism begins to emerge, leading the artistic direction of the entire 19th century" [4].

Another group of young Uzbek theatre figures, the Youth Experimental Theatre Studio "Diidor" and a joint venture with the USA, Essence Theatre Studio, have published a collection of works by the famous Russian writer Nikolai Nekrasov. Honoured Artist of Uzbekistan Nabi Abdurakhmanov staged the play "Dark Autumn". The show is performed in the genre of comedy, and the nightly experiences of a rich father come to life on stage. The director has found a unique interpretation of the play, bringing five characters to life with the help of two actors. Bobur Yuldashev played the lead role, while Umar Dzhumaev played dynamic roles in the second role. The heartbreaking moments of a rich father's life, the autumn boredom, the torture of a servant boy picking on everything and whims, subtle solutions to situations and vital discoveries make the audience think. Bobur Yuldashev's mastery, his acting manner, the charm in his eyes, lightness and unusual direction showed the destiny of the main character. Umar Dzhumaev, one of the young actors in the Diidor theatre-studio, performed the roles of a child, cook, Kachal and Bolta. After the events of the play, it was as if the painful moments of society as a whole, people's daily lives and concerns were absorbed. The theatre atmosphere was a small circle, and the actors came to life in front of the public, and the events unfolded before your eyes, not on the stage above. It is no secret that in this case the director intended to make the performance brighter and brighter. The artistic interpretation of the stage was created by the participants in the creative group: costume designer Vassa Vasilyeva, composer Ilya Khalmurzaev, lighting designer Obid Abdurakhmanov, and choreographer Anna Trenina. Specially at the end of the performance was a poetic composition "Mashara" by the Uzbek national poet Usmon Azim in his native language.

The Union of Theatre Workers of Uzbekistan is a leader in the coverage of unique plays, production workshops and beautiful productions. It also praised the play "Mungli Kuz" as one of the plays that provides spiritual food for the Uzbek people. The creative collaboration between the Deidor Youth

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Experimental Theatre Studio and the play *Dark Autumn* by the American Essence Theater Studio has found its audience.

The creative activity of the Cinema Actor Theatre Company, established under the former Uzbekkino National Agency, occupies a special place in the development of the Uzbek theatre, staging works by many domestic and world writers. The director of the troupe, Sayfiddin Meliev, presented a new work by the American writer Tennessee Williams "Glass Cage for Wild Animals" (2008) called "One Day Happiness" [6]. The author is not only a playwright but also a publicist and teacher. Williams has twice won the Publisher's Prize. This work is one of the most famous poems in his creative repertoire.

Conflicting work events take place in one flat. It is visited by a mother who is separated from her husband and hangs her picture in the network of her house - a mother with a deformed one leg - a cripple, a brother who is tired of life's worries, a guest in the dream house, a one-day guest and a guitarist who expresses his pain. The mother in the play wants to marry her disabled cousin, and she has lived her whole life with this noble desire in her heart. Suddenly, his son tells of a generous customer who comes to the shop and invites the customer to his home at his mother's insistence. By coincidence, it turns out that the young man, who went to the same school as one guest and sang in the choir on the same stage, was the fiery love of a girl wrapped in white dreams and cherished in his fiery heart. In a sweet conversation on a romantic night, they understand that they are made for each other. But the guy turns away from the girl, saying he has a lover and leaves. White dreams also disappear with him.

#### IV. Discussion

The theme of the play is very relevant, and the idea put forward is universal and modern. There is no doubt that the show will find its audience, especially if it impresses parents who are about to double the child's head. The sets, psychological pauses, unique live tones, guitar accompaniment that creates a themed atmosphere are amazing. A white wedding dress and bitchy dreams hang on a round hook hanging from the stage net. The surrounding white pair of pillows is embroidered with images of black wild animals, indicating the dream of a disabled girl. How human dreams are reflected in his work, the white pillow is the heart, and the animals in it are people who don't seem to understand subtle feelings. The girl does not work anywhere, she sews her inner fantasy at home. She rubs herself with this work. Her house brother rushes to the cinema. He wanders through the moonlit streets alone until dawn to find solace in the dreamy sighs of his miserable life. The happy mother lights a candle when two lovers meet their fate in the same house years later. But this symbolic light was very weak and transient. Soon it

dims. For the performance, the director approached the process of choosing symbolic equipment, music and songs with a clear goal. The scene mainly used a black and white image. All the finds serve the artistic and philosophical solution to the performance.

In the performance, you will see actors performing according to their characters. Izrohat Murodova is her mother. The sharpness of her gaze, the conventionality of her actions reveal the endless pain hidden in her mother's heart. Especially by hiding her daughter's disability and fighting for her happiness more than anyone else. Although her husband has long since left her, she sacrifices her life for two children without remarrying. In this image, the actress was able to show her creative abilities more vividly. The excited actions of a long-awaited guest who comes to her flat, the fact that she is often informed, the appearance of her in a new dress every time she goes out show the pure heart of a woman, a momentary thirst for happiness and attention. Her quick and proud steps on stage mean that her receding head hides her bitter fate. Accompanied by a guitarist in a normal setting, the actress discovers a unique aspect of skill. Sincerity in the songs of the group, live singing takes the audience to another world, revealing the hidden pain and joy of the protagonist.

Ilmira Rakhimjanova's crippled eyes, her gestures, her barely speaking tongues, her inner world, her dreams, her legs warn the viewer of her lame life. The actress's emotional mimicry, state of virginity at the sight of her beloved boyfriend and gentle, passionate eyes show how white, mysterious and full of dreams the woman's world is. A guy who has waited all his life, hoped and lived in his head as if he loved her too, but the guy chose a different fate. Pure love became an orphan. The actress's innocent looks, her worries about the hidden pain in her innocent heart, involuntarily shock the audience. It makes him really want to be happy.

Actor Farhod Khudojberdiev originally portrayed his brother. The revolt of his inner pain in the bitterness of his bitter fate is extremely lively and vivid, especially in his acute dialogues with his mother. Under one roof are two unfortunate women, the adult son, who is the only support for his mother and sister, cannot lift his shoulders, the son who is tired of family worries, the son who preserves the image of his father and the memory of the deposit, is very worried. The actor's unique manner of playing, the innocence in his eyes, the feeling of mutual love in his relationship with his mother: "Oh, I am more scared when you whisper than when you scream.

The character's guest role is characterized by Erkin Bozorov's well-groomed plastic, beautiful and energetic look. The actor's mysterious attitude towards the girl in his actions is simple and vital. It is as if happiness is in this simplicity, but he begins to feel that he is living like a piece that has fallen into a stream of cruel times. When he says goodbye to a very

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simple and sincere girl, he shows that he is taking away his pure feelings by wearing the scarf that his lover gave him. You can also see the focused guitar playing that appears in the necessary scenes. Sometimes solo, sometimes adventurous songs give the performance an artistic spirit. The human imagination shows how romantic it is. Although the troupe's next performance, "The Cinema Actor", refers to world drama, the director expresses Uzbek pain in an artistic form. He turns the vital truth about the fates of mums and adult children into a vivid sad spectacle. The various suffering of a mother who would do anything for her children, especially her daughter-in-law's happiness, has become a whole artistic spectacle on stage. The small size of the auditorium allowed the actors to quickly communicate

with their admirers. The creative team's achievements in this area deserve attention and achievement.

## V. Conclusion

In short, interpretations of world drama works on the Uzbek stage are becoming more and more new. After all, the production requires great skill and research from the director. The unique mature poetic brilliance and art of world drama must find its brightest solution on the Uzbek stage. Everything depends on the approach and creativity of the director who turns to the work. The number of unique productions of such works should increase. After all, first of all, the qualification of professionals and, in this case, the world view of the audience will be improved.

## References:

1. Mirziyoev, Sh. (2020). *Decree PF-600 "On measures to further enhance the role and influence of culture and art in society"*. – Tashkent.
2. Mirziyoev, Sh. (2020). "Madaniyat va san'at sohasining jamiyat hayotidagi o'rni va ta'sirini yanada oshirish chora-tadbirlari to'g'risida" *gi PF-600 sonli Farmoni*. – Tashkent.
3. (n.d.). Retrieved from <https://lex.uz/docs/4829149>
4. Bayandiev, T. (2007). "The role of the subject" *World Theater Arts "in the training of actors and directors."* "Art Education" yearbook. – Tashkent: UzDSI.
5. Bayandiev, T. (2007). "Aktiyor va rejissyor kadrlar tayyorlashda "Jahon teatr san'ati" fanining o'rni". "San'at ta'limi" yilnoma. – Tashkent: O'zDSI.
6. Shakespeare, W. (1992). "The Tragedy of Hamlet, Prince of Denmark". ASCII text placed in the public domain by Moby Lexical Tools, 1992. SGML markup by Jon Bosak, 1992–1994 yy.
7. (n.d.). Retrieved from <https://www.w3.org/People/maxf/XSLideMaker/hamlet.pdf>
8. Tursunov, T. (2008). "History of World Theater". Tashkent.
9. Tursunov, T. (2008). "Jahon teatr tarixi". Tashkent. <http://mrxom.uz/wp-content/uploads/.pdf>
10. Nekrasov, A. (1983). "Autumn boredom". *Complete Works and Letters in Fifteen Volumes Works of Art. Volume six. Dramatic works of 1840–1859*. – L.: "Science", 1983. [http://az.lib.ru/n/nekrasow\\_n\\_a/text\\_0430.shtml](http://az.lib.ru/n/nekrasow_n_a/text_0430.shtml)
11. Nekrasov, A. (1983). "Osenniy skuka". *Polnoe sobranie sochineniy i pisem v pyatnadsati tomax Xudojestvennye proizvedeniya*. Tom shestoy. Dramaticheskie proizvedeniya 1840-1859 gg. – L.: «Nauka».
12. (n.d.). Retrieved from [http://az.lib.ru/n/nekrasow\\_n\\_a/text\\_0430.shtml](http://az.lib.ru/n/nekrasow_n_a/text_0430.shtml)
13. Williams, T. (1945). "Steklyanny zverinets". *Pesa. Tennessee Williams. The Glass Menagerie*. Retrieved from [https://briefly.ru/uiljams/stekljanjy\\_zverinec/](https://briefly.ru/uiljams/stekljanjy_zverinec/)
14. Ahmedova, M.B. (2018). Genetic and Structural Specifications of tge Spirituality Nominative Units in the Uzbek Language. -*Theoretical and Applied Science*, 10 issue. 2018, pp.331-333.
15. Ochilova, N.U., & Ahmedova, M. B. (2019). Reflections on Horse in Uzbek Prose.-*Theoretical and Applied Science*, 10 issue, pp. 86-88.
16. Sharipova, M.S. (2020). "Philosophical analysis of the hero of Amir Temur". "International Journal on Integrated Education" Scientific Journal Impact Factor. (Impact factor 5.083) e-ISSN:26203502 p-ISSN : 2615 3785 Indonesia, Volume 3, Issue III, March 2020, pp.87-89.
17. Amonova, Z. K., & Sharipova, M. S. (2020). "The Reflection of Nasim's Concepts in The Works of Atoi". *International Journal of Psychological Rehabilitation*. (Indexed by

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	<b>GIF (Australia) = 0.564</b>	<b>ESJI (KZ) = 8.997</b>	<b>IBI (India) = 4.260</b>
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Scopus) ISSN: 1475-7192. Volume 24- Issue 9.  
June 2020, pp.3669-3676.

18. Fayozova, D. S. (2020). Comment of artistic means used in the novel "Days gone by".-

*Theoretical and Applied Science*, 03 issue,,  
pp.104-107.

19. Fayazova, D.S. (2017). Adaptation of authentic material. *Dostizhenija nauki i obrazovanija*, N:4, pp.53-54.



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QR – Article



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## IMPROVING APPLIED ARTS CLASSES BASED ON MODERN INFORMATION TECHNOLOGY

**Abstract:** This work focuses on the computer technology use in improving the pattern compositions in applied arts classes, as well as ways to implement the students' information learning skills formation, the skills development in working with programs and systems.

**Key words:** System, program, composition, education informatization, modern information technologies, pattern terms, reproductive activity, project, knowledge skills.

**Language:** English

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### Introduction

The independence of the Republic of Uzbekistan has paved the way for our spiritual, historical values revival and folk pedagogy traditions and their development on the modern pedagogical and information technologies base. New laws and our government decrees have been issued on education system further development. The rapid information technology penetration in every field has significantly facilitated the work of specialists. The rapid penetration of information technology in every field has significantly facilitated the specialists work. This is confirmed by the Resolution of the Ministers Cabinet of the Republic of Uzbekistan № 200 "On measures for further computerization and information and communication technologies introduction development."

### II. Literature review

Various programs based on modern information technologies applied to all disciplines in the educational process are being developed, and many lessons is increasing year by year. In this case, the computer is widely used in the teaching process in the applied arts field, as well as in the education disciplines, such as chemistry, physics, computer science, biology, mathematics [1].

Drawing on a computer arouses great interest in students and stimulates their mastery of the material covered. Many design and drawing programs around the world have been developed and are being used to facilitate the artists work, applied arts and design. As an Uzbek folk art example (painting, wood carving, etc.), there are programs such as CorelDRAW (girih) for floral pattern compositions that you like to draw its base-composition, and AutoCAD (Auto Computer-Aided Design), which is more suitable for drawing geometric (islmiy) pattern compositions.

### III. Analysis

It is well known that drawing lessons using CorelDRAW and AutoCAD programs are of great interest to students and have a positive impact on the lesson effectiveness. It would also be useful to use these programs in composition classes in the applied arts. It is natural that such a modern approach leads to high results in the applied arts field, as well as in drawing [2].

The current development is directly related to all spheres informatization of our society, and each state attaches great importance to the development and implementation of its own information strategy. It is known that education informatization means the modern information technologies application to all education system components. In this case, the

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communication process between the student, teacher and the new information technology means occurs, and the formation and development of the student's cognitive activity in combining the necessary components context for a particular course (subject).

So, from the above, based on the developing experience and implementing modern information technologies, modern innovative educational technologies in the qualified professionals training today, they can improve their professional activities and create, master and implement effective innovative methods.

Today, the teachers' training using computer technology is one of the most important issues in improving the patterns composition in applied arts classes. This is due to the fact that the applied arts teacher provides appropriate guidance to students in the qualified personnel training that will further strengthen our independent republic development, that is, the aesthetic and spiritual education of secondary school students, our national values study is the main person who teaches and directs the profession. When analyzing the state educational standard and professional arts curriculum in the applied arts field, it is necessary to look at the minimum knowledge content, skills, competencies that most students should have. It is clear that, in addition to the painting concepts, it is necessary to acquire the concepts, knowledge, skills and abilities related to painting [3-4].

The knowledge, skills and abilities formation in painting is extremely important in educating students about the elements and patterns in the objects used in our lives. Painting knowledge is also important in acquiring knowledge, skills and competencies in painting, fine arts and drawing.

The above analysis and the process analysis of training qualified specialists in pedagogical universities and our current practical experience results in improving this area have shown that the computer technology use in the specialists training in applied arts is extremely important and effective. In this regard:

- the education content (curriculum and program, blocks of subjects in the curriculum and their continuity and continuity, guidelines and recommendations) at each training stage, ie in each subject block in the curriculum detection;

- to study the history and development of the painting and leading painters art in Uzbekistan;

- terms and patterns types, the materials structure and tools used in painting, the application areas definition;

- to study that computer technology is the most qualitative step in the increasing the education effectiveness process;

- to develop methods and students' teaching techniques the drawing patterns stages and intricacies using computer technology;

- gradual abandonment of old methods and teaching techniques, knowledge and opportunities creation to apply new innovative methods;

- to have a broader understanding of the science subject and to have additional information on its application in practice in various spheres of our life (general secondary education, vocational education, research activities, production, etc.) ;

- situational (problem) texts preparation, practical work assignments, stand for demonstration information, test-questions in addition to the subject in order to increase the curiosity, students' curiosity in the learning process;

- we need to identify the patterns sequence to be studied in the applied arts professionals training, use them to achieve the ultimate goal, and so on. In order to successfully implement the students' information and educational skills formation in improving the pattern compositions composition on the computer technology basis:

- students' skills and abilities formation to work with new information technologies in the creating pattern compositions process;

- to be able to effectively use the finding optimal options methods for the socially competitive personnel training with the information technology help;

- control systems preparation for objective assessment of the acquisition quality of knowledge and skills, as well as appropriate criteria for determining the students' mastery level and monitoring their overall monitoring;

- to ensure that students are able to work freely in the educational process computerization, and on this basis to achieve clear results and have full confidence in their computer literacy;

- I would like to emphasize the need to take measures such as finding optimal options to ensure that students are connected between computer literacy and pattern drawing skills [5-6].

As the research result, students and pupils with "Applied arts" sufficient knowledge can use computer technology in the education system, increase their interest, perform compositions with high precision, save time in the drawing process, use color palettes and apply any color to patterns enriched with scientific methodological recommendations such as giving gamma colors, showing three-dimensional readiness, computer literacy and skills development in students. Also, the content, form, methods, as well as the psychological and pedagogical system ways of students' information-educational formation in the observation case and representative's study of Uzbek folk arts and their works were identified. It can also be used as a methodological guide in applied arts faculties, teacher retraining and professional development courses. Modern information technologies, which are being developed and used today, have a significant impact on the educational

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process quality, especially the students' professional training level. In particular, the introduction advantages of computer technology are obvious in the applied arts teaching.

#### IV. Discussion

The new information technologies use places a great deal of responsibility on learners and, to some extent, expands the educator role. It is now the information disseminator and the educational process manager. It is important to note that in the educational process, teachers and students must work together and be diligent in teaching and learning the subject.

It has become clear that the computer technology use in education requires the new teaching aids creation, primarily electronic teaching aids. The research purpose is to organize training sessions in various educational processes, in particular, in the applied arts field (theoretical knowledge, practical training, students' knowledge monitoring and learning outcomes) to increase the maximum computer technology use.

Different types of technical means are used in the modern education system. However, many learners face certain difficulties in using teaching aids. Therefore, learners need to have a clear idea of what areas of computer technology are most likely to be used and the consequences of their use. It is also important to have sustainable practical skills in the use of information technology and the performance of relevant tasks. It is advisable to use information technology, especially computer, in the teaching of science in secondary schools. In this case, the education computer should act as a teacher for a certain time period, mainly in the early stages, and then become an effective tool in the educational and students' practical work.

The electronic teaching aids introduction in the educational process in the fine arts and drawing study, which is the general education sciences part, will significantly change the classes' organization order. Here is a brief description of this learning process stages.

The first stage. Selecting the appropriate objects for each subject study in the fine arts and drawing study. Particular attention should be paid to the information technology choice for the topics coverage, their mastery by students in conjunction with the general education subjects. Depending on the opportunity level, it is advisable to create a sufficient database on the topic covered.

The second stage. It is necessary to organize independent work on the curriculum in order to develop students' sustainable professional skills in the technology use for the selected objects analysis of fine arts and drawing. This stage is the main stage of teaching general subjects, especially applied arts.

The third stage. Test based on knowledge, skills and competencies in applied arts.

The fourth stage. At this stage, students work with the teacher to find new information in the applied arts field, to explore new objects. It is now a real professional activity, in which students use computers independently to gather information sources, and introduce technology to analyze the learning process based on the curriculum.

In our opinion, systematic work should be done to create an orderly educational programs fund for the applied arts effective teaching in general secondary education, secondary special vocational education and higher education. It is advisable to take into account the following in the developed educational programs:

- to create favorable conditions for the applied arts teaching, in order to organize an effective educational process to cover any existing topic;
- information technology tools availability, convenient scientific and technical encyclopedias, informing about the applied art modern achievements;
- have a clear structure for collecting information on any topic and a convenient system for searching for the necessary information.

Achieving these goals requires the methods development for selecting and creating electronic resources from the applied arts. Of course, this requires students to know how to use a computer and the Internet, and thus gather the latest information on the subject.

In the future, it is necessary to enrich the fundamental knowledge and advanced achievements of the applied arts, to create a separate fund program, to obtain relevant information when necessary, to review, correct and make additions to the data.

Research and studies have shown that the modern information technology introduction in education today should cover the following issues:

- students' personal development and preparing them to work independently in an informed society;
- developing students' algorithmic thinking in science;
- to teach students to be creative by reducing the reproductive activity share;
- students' interest development in science and their communication skills through the joint projects implementation;
- to develop students' ability to make optimal solutions to complex situations and science and technology problems;
- skills formation and development in working with programs and systems;
- to develop students' skills and collecting and using information culture on subjects.

We have tried to highlight the opportunities for the modern information technology introduction in the educational process, the high level of information technology use by students, the activities that contribute to the educational process on thirteen factors.

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The following table provides information on the information technology use in the educational process

and can be used, in particular, in the educational process.

**Table 1.**

No	Factors	Opportunities and tools to facilitate the information technology learning process.
1	A set of used teaching aids.	Traditional teaching aids, teaching aids, software control tools, automated learning systems, intellectual learning systems, learning and information environment.
2	Psychological and pedagogical teaching theory.	Teaching theory in a virtual environment
4	Cognitive activity types	Productivity
3	Teaching aids tasks	Learning materials demonstration, current, intermediate and final control of knowledge, knowledge assessment, diagnosis, skills and competencies formation, skills and competencies development.
5	Tools for individualizing teaching.	Take into account the learner's specific abilities.
6	The time interval between the knowledge to be acquired and the knowledge to be controlled.	Choice depends on the teaching environment
7	Knowledge control interval	Practical limitations of computer technical capabilities
8	Knowledge control subject	Teacher, teaching and learning tools
9	Opportunities to provide learner information	Animation, audio and video, lectures
10	Factors that stimulate the educational materials study	Working with a virtual entity
11	Opportunities to integrate teaching aids	All teaching aids, tools integration for organizing teaching based on artificial intelligence
12	Teaching aids use ease and popularity in different contexts.	Practically does not depend on the teaching conditions.
13	Equipped with tools	Automated tools for organizing and conducting the learning process in different contexts.

If the above table and form are used in the applied arts teaching, the teaching work will be effective. In addition, it is advisable to use computer capabilities in practical training to strengthen the acquired knowledge, to deepen theoretical knowledge. For this purpose, it would be expedient to create a special program for teaching science, which would include all the information on the subject. Program creative use increases the education effectiveness.

### V. Conclusion

The information technology use in the educational process and the multimedia use on their basis allows to achieve the following results: intensifies the educational process and the students cognitive activity, the educational presentation materials in various forms and means (audio, text,

video, graphics, animation) increases the students' interest in learning, demonstrates a high level of presentation in the educational presentation materials and creates a basis for students' independent thinking, the information technology use leads to the long-term educational materials content storage in the students' memory, there will be an opportunity to classify students, students change from a passive listener to an active participant during the lesson, students communicate freely with the teacher and become his partner, students develop the ability to learn independently, saves teacher time, students' knowledge is monitored and evaluated by computer. It should be noted that pedagogical development bases for the information technology use in the applied arts teaching and their application in educational activities provides a high level of training and allows to significantly increase the education effectiveness.

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## References:

1. Mirzahmedov, M.K. (1976). *Basic pattern making technique*. (p.56). Tashkent: Teacher.
2. Semenova, M.T. (1977). *Folk art and its problems*. (p.117). Moscow.
3. Kosimov, K.K. (1990). *Painting*. (p.97). Tashkent: Teacher.
4. Soloviev, S.A. (1987). *Decorative design*. (p.56). Moscow.
5. Bulatov, S.S., & Dadashev, L. (1999). *Pattern alphabet*. (p.58). Tashkent: Cholpon.
6. Norqulova, D.U. (2020). Improving applied arts teaching in higher and secondary special education (on the example of Samarkand carving school). *Asian Journal of Multidimensional Research (AJMR)*. Vol 9, Issue 10, October 2020.
7. Ahmedova, M.B. (2018). Genetic and Structural Specifications of the Spirituality Nominative Units in the Uzbek Language. *Theoretical and Applied Science*, 10 issue, pp.331-333.
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## THE ISSUES OF PROVIDING FOOD SAFETY IN AGRICULTURE

**Abstract:** In this direction, strategically targeted and consistent measures are being taken in our country to provide the population with high-quality food and support agricultural producers.

**Key words:** HACCP, raw materials, packaging materials, identified hazards, critical control points, food safety management system, Mycotoxin patulin, toxic elements, Global GAP, Organic, Halal, risk factors.

**Language:** English

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### Introduction

Ensuring food security in our country has become one of the key areas of sustainable development of the socio-economic status of society, improving the health and life of citizens, maintaining national security and independence of the country.

Decree of the President of the Republic of Uzbekistan dated April 12, 2018 No. 2520 provides for regular supply of processing enterprises in the country, stable saturation of the labor market with fruits and

vegetables throughout the year, as well as fruits and processed fruits and vegetables that are in demand on foreign markets. A single system of their production, production and procurement was created to increase exports and diversify their products.

Currently, the main directions and objectives providing of food safety are:

- Ensuring compliance with the requirements of normative documents in the field of agricultural and food production;

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- Harmonization of local standards with international standards ISO 9001, HACCP, ISO 22000, Global G.A.P, Hallal and organic and formation of certification system on their basis;

- development of technical regulations for agricultural and food security.

In the field of agricultural food security in relation to these goals:

- Formation of a certification system for agricultural production in accordance with the requirements of Global G.A.P, Hallal and organic standards;

- It is necessary to implement ISO 22000 standards in agricultural enterprises based on the principles of HACCP.

The HACCP system, based on a systematic approach and constant food safety throughout the food chain, has proven its effectiveness and has become popular in many countries around the world for many years.

The following is the current state of affairs in the field of agricultural food safety in Uzbekistan:

## 2 MATERIAL AND METHODS

Development and introduction of technical regulations is important for improving the competitiveness of the products. On January 1, 2019 years, 39 technical regulations were adopted, due to the program for period of 2019-2021 an additional 42 technical regulations will be adopted and Ministries, departments have approved schedules adopting this technical regulations.

Work in this direction will be continued systematically.

Total certified area for organic farming

• Total area– 1645,4 ha

Total area that have transited to organic – 645,4 ha

Area under transition – 1000 ha

Basic crops: fruits (raisin, apricot, mulberry, almond), legumes, vegetables.

Wild plants – 5000 ha (IFOAM 2017 information): кобул.

Certification agencies:

• «CERES-Certification of Environmental Standards GmbH», Germany

• «Austvia Bio Geventie Cmd H», Austria

• ICEA (Istituto Ia Certificazione Etica ed Ambientale), Turkey

• Ecocert, Turkey

• Ekoagros, Lithuania

• CCPB, Italy

• *National legislation:* The draft law of the Republic of Uzbekistan "On organic farming and production systems" has been drafted and at the stage of review.

• The draft Decree of the President of the Republic of Uzbekistan "On further development of organic farming and food production" has been elaborated and at the stage of coordination with interested ministries and departments.

• The draft law "On Order of certification of organic farming and food production certification" has been developed and at the same time being coordinated with interested ministries and departments.

• O'z DSt 3084:2016 «Organic Agriculture and Food Products. Terms and Definitions "have been developed and approved by the Resolution of the Uzbek Agency for Standardization, Metrology and Certification (Uzstandart Agency) as of May 31, 2016, No. 05-765.

• O'z DSt 3084:2016 «Organic Agriculture and Food Products. State standard for production, transport and storage" was approved by the Resolution of the Uzbek Agency for Standardization, Metrology and Certification (Uzstandart Agency) No. 05-920 dated from January 12, 2018.

The development of organic agriculture in the Republic of Uzbekistan is also very important due to the following:

Provision of the population with quality food products;

- Reduce chemical synthesis tools that are harmful for human health and environment;

- development of small and medium enterprises;

- Increased export potential of agricultural products.

Global GAP – This is the first standard for agricultural production and is a normative document that covers all production processes, from the time of sowing crops to harvesting, from the time of production to livestock production and feeding. Global GAP Certification System provides farms with a number of benefits:

*Systematic approach* – accurate identification of procedures and processes has a positive impact on any type of business. It is not possible to effectively manage a farm without a comprehensive set of approaches to managing the farm.

*Customer trust* – Confidence in the safety and quality of the products (raw materials) received by the product supplier (processing enterprises, wholesalers and retailers). This is a long-term partnership.

*Consumer confidence* – Consumer confidence in the quality and safety of agricultural products has a positive impact on the development of the market sector along with retail businesses.

*Risk management* – promotes the improvement of the environment and hygiene of production, reducing the potential for product contamination / contamination.

*Responsibility of administration* – creating favorable conditions for the production and delivery of safe products.

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*Effectiveness of Interaction* – Agriculture and Food Security Management System will allow for greater interaction between enterprises, controllers and customers in the food industry.

*Registration* – Introduction of the registration system improves control over the production and facilitates communication with the supervisory authority.

*Protection by law* – кўпчилиқ жаҳон давлатларида GlobalGAP тизими озиқ овқат тармоқларда етиштиришни бошқариш ва хавфсиз маҳсулотни етказиб беришнинг самарали қуроли ҳисобланади.

*Compliance with all Quality Management Systems* - Compatibility with Global GAP Quality Management Systems: For example, BRC, IFS, ISO 9001: 2015. State standards are not contrary to national law.

*Access to European markets* - Many European trade centers operate with the GlobalGAP system. Promotes the sale of certified products by preventing unauthorized products from entering the market.

*Profit on sales* - The product certification obtained under the Global GAP system gives priority to companies competing for a strong presence in the domestic and foreign markets.

With the aim of bringing the national certification system to the international level, facilitating entry of goods into export markets:

By the decision of the Uzstandard Agency dated October 11, 2019, No. 05-1073, the State Standard of the Republic of Uzbekistan O‘z Dst 3413:2019 was adopted.

More than 10 standards have been adopted internationally, such as Global GAP, Organic and Hallal, and certification has been established in cooperation with internationally renowned French “EcoCert” and Italian “Rina”;

“Uzstandard” agency Scientific-research Institute for Standardization, Certification and Technical Regulation was admitted to Global GAP in January;

The system of issuance of certificate “VI-1” for export of wine to European countries was launched.

According to the data, today the volume of Hallal standard products worldwide is 6.4 trillion dollars. This figure is increasing year by year. In Uzbekistan, the legal framework for certification of Hallal standard has been established and all mechanisms have been developed. Uzbekistan became a member of the Institute of Standards and Metrology of Islamic Countries (SMIIC). Now, the certificate “Hallal” received in Uzbekistan is of international significance.

The main problems and obstacles in the accelerated development of standardization and certification in agriculture are the international standards “Global GAP”, “Organic” and “Hallal”:

- Low level of knowledge of farmers in the frameworks of Global GAP, Organic and Hallal

standards and lack of government training system in this area;

- Lack of permanent consultant systems for producers;

- Lack of state control systems on organic production (including authorization, equivalence assessment systems and databases) and Global GAP;

- Lack of incentives for farmers in transition;

- High interruptions between researchers and practitioners;

- Low level of interest from businesses;

- Low demand in the internal market for products produced under the international standards “Global GAP”, “Organic” and “Hallal”;

- Lack of access to international markets and lack of mergers among farmers.

The strategy of development of production in agriculture based on international standards should be as follows.

- Development of legislative and regulatory framework at the national level

- Harmonization of the national legal and regulatory framework based on documents of the International Federation of Organic Agricultural Movement (IFOAM)

- Creation of electronic database on Global GAP and Organic Production systems

- Scientific and methodological support of the production of organic products, taking into account appropriate methods used in the world practice

- Justification of national accreditation and certification systems in Global GAP and Organic Production systems

- Clarify the accounting and reporting mechanism

- Extending community consultation and communication

- Organization of training and professional development in accordance with the international standards «Global GAP», «Organic» and «Halal»

- The organization of international cooperation and assistance in the development and implementation of international standards “Global GAP”, “Organic” and “Halal”

- Creation of effective systems of state control over the production of products based on international standards “Global GAP”, “Organic” and “Halal”.

Measures on harmonization of local standards with international ISO standards and formation of their certification system have been implemented in Uzbekistan since independence. This is evidenced by the laws, regulations and decisions adopted in Uzbekistan in recent years:

- In 1992 Uzbekistan joined the International Organization for Standardization.

- Resolution of the Cabinet of Ministers of the Republic of Uzbekistan № 349 of 2004 “On measures for implementation of quality management systems in



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enterprises in accordance with international standards";

– Resolution of the Cabinet of Ministers of the Republic of Uzbekistan № 183 of 2006 “About additional measures for the introduction of quality management systems in the enterprises in accordance with international standards”;

– Resolution of the Cabinet of Ministers of the Republic of Uzbekistan № 173 of 2009 “On additional measures to expand the implementation of quality management systems in accordance with international standards at the Republic’s enterprises”;

– Resolution of the Cabinet of Ministers of the Republic of Uzbekistan № 112 of 2011 “On additional measures to improve the implementation of certification procedures and quality management systems”;

– President of the Republic of Uzbekistan Resolution “On Additional Measures to Strengthen the Stimulation of Exporters and Increase the Export of Competitive Products” and others.

For reference, there are 10246 enterprises in Uzbekistan that are certified in the quality system and registered in the State Register. Of these, 9520 are ISO 9001 and 246 are ISO 22000.

The HACCP system, based on a systematic approach and continuous food safety throughout the food chain, has proven effective and has become popular in many countries around the world over the years.

Compliance with HACCP principles is compulsory in EU countries. All food producers (manufacturers) of all three CU member countries are eligible for HACCP (Customs Regulation of the Customs Union TR TS 021/2011) as of July 1, 2014. According to this regulation, all manufacturers (manufacturers) should develop, implement and maintain food safety management systems based on HACCP principles. The same requirements apply to Uzbek businesses. Enterprises that have implemented these systems in Uzbekistan will be able to export their products not only to European countries, but also to Russia, Belarus, Armenia and Kazakhstan.

ISO 22000 is based on HACCP principles and can be applied independently to other management standards. At the same time, it is integrated with ISO 9001 to simplify the creation of a unified safety and quality management system and increase the flexibility of both standards.

International standard ISO 22000 is aimed at clarifying requirements for organizations wishing to take precedence over food safety requirements. This international standard is intended for voluntary organizations in the food industry (from pre-production to consumption), as well as for organizations involved in the production (packaging materials, additives and ingredients for this industry). ISO 22000 is designed for enterprises that want to integrate integrated management systems, such as ISO

9001 and HACCP.

ISO 22000 applies to all types in the food chain: from animal feed to raw material manufacturers, food manufacturers, food and beverage storage, subcontractors, catering organizations and retailers.

The introduction of international standards ISO 22000 series has already been introduced by all European companies. Consistent introduction of new series in local practice will help improve food security in the near future.

International standard ISO 22000 has both internal and external advantages.

Internal advantages:

- Systematic approach to all stages of the technological process, including all food safety parameters;

- Promptly identify and prevent product defects immediately;

- Control parameters affecting product security;

- Determine the same responsibility for food safety;

- Reduce the total number of defects in production;

- Additional opportunities for integration with the international standard ISO 9001 and the food safety management system;

- Restrict unauthorized interference by state administratively bodies.

External benefits:

- Increasing consumer confidence in the products;

- Promotion of products to new external markets;

- Additional advantages of participating in various tenders and contests;

- Increasing the competitiveness of the products;

- Increasing investment attractiveness;

- Reduce the number of ads by ensuring product quality and safety;

- Promote the status of a good and safe food producer.

Enterprises have a number of shortcomings in the development and implementation of ISO 22000 based on HACCP principles. These include insufficient information, poor food safety legislation, and limited funding for initiatives in this regard. It is also reported that the introduction of ISO 22000 is too expensive, too complex to work, and unsuitable for Uzbekistan.

### 3 RESULTS ACHIEVED

Characterization of hazardous factors for wine fruit

The creation of an information basis for determining critical control points begins with the identification of potential hazards and their occurrence in the production of fruit wines. The identification of potentially dangerous factors should be based on information about the finished product, on its

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production, information from scientific and technical literature, as well as on the results of tests of production laboratories.

A hazardous factor is a biological, chemical property or condition of a food product that may pose a risk to human health. The analysis of hazardous factors includes the selection of potentially hazardous factors from among all possible for fruit wines, i.e. biological, chemical, physical [2].

Biological hazards are living organisms, including microorganisms. Microbiological hazards (microorganisms) are divided into groups of sanitary-indicative, opportunistic, pathogenic microorganisms and microorganisms spoilage.

Chemical hazards, depending on the origin, are divided into two categories: natural and artificial.

Toxic chemicals, hazardous substances of natural origin are natural components of products and not the result of environmental, agricultural, industrial or other pollution. Pesticides of artificial origin or hazardous substances are those that are intentionally or randomly added to the product. This group of chemicals may include pesticides, antibiotics, and natural and artificial food additives. This group may also include chemicals such as lubricants, cleaning products.

A physical hazard is any physical material found in a product that causes illness or harm to the person using the product. Physical hazards include various foreign materials or objects. However, foreign objects that cannot cause illness or harm are not hazards, even if they may be aesthetically distasteful to the consumer.

## 4 DISCUSSION

Sources of physical hazards in the finished product can be the following objects [2]:

- contaminated raw materials;
- premises designed and maintained in violation of sanitary rules and regulations, worn fixtures, equipment and containers;
- mismanagement of the process, incompetence of staff, lack of practice.

In the production of fruit wines, the following hazards can be identified:

- foreign microflora that causes damage to wine materials;
- coliform bacteria (coliforms);
- pathogenic microorganisms (microorganisms of the genus *Salmonella*);
- toxic elements, including iron;
- mycotoxin patulin;
- pesticides.

The presence of foreign microflora in wine materials indicates that the process of fermentation of juices was carried out with violations of the parameters of the technological process, or in unsatisfactory hygienic conditions, or low-quality fruit and berry raw materials were used.

Detection of *E. coli* bacteria (*Escherichia coli*) and pathogenic microorganisms (microorganisms of the genus *Salmonella*) on the surface of technological equipment, inventory or consumer packaging indicates a violation of sanitary and hygienic conditions of production, as well as non-compliance with the rules of personal hygiene by personnel.

In the Republic of Belarus, hygienic requirements for the quality and safety of food raw materials and food products define safety criteria for the following toxic elements: lead, cadmium, arsenic and mercury. For fruit wines, the iron content is additionally regulated. Contamination of fruit and berry raw materials with toxic elements is due to industrial development.

Mycotoxin patulin is a secondary metabolite of microscopic (mold) fungi of the genus *Penicillium*, which are found most often as a natural pollutant of fruit and berry raw materials. Patulin has a pronounced mutagenic, teratogenic, carcinogenic and embryotoxic effect.

Pesticides are substances of chemical and biological origin used to kill weeds, insects, rodents, pathogens of plant diseases as defoliant, desiccants and plant growth regulators. Widespread use of pesticides leads to environmental pollution. Once in the food chain, pesticides inevitably enter the human body. Pesticides have a pronounced mutagenic, teratogenic and carcinogenic effect [3].

Thus, the quality of fruit wine is characterized primarily by safety indicators. A guaranteed way to ensure the production of high-quality and safe finished products is the HACCP system, the introduction of which is relevant for food enterprises of our country, including those producing fruit wines[9].

Taking into account the above, the purpose of this work was to conduct a risk analysis and identify critical control points in the production of fruit wine at the "Mehnat agrofirmary" JSC. To achieve this goal it was necessary to solve the following tasks:

- 1) analyze all available information on products, raw materials, packaging materials and production of fruit wines;
- 2) identify potentially hazardous factors in the finished product, raw materials, packaging materials and in production;
- 3) identify hazards in raw materials, packaging materials and manufacturing process;
- 4) assess the risk of identified hazards;
- 5) define critical control points (CCTS) and set critical limits for them;
- 6) develop monitoring system documentation for established CCTS.

Existing food safety management system will be an instrument to open new markets for export.

## 5 CONCLUSIONS

The cost of implementing ISO 22000 based on HACCP principles depends on the specific industry,

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the facility, the building, the equipment used, the technological process, and the standards used by the enterprise for food safety. If all of these are in good condition, the introduction of ISO 22000 will be much cheaper.

One of the problems with the implementation of ISO 22000 is the "complexity of development", which

is considered one of the reasons, so we will describe of the risk factors for wine in the implementation of ISO 22000 standard for the winemaking enterprise of JSC "MEHNAT AGROFIRMASTI".

## References:

1. Yusupov, B.D., Jumanov, A.A., Soatov, O.I., & Turaev, Sh.A. (2011). "Organization of quality management at the enterprises of agro-industrial complex", teaching manual. (p.84). Tashkent.
2. (2009). O'z DSt ISO 22000 "Food safety management system. Requirements for organizations involved in the food chain" 2009. (80 p.).
3. Koreshkov, V.N. (2006). *The quality management system and product safety based on hazard analysis and critical control points: guidelines on the construction and application of / V.N. Koreshkov [etc.]*. (p.176). Minsk: The Consortium for the Science of Economics Right.
4. (1998). *A simple guide to learn and apply the concept of critical control point in hazard analysis*. (p.14). ILSI Europe.
5. Egorova, Z. E. (2005). *Certification of food products: studies. Manual for students majoring in "Physical and chemical methods and devices of product quality control"*. Z. E. Egorova, N. D. Kolomic. (p.300). Minsk: BSTU.
6. (2002). *Food quality management based on HACCP principles*. Collection and processing of initial information about products and production: TK PБ 4.2-MP-14-2002. (p.18). Minsk: Gostandart Republic of Belarus.
7. (2003). *Food quality management based on HACCP principles*. Procedure for risk analysis: TK PБ 4.2-MP-15-2002. (p.28). Minsk: Gostandart Republic of Belarus.
8. (2003). *Food quality management based on HACCP principles*. Procedure for determining critical control points and establishing critical limits: TK PБ 4.2-MP-20-2003. (p.20). Minsk: Gostandart Republic of Belarus.
9. (2014). *Food Safety Management. A Practical Guide for the Food Industry*. 2014, Chapter 31 - *Hazard Analysis and Critical Control Point System (HACCP)*, pp. 845-872.
10. (2014). *Guide to Food Safety and Quality During Transportation*. Controls, Standards and Practices. 2014, John M. Ryan., pp.119-151.
11. (2016). *Handbook of Hygiene Control in the Food Industry (Second Edition)*. Woodhead Publishing Series in Food Science, Technology and Nutrition. C.A. Wallace, S.E., (pp.25-42). Mortimore.
12. (2011). *Molecular Wine Microbiology*. Adolfo J. Martínez-Rodríguez, Alfonso V. Carrascosa, (pp. 319-339). Santiago.
13. (2015). *Handbook of Food Allergen Detection and Control*. Woodhead Publishing Series in Food Science, Technology and Nutrition. S. (pp.67-87). Flanagan.
14. (2016). *Consumers and food safety: A food industry perspective*. Sherwin Gardner. *Science and Technology of the Grocery Manufacturers of America, Inc.* Retrieved from <http://www.fao.org/>.

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## RESEARCH OF NATURAL HONEY BY SENSOR AND PHYSICO-CHEMICAL METHODS

**Abstract:** Nowadays, the requirements imposed by the consumer on the quality of goods have become more stringent. In this regard, the effectiveness of organizations is possible only with the constant provision of a high level of quality of products sold. This is achieved through compliance with the requirements of regulatory documents. The purpose of this study is to determine the organoleptic and physicochemical characteristics of natural honey in order to determine its naturalness, quality and safety by sensory, chromatographic and refractometric methods. The data obtained made it possible to determine competitive and high-quality honey samples.

**Key words:** natural honey, safety, physicochemical properties, diastase number, pesticides.

**Language:** English

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### Introduction

Requirements for the quality of products that meet the needs of customers are established in standards, technical regulations, which constitute the regulatory framework for conducting a commodity examination [1].

Assessment of the quality of natural bee honey is carried out in accordance with the requirements of GOST (Interstate standard adopted by the Interstate Council for Standardization, Metrology and

Certification of the Commonwealth of Independent States) 19792-2001, which applies to honey procured and sold in various trading enterprises of all forms of ownership.

In the commodity examination of honey, organoleptic and measuring methods are mainly used. The need for laboratory research of honey arises in the case of its identification (floral, honeydew, monofloral or polyfloral), determination of quality, establishment

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of falsifications, or when certain indicators of the quality of honey cause controversy.

To identify and assess the quality of honey, an organoleptic researches are carried out (determine the appearance and consistency of honey, its color, aroma, taste, the presence of mechanical impurities and signs of fermentation) in combination with laboratory methods (determine the content of water, reducing sugars and sucrose, diastase number, total acidity, the amount of hydroxymethylfurfural, put reactions to various falsifications, etc.) [2]

The natural honey which has been researched is classified in heading 0409 TN [3].

## 2. OBJECTS AND METHODS OF RESEARCH

We have studied the chemical composition of six samples of bee honey, taken from a honey fair, of different harvest years. Sample No. 1 - "Vasilokr", 2018 p. Sample No. 2- "Buckwheat", 2018g.s, Sample No. 3- "Vysokogorny", 2019g.s. Sample No. 4 - "Mountain Kyrgyzstan", 2019 p. Sample No. 5 - "Cotton plant", 2011 p. Sample No. 6 - "Cotton plant", 2017 p.

### Determination of organoleptic indicators

Determination of color - the color of honey is determined by visual inspection in daylight.

Determination of aroma - put 30-40 gr of honey in a glass beaker, cover with a lid and heat in a water bath at 40-45 ° C for 10 minutes.

Determination of taste - honey is heated to a temperature of 30 ° C and then taste is determining.

Determination of consistency - take a spoonful of honey with a density (viscosity, juiciness) at a temperature of 20 ° C is taken and assessed by the flow from the spoon.[4]

### Determination of the mass fraction of water

The method is based on the fact that the refractive index of honey depends on the water content.

Apparatus for analysis: refractometer with a refractive index scale division not more than 1x10<sup>-3</sup>.

Uncrystallized honey is used for testing. If the honey is crystallized, then about 1 cubic meter. cm of honey is placed into the test tube, tightly closed with a rubber stopper and heated in a water bath at 60 ° C until the crystals are completely dissolved. The tube is then cooled at the air temperature in the laboratory. Water, condensed on the inner surface of the walls of the test tube, and the mass of honey are thoroughly mixed with a glass rod.

One drop of honey is applied to a refractometer prism and the refractive index is measured.

Mass fraction of water in honey, depending on the refractive index

Table 1.

Coefficient refraction n <sub>20D</sub>	Mass share of water, %	Coefficient refraction n <sub>20D</sub>	Mass share of water, %	Coefficient refraction n <sub>20D</sub>	Mass share of water, %
1,5044	13,0	1,4935	17,2	1,4830	21,4
1,5038	13,2	1,4930	17,4	1,4825	21,6
1,5033	13,4	1,4925	17,6	1,4820	21,8
1,5028	13,6	1,4920	17,8	1,4815	22,0
1,5023	13,8	1,4915	18,0	1,4810	22,2
1,5018	14,0	1,4910	18,2	1,4805	22,4
1,5012	14,2	1,4905	18,4	1,4800	22,6
1,5007	14,4	1,4900	18,6	1,4795	22,8
1,5002	14,6	1,4895	18,8	1,4790	23,0
1,4997	14,8	1,4890	19,0	1,4785	23,2
1,4992	15,0	1,4885	19,2	1,4780	23,4
1,4987	15,2	1,4880	19,4	1,4775	23,6
1,4982	15,4	1,4875	19,6	1,4770	23,8
1,4976	15,6	1,4870	19,8	1,4765	24,0
1,4971	15,8	1,4865	20,0	1,4760	24,2
1,4966	16,0	1,4860	20,2	1,4755	24,4
1,4961	16,2	1,4855	20,4	1,4750	24,6
1,4956	16,4	1,4850	20,6	1,4745	24,8
1,4950	16,6	1,4845	20,8	1,4740	25,0
1,4946	16,8	1,4840	21,0		
1,4940	17,0	1,4835	21,2		

### Determination of the diastasis number:

A 10% solution is prepared with a sample of 30 g of honey, distilled water is added in accordance with the table. Firstly, a 1% solution of soluble starch is

being prepared. 11 test tubes are taken, numbered and poured all solutions in accordance with the table

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Table 2.

Number of test tubes	1	2	3	4	5	6	7	8	9	10	11
10% honey solution, ml	1	1,3	1,7	2,1	2,8	3,6	4,6	6,0	7,7	11,1	15
Distilled water, ml	9,0	8,7	8,3	7,9	7,2	6,4	5,4	4,0	2,3	-	-
0,58 % p-p salt, ml	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
1% p-p starch, ml	5,0	5,0	5,0	5,0	5,0	5,0	5,0	5,0	5,0	5,0	5,0
Diastase number	50,0	38,0	29,4	23,8	17,9	13,9	10,9	8,0	6,5	4,4	3,3

After spilling all the solutions, the tubes are closed with stoppers, mixed thoroughly. The rack is put with the test tubes in a water bath at a temperature of 40°C for one hour. When it is time the tubes are cooled under running tap water till the room temperature. Then of the Lugol solution is dripped into each tube, for a drop from the first tube to the last one. The diastase number of the tube that is the previous tube with a brown color is taken [5].

### 3. RESULTS OF THE STUDY AND THEIR DISCUSSION

The results of the organoleptic evaluation of honey samples are shown in the table 1. As it can be seen from the table 1 all honey samples met the requirements of GOST in terms of organoleptic

indicators, no gross defects in organoleptic indicators were found. Honey samples with the numbers 1, 2, 3 and 4 are distinguished by an excellent aroma. This is due to the variety of melliferous plants with a bright, well-expressed aroma. The aroma of honey samples No. 5, 6 is very weak. This is due to the fact that the main melliferous plant is cotton, the honey aroma of which is practically absent. If the aroma of honey is poorly expressed, then by its organoleptic characteristics, consumers may undeservedly confuse it with sugar honey[6].

Color, as well as physicochemical indicators, helps to establish the botanical origin of monofloral honey, since it primarily depends on the plants from which the honey is collected and which may also contain pollen from melliferous plants.

Table 3: Organoleptic characteristics of bee honey

Title of the indicator	Sample №1	Sample №2	Sample №3	Sample №4	Sample №5	Sample №6
Aroma	Pleasant, well-defined, floral, without stranger smell.	Nice, delicate and gentle, well-defined, without stranger smell.	Pleasant, well-defined, floral, without stranger smell.	Pleasant, well-defined, floral, without stranger smell.	Pleasant but weak, without outsider smell.	Very weak, without outsider smell.
Taste	Sweet, pleasant rather spicy, without stranger taste.					
color	Dark amber	Dark amber	Light amber	amber	Light gold	Bright yellow
Consistency	Viscous, transparent					
Mechanical impurities	absent					
Fermentation signs	absent					

From the physicochemical properties of honey followings are standardized: mass fraction of water - no more than 21%; mass fraction of reducing substances (for dry matter) for honey from white acacia - not less than 76%, from cotton - not less than 86%; for other types of honey - at least 82%.

The diastase number, characterizing the activity of enzymes, in honey from white acacia is at least 5

units. Gothe, for all other types of honey - at least 7 units. Gothe. The total acidity of all types of honey is standardized not more than 4.0 cm3. Physicochemical indicators of honey are given in table 2. As can be seen from the data given in table 2. Diastase number characterizes the amount of enzymes in the product. And as well, its medicinal properties [7].

Table 4.

Title of the indicators	sample №1	sample №2	sample №3	sample №4	sample №5	sample №6
diastase number, unit gothe	13,9	10,9	17,9	23,8	6,5	8,0
Mass share of the moisture, %	18,6	17,8	16,2	18,2	19,0	16,6
General acidity, cm <sup>3</sup>	2,9	2,8	3,0	3,0	3,8	3,2

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As for the indicator of the mass fraction of moisture, the results of the study which are given in Table 2, it can be seen that honey will ferment quickly, and the diastase number will then collapse. Increased water content is often observed in unripe honey that has been pumped out of the hives early. Sample No.5 had the highest moisture content. The overall acidity of honey when exceeded also indicates that honey may ferment very soon. In all samples, the total acidity was significantly lower than the standard established by GOST, which is consistent with the organoleptic characteristics of honey samples. In addition to sample No. 5, the value of which is close to the maximum permissible GOST [8].

Of the six samples which were submitted for examination, the tests have been successfully tested and samples No. 1,2,3,4,6 have been recognized as of high quality and sample No. 5 has a low diastase number. Thus, a comprehensive study of the quality of honey samples made it possible to roughly determine the quality and naturalness of honey [9].

For an even deeper study of honey, safety indicators were also investigated. Since now an environmental problem has arisen all over the world. Humanity is faced with such life-threatening phenomena as industrial pollution of air, soil and water, accumulation of toxic elements (heavy metals, pesticides, radionuclides, etc.). Environmental pollution suggests the possibility of its influence on bees and beekeeping products, which leads to the need to study toxic elements in them. Requirements for the quality of beekeeping products are becoming more stringent, namely for their ecological purity and safety. From the above samples, two samples of bee honey (Sample No. 4 - "Mountain Kyrgyzstan", collection year 2019, Sample No. 6 - "Cotton plant", collection year 2017) were selectively investigated for the content of chlorine-containing pesticides. The study was carried out on gas-liquid chromatography brand "Crystal-Lux 4000M".

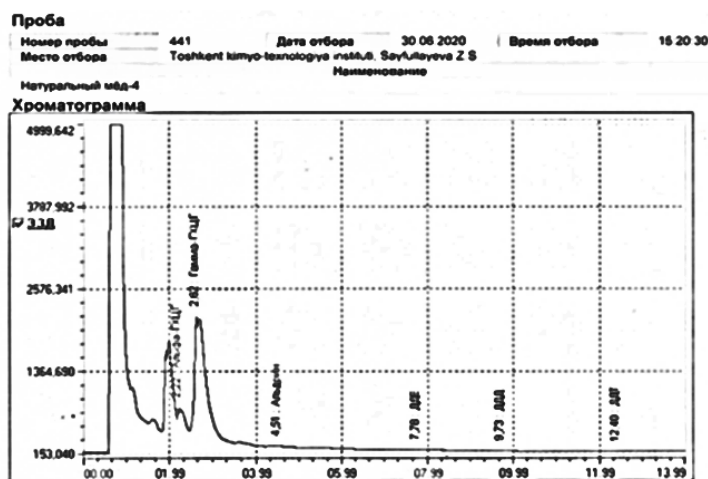


Figure 1 - Chromatogram of sample No. 4

This sample contains two different isomers of Hexachlorane[10].

Table 5. Values of chromatogram peaks for sample No. 4

№	Component	Detector	time, minute	window, minute	Concentration, mgr kg	MPC (not more than), mg/kg
1	Alpha HCH	ECD	2,22	0,50	0,004	0,083
2	Gamma HCH	ECD	2,62	0,50	0,019	0,086
3	Aldrin	ECD	4,51	0,50	0,001	0,146
4	DDE	ECD	7,78	0,50	0,000	0,093
5	DDD	ECD	9,73	0,50	0,000	0,101
6	DDT	ECD	12,40	0,50	0,000	0,184

## Impact Factor:

<b>SIS (India)</b> = 4.971	<b>SIS (USA)</b> = 0.912	<b>ICV (Poland)</b> = 6.630
<b>ISI (Dubai, UAE)</b> = 0.829	<b>ПИИЦ (Russia)</b> = 0.126	<b>PIF (India)</b> = 1.940
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<b>JIF</b> = 1.500	<b>SJIF (Morocco)</b> = 5.667	<b>OAJI (USA)</b> = 0.350

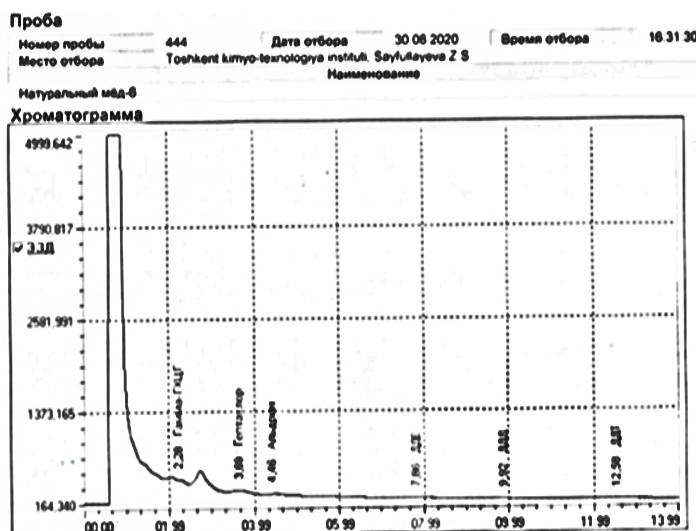


Figure 2 - Chromatogram of sample No. 6

Fig. 2. You can see the presence of the component Gamma HCH (Hexachloran), this type of insecticide is widely used in agriculture to combat animal parasites. Hexachloran enriched in the  $\gamma$ -isomer, which has

higher insecticidal properties (is a strong contact, systemic, intestinal and fumigant poison.[11]

Table 6. Peak values of the chromatogram of sample No.6

№	Component	Detector	time, minute	Окно, min	Concentration, mgr/kg	norm (not more than), mgr/kg
1	Alpha HCH	ECD	2,28	0,50	0,005	0,083
2	Gamma HCH	ECD	2,28	0,50	0,008	0,086
3	Heptachlor	ECD	3,70	0,50	0,008	0,092
4	Aldrin	ECD	4,46	0,50	0,003	0,146
5	DDE	ECD	7,87	0,50	0,000	0,093
6	DDD	ECD	9,92	0,50	0,000	0,101
7	DDT	ECD	12,58	0,50	0,000	0,184

#### 4. CONCLUSIONS

1. The examined samples of natural honey, except for sample No. 5, meet the requirements of GOST 19792-2001, which indicates the quality and naturalness of honey.

2. The investigated two samples contain insecticides, but their concentration is significantly low compared to the maximum permissible concentration. This means that the test samples are safe for consumption.

3. Thus, natural honey has different characteristics in terms of botanical origin and in terms of physicochemical indicators. In this regard, the question arises of the classification of natural honey according

to the Commodity Nomenclature of Foreign Economic Activity of the Republic of Uzbekistan (CN FEA RUz). In CN FEA RUz "Natural honey" is assigned the classification code 0409000000, which is located in Section 1, in Group 04 "Dairy products; bird eggs; natural honey; foodstuffs of animal origin, not elsewhere specified or included." This code is indicated in column 33 of the Cargo Customs Declaration. It should be noted that "Natural honey" has only one product code, which does not take into account its consumer value. There was a task about detailing this commodity code by examining its properties and consumer characteristics.



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## References:

1. Zaikina, V.I. (2012). *Examination of honey and methods of detecting its falsification*. (p.59). Moscow.
2. (2006). *Methods of scientific research in beekeeping*. (p.154). Rybnoe: NIIP.
3. (2002). *GOST 19792-2001. Interstate standard. Natural honey*. Technical conditions. Date of introduction 2002-07-01.
4. (2008). *Order of the Head of the State Veterinary Administration under the Ministry of Agriculture and Water Resources of the Republic of Uzbekistan No. 72 On approval of the rules for conducting veterinary and sanitary examination in sanitary laboratories*. Tashkent city. [Electronic resource]. - Retrieved from <https://lex.uz/docs/1978071>
5. (2017). *Commodity nomenclature of foreign economic activity of the Republic of Uzbekistan (2017 version)*. [Electronic resource]. - Retrieved from [http://fmc.uz/legisl.php?tnvd2017=tnved\\_2017](http://fmc.uz/legisl.php?tnvd2017=tnved_2017)
6. Sayfullaeva, Z.S., Khamrakulov, G.Kh., & Khasanova, D.Yu. (2020). *Evaluation of consumer characteristics of bee honey, presented in retail trade in Tashkent*. Materials of the VII-international scientific-practical conference "Problems and prospects of chemistry of goods and traditional medicine", (pp. 81-82).
7. Sayfullaeva, Z.S., & Khamrakulov, G.Kh. (2020). *Impact of the environment on bees and the safety of beekeeping products*. Materials of the VII-international scientific-practical conference "Problems and prospects of chemistry of goods and traditional medicine", (pp.79-80).
8. Sayfullaeva, Z.S., Khamrakulov, G.Kh., & Khasanova, D.Yu. (2020). *Prospects for the development of the consumer market for natural honey, identification and falsification*. Republican interuniversity collection of scientific papers "Topical issues in the field of technical and socio-economic sciences." (pp.255-256). Tashkent.
9. Sayfullaeva, Z.S., & Khamrakulov, G.Kh. (2020). *The state of honey production in Uzbekistan and its classification according to the CN FEA*. Materials of the VII-International Scientific and Practical Conference "Problems and Prospects of Chemistry of Goods and Traditional Medicine". (pp.43-44). Andijan.
10. (n.d.). *Handbook of pesticides* [Electronic resource]. - Retrieved from <http://www.pesticity.ru/pesticides>.
11. Evashevskaya, E.B., Ryzanova, O.A., Lebedev, V.I., & Poznyakovsky, V.M. (2020). *Examination of beekeeping products. Quality and safety*. (p.384). St. Petersburg: Lan. [Electronic resource]. - Retrieved from <https://e.lanbook.com/reader/book/130480/#2>

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## DEPOSIT POLICY OF COMMERCIAL BANKS AND WAYS OF ITS EFFECTIVE FORMATION

**Abstract:** This article examines the deposit policy of commercial banks in the Republic of Uzbekistan and its specific features. Also, theoretical, scientific, and practical proposals and recommendations on strengthening the deposit base of commercial banks have been developed.

**Key words:** bank, deposit, deposit policy, deposit base, types of deposits, financial resources of the bank.

**Language:** English

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### Introduction

The role of fiscal policy in achieving its goals is growing in our country, given the openness of economic relations, increasing competition, limited domestic financial resources, and their short-term nature.

The Decree of the President of the Republic of Uzbekistan dated February 7, 2017 "On Strategy for further development of the Republic of Uzbekistan" DP-4947 emphasizes the issues of deepening and stabilizing the banking system, increasing the level of capitalization and deposit base of banks, strengthening their financial stability and reliability given in [1].

However, the existence of some problems in the deposit practice of commercial banks today affects the stability of the resource base of banks. This leads to a decrease in the efficiency of bank assets. The share of time deposits in the deposit operations of commercial

banks of the country is high. This, in turn, is explained by the high level of unstable resources in the structure of the bank's deposit base.

Therefore, the improvement of the deposit policy of commercial banks is one of their main tasks and the amount of income generated as a result of active operations of banks is directly related to the effectiveness of the deposit policy. In general, the bank's deposit policy is a key part of the overall banking policy and determines the strategy and tactics of deposit activities.

In studying the scientific literature in the field of deposit policy of commercial banks, we consider it appropriate to consider the views of several scholars on this concept.

In the economic literature, we can see that among foreign economists there are different approaches to the deposit policy of banks.

**Table 1. Theoretical views on the deposit policy of commercial banks**

№	The author's	The concept of theoretical perspective
1.	O.I.Lavrushin[2]	Deposit Policy - banking activities related to attracting funds from depositors and other creditors.
2.	A.V.Gribanov[3]	The deposit policy of a commercial bank is an integral part of the bank's policy, which is part of the process of transformation of funds attracted by the credit

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		institution into investment resources and interrelated complex strategic planning and effective resource base management to ensure a certain level of profitability and liquidity through continuous deposit financing. is a set of actions, methods, and tools.
3.	G.M.Baysembaeva[4]	Deposit policy is a set of measures to attract individuals and legal entities, as well as state budget funds in the form of deposits for future mutually beneficial use.
4.	G.S.Panova[5]	A deposit policy is a banking policy to attract customers' deposits and effectively manage them.
5.	G.N.Beloglazova[6]	Deposit policy is the process of attracting temporarily free funds to various deposits available in commercial banks.

Indeed, the deposit policy is a key part of the overall banking policy, which determines the strategy and tactics of credit institutions to carry out deposit activities.

Given these tariffs, in our opinion, the bank's deposit policy is up to the bank raising funds and the effective organization of management. Its organization includes the objectives of ensuring the liquidity of the bank and if necessary, the use of borrowed funds, and increase the level of profitability, reduce the level of risk [7]. To realize the investment potential of the national economy in the form of deposits, it is necessary to develop the most optimal ways to attract these funds to the banking sector [8]. The most important thing is to gain the trust of citizens in the banking and financial system, as well as in the national currency.

The deposit policy of the bank is based on the strategy and tactics of the commercial bank to attract customers, the return of funds. These include:

- development of a strategy for banking activities, attracting funds to comprehensively justified deposits, market research, financial analysis of the environment, determining the place and location of attracting funds, diagnostics, and forecasting of raising funds [9];

- formation and implementation of tactics and strategies of the bank to attract funds to deposits and the creation of new bank deposit products [10];

- monitoring the effectiveness of the activities of a commercial bank to attract deposits [11];

- deposit policy and control of its effectiveness [12].

Regarding the elements of the bank's deposit policy, it should be noted that the formation of the deposit policy is closely linked with the bank's interest rate policy, as the deposit rate is an effective tool for attracting resources. At the time of state regulation, the law set the maximum interest rate in the following cases.

The bank's deposit policy is necessary to maintain a balance that attracts deposits from individuals and legal entities to finance various banking operations and projects, but also to maintain the interest rate, ie the positive difference between the bank's interest income and its interest payments [13]. To achieve this goal, the bank must use an appropriate

strategy. Experience shows that an effective deposit policy strategy should be based on the following three basic principles.

The first principle is to follow the rule of cost-effectiveness or profitability - all efforts must ensure the final return. After all, if the deposit policy includes measures that are not practical from an economic point of view, it means that the bank will not be able to fulfill any interest obligations on deposits or perform other banking operations that need to "feed" itself [14].

The second principle is that bank deposits can be an effective factor. If the financial system only attracts and uses them on a competitive basis, if there is a financial monopoly in the system, that is if a single bank can set a single interest rate on deposits, it is more efficient than competition between banks and not only allows customers to choose encourages banks to rationalize their operations [15].

The third principle is that the components of the deposit policy should not contradict each other, i.e. all financial instruments of a certain type should be interrelated with a commercial bank, for example, interest on deposits is the same as interest on loans.

The specific principles of deposit policy are to ensure the optimal level of bank costs, security principles, deposit operations, and its reliability, banking secrecy and in practice, the accumulation of temporarily available funds for their implementation leads to income, not costs. It is important to take into account the realities of the market in which the deposit policy operates. Adherence to these principles allows the formation of the bank and provides both strategic and tactical directions in the organization of the deposit process, as well as the effectiveness and optimality of its deposit policy.

The main type of deposits attracted by commercial banks are deposits. They reveal the content of the activities of a commercial bank as an intermediary in the acquisition of resources in the free credit market. Deposits can be distinguished from the categories of depositors: legal entities (enterprises, organizations, etc.) individuals.

Demand deposits in most commercial banks account for the largest share of the accumulated funds. This is usually the cheapest source for organizing bank resources. A decrease depending on the account

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holder’s ability to withdraw cash at any time requires an increase in the share of highly liquid assets in the bank’s turnover by reducing the share of high-yield assets. However, commercial banks are more interested in expanding the use of time deposits, as this will increase the most stable part of their credit resources. Concerning current deposits of a short-term nature, time deposits are placed for a longer period and can be claimed by depositors after a specified period. Long-term placement of temporarily vacant

funds by a depositor means obtaining high-interest rates. The bank is also interested in such deposits, as it can place them in the form of long-term loans and increase interest income accordingly.

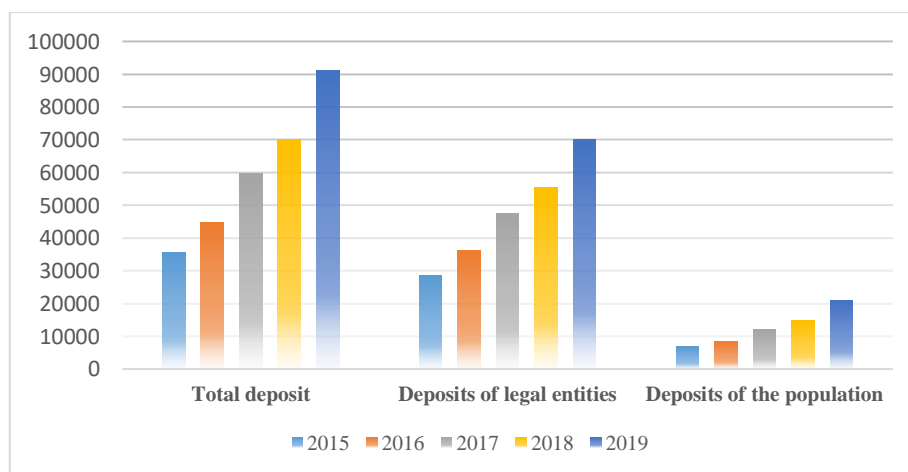
Over the years, the growing confidence in the banking system has led to an increase in deposits in commercial banks. This will help to solve the problem of lack of resources by banks and increase the profitability of the bank through the rational placement of borrowed funds.

**Table 2. Structure of deposit funds of commercial banks of the Republic analytical information about (billion sums)**

Years	Total deposits	Deposits of legal entities		Deposits of the population	
		total	%	total	%
2015	35600	28634	80,43	6966	19,57
2016	44600	36069	80,87	8531	19,13
2017	59579	47447	79,64	12132	20,36
2018	70001	55297	78,99	14704	21,01
2019	91009	69956,7	76,87	21052,3	23,13

From the data in this table, we can see that the volume of deposits attracted by operating commercial banks has been on an upward trend over the years. In particular, in 2015, commercial banks issued loans worth 35,600 billion sums. As of January 1, 2020, this deposit increased by almost 2,6 times and amounted to 91,009 billion sums. This situation can be explained

by the fact that commercial banks pay special attention to the issues of attracting deposits and their effective management. This is also evidenced by the increase in deposits of individuals and deposits of legal entities in banks. However, if we analyze the share of corporate deposits and household deposits in total deposits.



**Figure 1. Information on the structure of deposit funds of commercial banks of the Republic of Uzbekistan (billion sums)**

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Today, using the factors that increase and strengthen the confidence of the population in the banking system, first of all, ensuring the safety and security of deposits, the new "Online" it is necessary to organize the deposit service and expand the possibilities of remote management of funds in the deposit account. Also, The use of modern digital technologies in office work is a requirement of the times.

Carrying out deposit operations based on studying and analyzing the current state of banks makes it necessary to formulate a deposit policy of a commercial bank. Based on our observations and analysis, we can conclude that it is expedient to take the following measures in the effective organization and management of deposit policy of banks:

✓ organization of labor of bank employees on a scientific basis [16]. That is, if in commercial banks, appointments are made taking into account the outlook and ability of employees, and the proper distribution of powers, this will lead to the development of the bank. In the narrow sense, it is advisable if the bank uses the knowledge and skills of qualified personnel in the development of deposit policy.

✓ clear definition of the target road map. The Bank should set clear goals and objectives in the

development of any plans of strategic importance. Because if the goal is not clear, the efficiency of the labor you do will be zero.

✓ monitoring and analysis. The bank's deposit policy should highlight the organization of management by taking into account every detail of the attraction of deposits by commercial banks and the establishment of regular analysis and control over these cases.

✓ setting the operating mode. Every process in the formation of a bank deposit policy is closely interrelated, the development of a perfect deposit policy and bank deposit is necessary for the effective organization of operations.

Constant study of the theoretical aspects of the formation of deposit policy of commercial banks has a direct positive impact on the growth of their deposit operations, ensuring the liquidity and profitability of the bank. However certain criteria of banks' optimization in the development of deposit policy: interdependence of the bank's deposit, credit, and other operations, maintaining its stability, reliability, and financial stability; diversification of bank resources to minimize risk; segmentation of the deposit portfolio (by customers); a stratified approach to different groups of clients; should be managed by the competitiveness of banking products and services.

## References:

- (2017). *Decree of the President of the Republic of Uzbekistan dated February 7, 2017 No DP-4947 "On the Action Strategy for further development of the Republic of Uzbekistan"*.
- (2009). *Banking management*. Textbook. (p.295). Moscow: KNORUS.
- Gribanov, A.V. (2019). *Improving the deposit policy of a commercial bank in the context of its sustainable development*. (p.3). Saransk.
- Baysembaeva, G.M. (2014). *Development strategy of the deposit policy of second-tier banks (on the example of Alliance Bank JSC)*. (pp.7-9). Monograph.
- Panova, G.S. (1997). *Commercial bank credit policy*. (p.464). Moscow: DIS IPP.
- Beloglazova, G.N. (2014). *Banking*. Textbook. (p.591). Moscow: Finance and statistics.
- Tukhtabaev, J.Sh. (2020). *An organizational and economic mechanism for increasing labor efficiency in industrial enterprises in the context of the development of the digital economy*. Monograph. (p.170). Tashkent: "Science and Technology".
- Tukhtabaev, J.Sh. (2016). "The theoretical approach on increasing the professional skills of workers and stimulating their creativity". *International Scientific Journal Theoretical & Applied Science*, № 03 (35), pp. 45-48.
- Uktamov, H.F. (2020). Problems of Evaluation and Procuring Economic Security At Enterprises. *Asian Journal of Technology & Management Research*, Vol. 10 - Issue: 01, pp. 123-129.
- Tukhtabaev, J.Sh. (2016). "Criteria and parameters of labor efficiency". *Journal L'Association 1901 "SEPIKE"*, Ausgabe 12. den 31.03.2016, pp. 201-206.
- Tukhtabaev, J.Sh. (2020). Labor Protection Problems In Ensuring The Economic Security of Industrial Enterprises. *Asian Journal of Technology & Management Research*, Vol.10, Issue: 01.
- Rashidov, R.I., Murtazayev, N.R., & Baratova, S.S. (2020). Directions of innovative agricultural development. *Journal of Agro-processing*, Vol. 7, Issue 2, pp.29-34.

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---

13. Tukhtabaev, J.Sh. (2020). The role of farming and landowners in improving the living standards of the population in a pandemic. *Electronic scientific journal of Finance and Banking*, № 2, pp.318-323.
14. Tukhtabaev, J.Sh. (2020). *The essence of motivation on an increase of efficiency of labor*. III International scientific-practical conference "Priority vectors of development of industry and agriculture", "Donbas agrarian academy".
15. Uktamov, X.F. (n.d.). *Ways to ensure the economic security of industrial enterprises*. Society and innovations - Society and innovations - Society and innovations.
16. Tukhtabaev, J.Sh. (2020). "Econometric Evaluation of influential factors to increase labor efficiency in textile enterprises. *Advances in Mathematics: Scientific Journal*.

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Safiya Djumayeva  
unemployed

Doctor of Philological Sciences

## THE PLACE AND SIGNIFICANCE OF THE NUMBER SEVEN IN ANCIENT FAITH AND MYTHOLOGY

**Abstract:** This article is devoted to the role and essence of the number seven in ancient beliefs and mythology. Pythagoras' views on the number seven revealed the role and significance of the number seven in the philosophical views of Egypt, Babylon, China, and other eastern peoples. The attitude towards this number in Islam, as well as the role of the number seven in Christianity and Buddhism, is highlighted.

**Key words:** number, number magic, religious mythology, seven planets, seven heavens, seven hells, The Holy Quran, Philosophy of Sufism.

**Language:** English

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### Introduction

Many secrets from the history of mankind still remain hidden. One of them is the essence of numbers and their important aspects. Numbers have a special place in the spiritual life, mythology, religion, philosophical views of the peoples of the world. Because number is a philosophical category with logical, national-cultural, mythological and religious features. That is why the belief, attitude and appeal to numbers from the history of the ancient world to the present day is noticeable. In ancient Babylon, Egypt, and Greece, a variety of sacred number systems were developed. It was started in Greece by Pythagoras and his followers, which later led to the emergence of mystical-philosophical numerology. Their ideas about numbers were related to their views on the universe and the origin of everything in it. According to Pythagoras, the founder of such views, the universe was created through the power of numbers. His interpretation gave rise to the notion that "everything consists of numbers" because the number is manifested as both a material and a form of the Universe. It is known that Pythagoras did not write down his scientific works, which came down to us through the records of Aristotle and Plato. Aristotle writes: "Pythagoras recognized the beginning of the whole being as a mathematical beginning". This

philosophical truth connected him with number and music. Pythagoras considered the number as a source of power and advanced the view that the science of numbers could reveal the mysteries of the universe. As the scientist enters into the properties of numbers and describes their different meanings, he concludes that the science of numbers is the key to life.

Opinions about the numbers that first appeared in Europe were also beginning to take shape among the peoples of the East. It should be noted that although views on the number, its characteristics, its place and significance in human life have emerged and developed separately in the East and the West, they are often mutually exclusive, even very close to each other.

The attitude of the peoples of the East towards numbers and the question of their elucidation of their essence is related to the views on the origin of the universe. Usually, in the legends related to religious mythology, the appearance of nature and living beings and the beginning of the life process on this basis are interpreted on different bases. Reflecting on this, N. Nizomiddinov says: "In Chinese mythology, the emergence of the "whole being" took place in the following structure: that is, the light is created from the "Yan" and the darkness from the "In", which appeared after the division of the "chaos-fog" and the

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"abyss" of darkness into two elements, similar to the concept in ancient Greek mythology. In this case, the masculine origin of Yan is understood in the sense of sunshine, strength and positiveness in general, while the feminine origin of In is taken in the form of the moon and darkness, sadness and weakness" [8:138]. It is obvious that the main essence in this is illuminated by two numbers. In China, this number is considered a symbol of harmony between men and women. The number two, which is especially common in wedding ceremonies, signifies double happiness. The origin of the Chinese proverb "Happiness comes in twins" is probably related to this.

It is no secret that in China, numbers are given a great deal of meaning. Some of them are considered lucky numbers, while others are considered unlucky numbers. For example, the number eight is recognized as a good number and is considered a symbol of progress. It's hard to say the same about the number four. This number is synonymous with the word "death" in Chinese, which has created a negative attitude towards the number four. In the Pythagorean interpretation, it is recognized as a clear idea, quality, feature, symbol that surrounds the universe and man. The fact that the sum of numbers from one to four was equal to ten, and that the number four played an important role in this, was also interpreted by Pythagoras and his followers as the basis of all four beings, a symbol of power, equality, and justice<sup>1</sup>.

Numerical magic had a certain meaning, whether it was related to the calendar or to astronomical events. Among them, the number seven occupies a special place. Its magical power applies to all aspects of human life, and the participation of the number seven is much higher compared to other magical numbers.

The great significance of the number seven is not in vain connected with the philosophy of Egypt and Babylon. This argues the view that there is a life of two numbers: three and four. While three people: father, mother, and son form the basis of an entire life, four are the four sides of this universe. Pythagoras also recognized the perfection of the number seven as the sum of the numbers three and four. In some religious beliefs, the number seven also served to denote the six sides of the universe - north, south, east, west, high, low, and Creator. The number seven also served to represent heaven and earth, water and fire, birth and death, and man. In ancient Greece, the number seven was considered a symbol of Appalon. Because he was born on the seventh day of the month and had seven strings in his lyre<sup>2</sup>.

While it is difficult to say exactly when this number has held such a high position in human life, we can see that in the Sumerians this number rose to

the level of a cult. The Sumerian legends about Gilgamesh contain the views of the seven most powerful and wise gods, the seven gates of the underworld, and the seven angels who interrogate the dead. It is noteworthy that in Babylon, with the advice of seven omniscient sages, seven-tiered temples dedicated to the greatest god were built. According to the priests, the underworld is surrounded by seven walls, and the dead who have passed away enter the palace through seven gates.

It can be said that the seven planets in the sky played an important role in the rise of the number seven to this level. The idea of sponsoring the seven planets every day of the week first originated in ancient Babylon. A. Borodin connects the tradition of dividing time into seven days with this view [3:112]. The naming of the days of the week is also associated with the names of the planets in many European languages. For example, in French Lundi (Monday) - Day of the Moon, Mardi (Tuesday) - Mars Day, Mercredi (Wednesday) - Mercury Day, Jeudi (Thursday) - Jupiter Day, Vendredi (Friday) - Venus Day, Samedi (Saturday) - Saturn day, Dimanche (Sunday) - Day of the Sun. The seven planets in the sky, the seven days of the week, and the seven famous metals associated with them, complemented each other in the eyes of astrologers and chemists, furthering mankind's confidence in the sevens. These are: gold - Sun - Sunday, silver - Moon - Monday, iron - Mars - Tuesday, mercury - Mirrix - Wednesday, fire - Jupiter - Thursday, copper - Venus - Friday, lead - Saturn - Saturday.

According to the beliefs of the Sumerians, the life cycle on Earth depends on the movement of the Moon. It is noteworthy that according to the lunar calendar, each month consists of four weeks, and each week consists of seven days. Another aspect of the lunar calendar is that in Babylon, the end of a cycle of seven days was considered dangerous, and it was believed that some misfortune would come on those days. That's why the seventh day of the week was declared a day off to avoid disappointments, and no one worked on that day.

The number seven was considered sacred in ancient Egypt, India, China, and even America. The magic of this number was also used in the construction of the Pyramids of Cheops in 2500 BC. In Egypt, the number seven was a symbol of eternal life, probably because the god Osiris was considered the number, and ancient Rome greatly enriched the essence of this number. There are speculations that the city itself was built on seven hills. It is noteworthy that the construction of ancient cities such as Bukhara, Tashkent, Istanbul and Kiev is also associated with the number seven. For example, according to Abu Bakr

<sup>1</sup> Perhaps the Pythagoreans' conclusion was based on the fact that the sum of the numbers four and four formed the numbers in the top

ten, i.e.  $1 + 4 = 5$ ;  $2 + 4 = 6$ ;  $3 + 4 = 7$ ;  $1 + 3 + 4 = 8$ ;  $2 + 3 + 4 = 9$ ; Forms  $1 + 2 + 3 + 4 = 10$ .

<sup>2</sup> The lyre is a musical instrument.



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ibn Ja'far Narshahi, Bukhara was built in the form of seven pirate stars [4:80-81].

This number is very popular in the holy books of Christianity. They adopted magical views on the sevens that emerged based on the scientific observations of orientalists and Pythagoreans. It would not be a mistake to say that the "Apocalypse" or "Revelation", one of the earliest examples of Christian literature, contains a system of sevens. It depicts God sitting on a throne with a book in his hand. There are 7 seals in the book, and the unraveling of each of these seals works a miracle. When the 7th seal is opened, 7 angels come out holding trumpets in their hands. After 7 of them blow the trumpet, 7 more angels appear on the stage. Interestingly, in the hands of these angels there are 7 bowls filled with the wrath of God, and the wrath overflows from the bowl and begins to pour out on the Earth.

In Buddhism, the number seven comes as a symbol of ascension, aspiration, and focus on the center. The seven steps of the Buddha represent the seven spatial steps set out into space, beyond the boundaries of space and time. The Buddha sits under a tree with seven fruits. They had the custom of gifting seven happy elephants made of bone, wood, or other material. In Hinduism, this number is more firmly rooted in concepts such as the seven sages, the seven worlds, the seven holy cities, the seven holy islands, the seven holy seas, the seven holy mountains, the seven sacred trees, and the seven deserts.

The peoples of the East emphasized that a person is spiritually renewed and changed at every age of seven, and divided human life into seven, that is, up to seven years - childhood, 14 years - adolescence, 21 years - youth, 28 years - maturity, 35 years - high maturity, 42 years - full of life force, 49 years - is considered a period of wisdom, 56 years is recognized as the onset of autumn in human life, 63 years - a period of powerlessness, 70 years - a return to childhood, 77 years - a period of return to infancy. This evidence was not accidental, but also reflected some mysterious aspects of human life.

Just as it is impossible to imagine the fourteen-century history of our national spirituality without Islam, it is very difficult to analyze the attitude towards numbers based on religious views without relying on the Qur'an. Because there are 30 types of numbers in the Qur'an, Professor Klaus Shedlya, who conducted a special study on them, notes that there is an inexplicable mysterious divine connection between words and numbers in the Holy Qur'an using computer technology in the 70s and 80s of the twentieth century.

Harun Yahya, another scholar who has studied such situations in the Qur'an, based his observations in his book, "The Miracles of Allah in the Qur'an",

states: The Qur'an ... also has "mathematical miracles". There are many examples of such a remarkable aspect of the Qur'an. An example of these miracles is the repetition of some words in the Qur'an. Some words are surprisingly repeated in the same amount" [11:148]. Giving a number of examples of the same number of repetitions of words or concepts in the Qur'an, the scholar points out that the number of heavens and the creation of the heavens have been used seven times, and the words "heaven" and "hell" seventy-seven times. In fact, one of the reasons for the special attitude towards the number 7 in the Islamic world, and the most important, is that the first surah of the Qur'an, Surat al-Fatiha, consists of seven verses. "We have given you the great Qur'an in seven parts", the Qur'an says (18/77). The scholars say that the fact that the Qur'an, which is the word of Allah, consists of a total of 77,000 words, means a lot.

The seven rounds of the Ka'bah during the Haj, the seven runs between Safa and Marwa, the seven years of imprisonment of the Prophet Yusuf, and the seven nights and eight days of the terrible storm sent to the people of 'Ad prove that this number has a special place in the Qur'an. One of the facts reported in the verses about the universe and its structure is that the sky was created in seven layers. He is the One who created everything on earth for you. Then he "stood up" to the sky and made it into 7 heavens. He is the All-Knowing, the All-Wise" [12:5]. According to the verse, the sky consists of 7 floors. Such information about the heavens and their number can be found in several places in the Qur'an. In several verses of the Qur'an, the word "heavens" is used to refer to the heavens above the earth and the entire universe. From this given meaning of the word, it can be understood that the sky or atmosphere of the Earth is created in 7 layers. Indeed, it has already been proven in astronomical science that the atmosphere is made up of different layers lying on top of each other [5:5]. It has also been proven that the seven layers of the Earth's atmosphere differ in chemical composition [1:3/7].

According to modern geological definitions, the atmosphere consists of seven layers called the troposphere, stratosphere, mesosphere, thermosphere, exhaust, ionosphere, and magnetosphere. The Qur'an states, "So He created the seven heavens in two days, and revealed to each heaven a task" [12:477].

Hence, each heaven has its own duty and is entrusted to them by Allah. Each of these layers plays a very important role in the survival of humanity and living things on Earth. Each layer has its own functions, from the formation of rain to the prevention of harmful rays, from the reflection of radio waves to the catastrophic consequences of meteorites<sup>3</sup>.

<sup>3</sup> For example, the troposphere, which is 13-15 km above the Earth, liquefies water vapor rising from the Earth and sends it back as rain. The ozone layer, which is the lower layer of the stratosphere at an

altitude of 25 km above the Earth, reflects harmful radiation and ultraviolet rays coming from space into space. The ionosphere reflects radio waves transmitted from Earth just like satellites with

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It is well known that in Eastern literature, when it comes to Sky or Space, they are recorded together with the numbers seven or nine: seven Skies, seven heavens, seven Spaces. But when our classical poets speak of the celestial universe, including the seven Skies, they always draw attention not only to physical beings, but also to ideas aimed at illuminating the essence of the perfect man through the symbols and metaphors attributed to man. This is due to the fact that everything in the universe is in man, and that the perfect man has not only everything on earth, but also everything in heaven. According to al-Qurtubi, the ancients applied and interpreted the terms "seven heavens" and "seven layers of earth" not only for the earth and the layers of the sky, but also for the world of angels, demons, devils, mines, plants, animals and humans [2:85].

In order to understand the coverage of the problem of the perfect man in mystical literature, the most widely used in classical literature are "7 celestial bodies", "7 planets", "7 climates", "7 rivers", "7 types", "7 spirits", "7 targets". It is required to know the symbolic-figurative meaning of dozens of phrases.

"And We have built above you seven strong (heavens). We have created a shining lamp (the sun)" [12:582], it is said in the Qur'an. "We know that the only light source in the solar system is the Sun itself. In honor of advances in technology, astronomers have discovered that the Moon is not a source of light, but merely a reflector of light that reaches it from the Sun. The word "lamp" used in the above verse is a translation of the Arabic word "sirooj". This word in Arabic fully describes the Sun, which is the source of light and heat. Various verses have appeared in the Qur'an to refer to celestial bodies such as the moon, sun and stars. "Do you not see how Allah created the seven heavens one on top of the other? He made the moon a light in them, and made the sun a lamp" [12:571]. In the above verse, the word "light" (Arabic for "light") is used for the Moon and the word "lamp" (Arabic for "sirooj") for the Sun. The word used for the moon refers to light, motionless bodies that reflect light. The word used for the sun refers to a celestial body that is always burning, a constant source of heat and light" [11:19]. According to mystical views based on Islamic concepts, the Sun is Allah and the Moon is its caliph on earth.

The full moon is the divine caliph who appears in the most perfect form in the universe with all the names of Allah and the rulings of these names. Just as the light of the sun is reflected on the moon, so can its manifestations be seen in the caliph of Allah on earth.

Another piece of information related to the number seven in Islam is that the Earth was created in seven layers. One of the verses says, "Allah created

the seven heavens and the same number of earths" [12:559]. As a result of scientific research, the water that forms the Earth's crust and the Earth's lithosphere; the asthenosphere, which is thinner and more mobile than the lithosphere; upper and inner mantle, containing iron, magnesium, and calcium; the outer core in the liquid state and the inner core in the dark state, consisting of an iron-nickel alloy, were found to consist of a total of seven layers. This is yet another proof of the divinity of this holy book while proving that the Earth is made up of seven layers, as stated in the Qur'an. Such views, of course, led to the creation of such verses as to occupy a special place in literature as well.

*Birligingga o'n sakkiz ming olam muqir,  
Yeti qat yer, yeti qat ko'k tasbeh o'qur* [6:378],

*Meaning: 18000 universe (the whole word) prove that you are the only one, Seven layers Earth, seven Heavens pray for you.*

The word land is referred to as arz. Sufi dictionaries define arz as follows: "Arz is a) a creation, and its adornment is the Truth; b) The qualities of truth are called Samo (Sky), the qualities of people are called Arz; c) Arz - the world of corruption. Samo (Sky) is the world of the sublime, the world of the righteous. The essence of knowledge is the human qualities in itself, and the heavens are the divine qualities of the Truth in it" [9:54]. This means that the earth and all the creatures in it are meant, and the sky is blue. Opinions about heaven and hell predominate among Muslims. If heaven is imagined in the Sky, above, then hell is understood to be below, below earth. According to Islam, hell, like heaven, consists of seven layers. In Eastern literature, in general, in mystical literature, the idea of the seven *tamug's*, that is, the seven hells, is quite stable. The great poet Alisher Navoi, in one of his hymns of praise, asks Allah to make the seven hells ashes:

*Elga maxlas istasang, yeti tamug'ni ayla kul,  
Aylabon bir shu'la bu ohi duraxshondin judo* [7:10].

*Meaning: if you wish goodness for your people, make the seven hells ashes and make them loose that pain*

However, the members of the Tariqah sect were not content with religious considerations in the belief in hell and hell, but sought hell and its torments from man himself, or more precisely, from his lusts and wrong doings. For this reason, throughout the history of literature, lusts have been strongly condemned and criticized. The most acceptable and reliable way to get rid of them or surrender them completely has been found to be a way called "*sayri suluq*", which also consists of 7 steps.

an inactive communication system and sends them back to different corners of the world. In this way, it provides the ability to transmit wireless communications, radio and television broadcasts over very

long distances. The magnetosphere sends harmful radioactive particles from the Sun and other stars back into space before they reach Earth.

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In general, in mystical philosophy, a number of sevens have emerged that have emerged under the influence of Islam and are related to the creation of the world. Seven climates - means the whole world, habitat. Seven rivers - seven seas. These are: the Sea of China, the Sea of Azar, the Sea of Oman, the Gulzum or Ahmar Sea, the Barbarian or Oceanic Sea, the Greek Sea, and the Black Sea [10:73]. These are the largest and most vast seas on earth. But in mysticism it is the quality and status of the Allah, and all beings in the world are innumerable tributaries of the seas. Sometimes the word sea means unity, and the rivers of the sea mean kasrat (plurality). Sufis, in general, use the sea as an example to fully imagine that the Creator is one, and that existence is many and varied. The name of the seas is used in mysticism under the following names: Bahri ayon - open sea: manifest rays; Bahri hasta - the sea of being: holy and divine manifestations; Bahri otash- sea of fire: sea of love; Bahri Muwaddat is a sea of friendship: endless love for the Truth, divine love; Bahri ato - the sea of grace: the constant grace of the Truth; Bahri muhit- The sea is the ocean: the infinite light of Allah, according to Aziz al-Nasafi, is perfect; The sea is a landless sea: the Sufi's continuous and uninterrupted

state with Allah. These seven seas, called Sabati abhur, also served to express the seven ways of the Arifs: sakr, vajd, berk, hayrat, shuhud, nuri qurb, valayati vujud [9:453]. Seven pens - 7 notes. 7 different Arabic letters: suls, muhaqiq, tavqe', basil, riqa, nasx, taliq [10:738]; haft andom - 7 organs of a person, i.e. head, chest, abdomen, two arms, two legs [9:234]; 7 different colors - 7 colors attributed to the seven planets [10:738]; 7 valleys - demand, love, enlightenment, warmth, monotheism, wonder, poverty and death.

While it is not known which of the above ideas led to the popularity of the number seven, each has played an important role in the mysterious and magical power of this number. Later, rainbow colors, musical notes, and the fact that the number of cervical vertebrae in almost all human and other mammals was seven, served to strengthen the relationship to the number seven. "The world is made up of numbers and sounds, solve everything with numbers, enter the world of mysteries and meditate", says one ancient book. As you enter the wisdom of numbers, you will become wiser yourself. And the number continues to attract like a magical force.

## References:

1. (n.d.). "Numerical Prediction Models used by NWS" (Shimoli-g'arbiy shtatlarda ishlatiladigan Raqamli oldindan aytish modellari), Integrated Publishing; Retrieved from [www.tpub.com/weather/3/4-27.htm](http://www.tpub.com/weather/3/4-27.htm).
2. Bayroqdor, M. (1989). *Tasavvuf va zamonaviy ilm*. Istanbul.
3. Borodin, A.I. (1972). *Chislo i mistika*. Donesk.
4. Jo'rayev, M. (1991). "Sehrli" raqamlar siri. Toshkent.
5. (1992). *Qur'oni karim. Izohli o'zbekcha tarjima. Tarjima va izohlar muallifi Alouddin Mansur*. - Toshkent: "Cho'lpon".
6. (2013). *Maxtumluli*. Asarlar. Toshkent. .
7. Navoiy, A. (1989). *Mukammal asarlar to'plami*. 20 jildlik, 5-jild. Toshkent: "Fan".
8. Nizomiddinov, N.M. (2014). *Qadimgi Xitoy tarixi, diniy etiqodi va madaniyati*. Toshkent: "Fan va texnologiya".
9. Paduirni, M. (1996). "Atmospheric Layers" (Atmosfera qatlamlari). Retrieved from <http://royal.okanagan.bc.ca/mpidwirn/atmosphereandclimate/atmslayers.html>.
10. Uludog', S. (1995). *Tasavvuf terminlari so'zlugi*. Istanbul.
11. (1969). *Farhangi zaboni tozhiki. Iborat az du zhild. Zhildi 1.* (p.952). Moskva: nashrijoti "Sovetskaja jenciklopedija".
12. (1969). *Farhangi zaboni tozhiki. Iborat az du zhild. Zhildi 2.* (p.952). Moskva: nashrijoti "Sovetskaja jenciklopedija".
13. Horun, Y. (2006). *Allohning Qur'ondagi mo'jizalari*. Toshkent, "O'qituvchi".

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## POETIC ANALYSIS OF ZULFIYA ISRAILOVA'S WORK

**Abstract:** *In Zulfiya's poetry, lyricism and journalistic spirit are closely intertwined. It is full of love for life, humanity and goodness. The poet's creative heritage has always been in the center of attention of literary critics and art lovers. Zulfiya's life and work have not been the subject of separate research by Methodists. However, one of the most important tasks is to study the life and work of the poet, his literary heritage and the use of advanced educational technologies and effective methods. Studying the poet's artistic skills will undoubtedly help us to understand the subtleties of her work. Zulfiya has a place in 20th century Uzbek literature. During the years of independence, the attitude to our history and spiritual heritage has changed radically. A number of measures have been taken to restore our national and literary values, which were suppressed during the dictatorial regime. Our poet went through hard times during the Soviet era, but he did not lose his humanity, remained steadfast in his faith, fought valiantly against difficulties, and did not retreat from the position of creativity. Most of the poet's poems are personal experiences, cries of heartache, fragments of his life, but they did not remain in the narrow shell of his personality. It enriches the spiritual and aesthetic world of the reader by singing the same human feelings in all ages. Based on this, in this article we will try to analyze the linguistic and poetic methods of the work of the beloved poet of the Uzbek people Zulfiyakhanim.*

**Key words:** Uzbek, linguistic, poetic.

**Language:** English

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### Introduction

Zulfiya left us a great creative legacy, including: "Fragments of my memory". "Girls' Song", (1938) "Poems" 1939, "In the days of Hijran" 1944, "One day in the field" 1948, "Dawn Song" 1953, "People close to my heart" 1958, "My songs to you" 1965, Thoughts, "Waterfall", "Sunny pen" (dedicated to Oybek) "Mushoira", - "Fragments of memory" 1995, "My son will never be a war" 1954, "Night" 1944, "Hijran", "On the moon", "My homeland", "Spring has come to question you" "Have you seen tears in you eyes", "Zootechnical girl", "Shepherd", "Where

are you, my heart", - He created several collections of poems, poems and verses, such as "Gardens are in bloom", "I am in the past life".

I'm not sorry for the past,  
I don't see anyone like me in my life:  
I loved,  
Erkalandim,  
I lost,  
I burned.  
Izzat knew what.  
This is a living!

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Instead of smiling, he smiled and said, "If I need to kiss, I kissed a madman," and gave the task "Based on the content of these lines, find out why the poet did not feel sorry for his past life." The point is that students need to understand for themselves how true what they have read in the textbook is a biographical text about the poetess Zulfiya, based on her writings. What a person writes often reveals his identity. You just have to be more discriminating with the help you render toward other people. Students will be taught a well-organized literature class. It is well known that the greatest of the blessings bestowed upon man by God is love. Enjoy life as much as you can. The author of the poem, as a human being, was found worthy of both. He was happy enough to "smile instead of smiling," he loved madness, and he was loved accordingly.

For a person who is drunk with happiness in his life, material things do not matter much. As a product of spiritual bliss and happiness in his personal life, he gave a new song to humanity every morning. Word artists are ambassadors of their people. They pass on human qualities and dreams to their readers, fans and future generations. Zulfiya, the beloved poet of the Uzbek people, is one of them. Because his rich poetry expresses a variety of life, human feelings, thoughts and ideas. That's why his poetry has captivated his fans. Schoolchildren are especially familiar with the poet's name.

Even the smallest cocaine is awake to me  
I only saw the crowd in silence.

The lyrical protagonist, who is passionate about violence, seems to be turning black from the pain. It looks like a sack that encloses with a drawstring. "Broken Memories" is Zulfiya's grassy cry for the nation to wake up and fight. From the analysis of these feelings, it can be seen that today's gratitude and pride for national independence are flowing. With the book "In the days of Hijran" the poetess was born in the house of the Uzbeks. made a thousand. Zulfiya's sincere and passionate cry about her painful fate and this painful fate that made her a poet. As one of the elders said: "The poet suffers, and this suffering is a joy for poetry." These words apply to the whole poetess Zulfiya. The great suffering that gave birth to the poet also created the great happiness, which is its action. This great happiness belongs to the people and poetry.

Every artist enters the world of poetry with his song. Zulfiya entered the poetry with the song Vafo. And this song became a high song of female devotion.

Life is a moment of inspiration  
A pearl spilled from your pen.  
The wind when the flower takes the neck  
Those eyes are full of jealousy.

Zulfiya's work is full of poetic depth and spiritual maturity. In the poem above, he says, "In this, life is a pearl of inspiration." - Let's pay attention to the

following verses. The poet used metaphors such as "moments of inspiration", "spilled pearl". In fact, life is not a moment of inspiration, and on the contrary, the poet hid his feelings in the verses, that is, to overcome the endless sorrows of life, migration and separation. We can see that he is subject to the traces of creation as opposed to traces.

Zulfiya's poem "Aydinda" differs from other poems to be studied in the program, both in terms of subject matter and artistic expression. The poem depicts the emotions and amazement of a person who was excited by the beauty of the starry sky on one of the rainy nights of spring, the moon that envelops the world in white, and the clouds of imagination. This work differs sharply from the previously studied poems in terms of showing the diversity of the poet's poetry, in terms of direct acquaintance with the expression of his sensitive heart. In the second hour of the study of Zulfiya's poetry, Aydinda should be recited from memory. After the poem is read, the student should try to embody the expressions in the poem in the face of the demands. Then the student becomes an author. Without her condition, Zulfiya will not be able to feel poetry. From the first verses, the poet begins to paint a moving scene in words:

A full moon,  
The cloud is as light as a dream,  
Oy anhorda qulun toy,  
Like a single mirror,  
It is spread out in the pool.

When we pay attention to these verses, "The slave's wedding in the moonlight" is in fact that the moon can never be a wedding, and the meaning of the verse is that the moon is alone, and here we see the crescent of the new moon. we can feel it coming out. "Like a single mirror, it is spread out in the pool" - the moon's brother in the water is compared to a "mirror".

In Zulfiya's poems we can see artistic analogies, metaphors, similes, comparisons. His creative legacy reaches the hearts of all, young and old alike. Pure, sincere, heartfelt verses mean that Zulfiya's work still needs to be studied in literature. In the poetry of Zulfiyaxanim, a great representative of Uzbek literature, along with the themes of great freedom, great happiness, fidelity, patriotism, masterful lines of mother nature, mother earth songs, motherhood veterans are given a wide place. He devoted his whole life and knowledge to poetry. In the poems of the poetess, who accurately describes the feelings of the mother, who longs for the perfection of the child, a wide place is given to the development of the younger generation as a healthy, mature and perfect person. Zulfiyaxanim is a pure-hearted, kind woman, a loyal companion, a shining example of Uzbek women as a beloved lady. The resounding voice and enthusiastic

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poems of the beloved poet still fill the heart of the reader with excitement.

## References:

1. Tosheva, O. (2012). Methods of using presentation materials. *Language and literature education* - Tashkent, Issue 12.
2. Tokhliyev, B., & Sarimsakov, B. (2008). *Literature* (curriculum for academic lyceums) - T.Teacher.
3. Tokhliyev, B., et al. (2011). *Modern technologies of language and literature education*. - T.Toshkent.
4. (n.d.). Mathematical Sciences. 2019-2020 years manual. (pp.11-19).
5. (2020). *Learning mathematics using short multiplication formulas*.
6. (2020). *The role of mathematics in Pedagogical Sciences*. (pp.11-15).
7. Al-Ajlouni, K. I. (2011). Acxiom Corporation. Experiences verifying the identity of online students. Acziom Corporation.
8. (2015). Learning Effects of Using Learning Management System (Moodle) by Students of Arab Open University. (pp.15-40).
9. Al-Amleh, M. (2014). Proceedings of MAC-ETel 2015. Multidisciplinary Academic Conference on Education, Teaching and E-Learning, Prague.
10. Zoller, V.N. (2000). Emotional-evaluative enantiosema of phraseological units. *Philological sciences*, M., No. 4, pp.56-57.
11. Tiraspol'sky, G.I. (1999). The system of language and consistency in the language. *philological sciences*, M., No. 6, pp.37-38.
12. Bolotnova, N.S. (1999). *On some features and new directions of stylistic research of artistic speech at the end of the 20th century*. Russistics: Linguistic paradigm of the late twentieth century. (pp.120-123). SPb..
13. (1994). *Dictionnaire des œuvres littéraires de la langue française en quatre volumes*. (p.2158). Paris.
14. Ibragimov, Kh., et al. (2008). *Dictionnaire FrançaisOuzbék*. (p.587). Tashkent.

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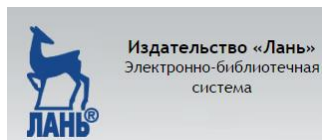
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