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Issue Article



**Abdurakhman Abdulahatovich Mirisaev**
Tashkent Architecture and Civil Engineering Institute
PhD in Economics, Associate Professor, (TIACE),
"Economics and Real Estate Management" Department,
Tashkent, Republic of Uzbekistan,
abdurahmonm@mail.ru

**Nozimbek Fakhridin ugli Soibov**
Tashkent Architecture and Civil Engineering Institute
master, (TIACE), "Economics and Real Estate Management" Department,
Tashkent, Republic of Uzbekistan


# MORTGAGE LENDING MARKET IN UZBEKISTAN


***Abstract***: *This article analyzes the growth in demand for housing and the implementation of measures to provide the population with housing and provides an overview analysis of mortgage lending. Analogous systems of mortgage lending in neighboring countries are considered.*



***Key words***: *mortgage lending, refinancing, constant population growth, outstanding mortgage loan balance, portfolio by region, population density in regions.*

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## Introduction

Today in Uzbekistan, the increase in demand for housing and the implementation of measures aimed at providing them with housing caused an increase in the volume of mortgage loans.

As of January 1, 2022, the balance of mortgage loans is 35.8 trillion. amounted to soums and increased by 26.8% (7.5 trillion soums) compared to the corresponding period of 2021, while mortgage loans allocated in this period increased by 7.4% or 671.8 billion soums compared to the corresponding period of the previous year. increased to 9.8 trillion soums. amounted to soum.

In 2021, the share of mortgage loans allocated for the purchase of houses built by IK "Qishloq qurilish invest" and "Uzshahar qurilish invest" IK in the total allocated mortgage loans was 21.7 percent (2,124.0 billion soums), compared to the corresponding period of the previous year decreased by 40.9 percent (3,148.7 billion soums), while the share of mortgage loans allocated within the framework of the "new order" (hereinafter referred to as "new order") based on market principles of providing housing to the population during this period decreased from 19.1 percent (from 1,744.6 billion soums) to 49.5 percent (by 4,846.2 billion soums) increased.

## Analysis of literature on the topic

This selected article is the Decree of the President of the Republic of Uzbekistan No. PF-5715 of May 13, 2019 "On additional measures for the development and expansion of the mortgage credit market" and the Decree of the President of the Republic of Uzbekistan of the Republic of Uzbekistan The basis is the decree of the President of November 28, 2019 on the construction of multi-apartment affordable housing based on Decree No. PF-5886 "On Additional Measures to Improve Mortgage Credit Mechanisms".

These foreign scientists in the field of mortgage credit contributed theoretical works (V. Bychkov, M. Gorsky, A. Elliot, A. Pomozgov), analysis of price factors in the housing market, real estate (Z. Urumova,

I. Gergiev, A. Pomozgov, Z. Kisiev, A. Milenkiy, A. Fokin and others) reflected in his scientific research.

In addition, a number of issues related to the management of the provision of housing to the population and the specific features of its mechanisms were researched by a number of our economists, and their work made a significant contribution to the development of the scientific-theoretical and methodological foundations of the development of management in Uzbekistan, taking into account the national characteristics, including: It is widely covered in the works of B. Khodiev, B. Berkinov (2010), I. Butikov (2001), D. Suyunov (2007), A. Khoshimov (2006), J. Fattakhova (2006).

**Research methodology**

Empirical research method was mainly used in the implementation of the research, that is, the issues of increasing the social well-being of the population based on housing construction were considered, the issues of crediting housing construction were mentioned in detail, and conclusions and proposals were developed regarding the improvement of the sector.

**Analysis and results**

The results of the research carried out in the course of the scientific research showed that there are a number of urgent problems in the improvement of mortgage lending practice in our country, which, in our opinion, are the main ones:

- Incompleteness of some legal bases of mortgage lending practice regarding property pledge and its sale by commercial banks.

The following can be added as the negative sides of the mortgage today: - the height of the interest rate. Average interest rates on national currency bank loans in Uzbekistan As of June 1, the annual average interest rate on all loans was 19.8 percent, and on May 1 it was 19.7 percent.

The rate of short-term loans increased to 19.5% (it was 19.1% in April), while the rate of long-term loans remained the same — 19.8% [10]. - the initial payment is 25%; - in addition, if the payer took a loan and failed to pay it, he will have to pay a considerable amount of fines; -mortgage forces many families to live economically; - not everyone can get a mortgage. Banks carefully study the situation of customers. These are the main disadvantages of this type of lending. But there is another aspect that is important - this is moral pressure, a sense of indebtedness.

Therefore, it is recommended to think carefully before taking such a step. It is necessary to further improve the legal base and infrastructure in order to develop mortgage credit in our republic, to reduce the financial risk of its participants and to facilitate the ownership of a house by citizens.

Providing a youth home to young families consists of three stages: the first stage is the construction of the youth home, the second is the selection of candidates, and the third stage is the conclusion of an agreement between the selected young families and the bank and the contracting organization, that is, the stage of formalizing documents.

At the present time, the scientists of our republic are expressing their opinions about the feasibility of creating a two-tier system of mortgage lending. But the perfect vision of the two-tier lending system has not yet been developed.

In general, the two-tier mortgage lending system envisages the creation of a special fund for the refinancing of mortgage loans at the state level. The purpose of the fund is to create such a mortgage lending mechanism, which, on the one hand, allows the formation of mortgage loan interest rates at a level convenient for the population; secondly, it should allow attracting long-term resources to the mortgage lending process. The level of credit risk of banks is high due to the fact that most of the individuals receiving loans from the banks of our republic, that is, bank clients, do not have a credit history. In the conditions of the growing demand of the population for housing and the improvement of its living conditions, the demand of citizens to borrow long-term funds from the financial market for the purchase of housing on the basis of interest rates that satisfy them will increase.

The mortgage lending system of banks allows to satisfy this demand. There is a practice of mortgage loan insurance, but today it would be desirable to further improve it, that is, taking into account the type of client and their territorial location;

As can be seen from the international experience, the support of the state through legal and other influencing factors is of decisive importance in the development of mortgage credit.

Based on this, we believe that it is appropriate for the state bodies to support this system in the following forms:

- Granting local status to the mortgage lending system;

- Loss or reduction of the amount of financial burdens of system participants due to reduction of costs and other benefits to the structural structure;

- In order to create a competitive environment in the system, providing non-refundable subsidies for construction or housing purchase from the republican or local budgets;

- Adopting a special lending decision based on a guarantee (at the local level), in which the city government acts as a guarantor if the implemented project corresponds to the important directions of the city's development.

One of the main sources of attracting resources to the mortgage lending system is the issue of mortgage securities and their placement, that is, the securitization of the mortgage housing lending

market. We hope that these, in turn, will serve as a basis for the full satisfaction of the population's demand for housing in the Russian Republic, and for the disappearance of certain differences between the city and the countryside.

**Materials and Methods**

The share of mortgage loans allocated by commercial banks at the expense of JSC "Uzbekistan mortgage refinancing company" in total allocated mortgage loans reached 20% (1,956.8 billion soums). Also, the share of mortgage loans allocated for the purchase of housing from the secondary market in the total allocated mortgage loans increased to 25% (2,442.6 billion soums). (Table 1).[1]

**Table 1. Share of mortgage loans allocated for the purchase of housing**

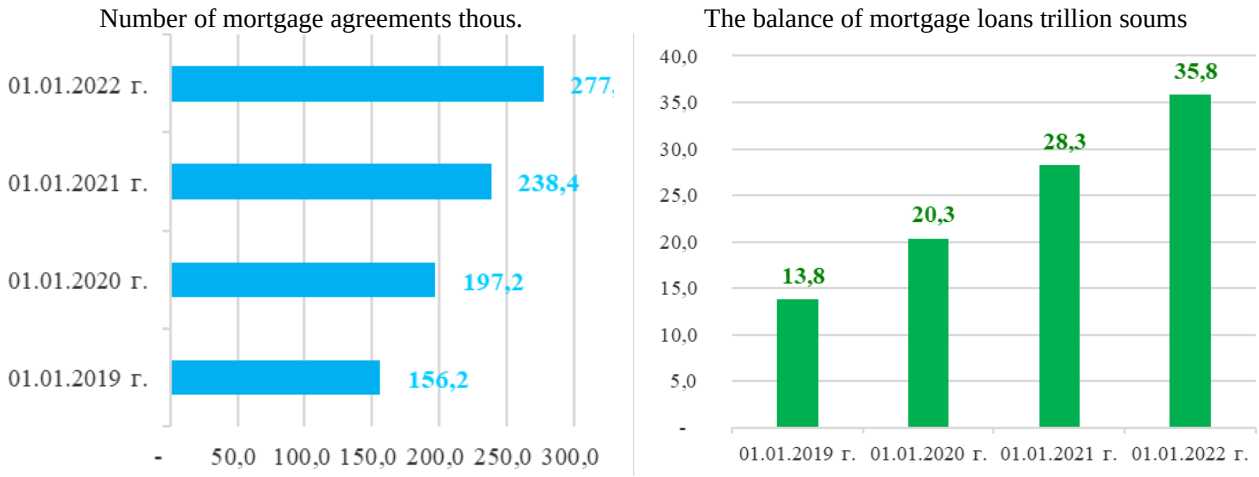
| | 2019 year | 2020 year | 2021 year |
|---|---|---|---|
| **Dedicated mortgage loans, billion soums** | **7 977** | **9 122** | **9 794,1** |
| - in the primary market | 7 709 | 8 841 | 7 351,5 |
| - in the secondary market | 268 | 281 | 2 442,6 |
| Mortgage loans allocated under the "new procedure", in billion soums | - | **1 746** | **4 846,2** |
| - For 1- and 2-room apartments | - | 748 | 2 442,4 |
| - For apartments with 3 or more rooms | - | 998 | 2 083,8 |
| - For private houses | - | - | 320,0 |
| **Mortgage loans allocated at the expense of JSC "Company on refinancing mortgages in Uzbekistan" in billion soums** | - | **61,9** | **1 956,8** |
| - for housing in the primary market | - | 0,9 | 2,4 |
| - housing on the secondary market | - | 60,7 | 1 931,2 |
| - for home renovation | - | 0,3 | 23,2 |
| **The rest of the mortgage loans, in trillion. soums** | **01.01.2020 y.** | **01.01.2021 y.** | **01.01.2022 y.** |
| | **20,4** | **28,3** | **35,8** |

It should be noted that along with the growth in mortgage loans in 2021, as a result of structural changes, the demand for mortgage loans remains high, and this is primarily due to the following factors:

- growth rates of economic indicators (growth in GDP by 7.4%, GDP per capita by 5.3% and investment in fixed assets by 5.2% compared to the same period last year);
- constant population growth (as of January 1, 2022, the population was 35.2 million people, up 102.1 percent compared to the same period last year);
- an increase in the share of economic entities operating in the construction sector in the economic sector as a result of an increase in investment activity in the republic;
- as a result of the introduction of a new procedure, commercial banks are provided with a stable source of resources for providing mortgage loans;
- simplification of mortgage loans provided to individuals-shareholders for the construction of private houses, for the purchase of housing from the secondary mortgage market.

As a result of the above and a number of other factors, from 2018 to 2021, the balance of mortgage loans increased by 2.6 times (22.0 trillion soums), and the number of mortgage agreements increased by almost 1.8 times (121.0 thousand units). (Picture 1).

[1] https://cbu.uz/upload/iblock/e4a/Obzor-ipotechnykh-kreditov_yanvar-2022.pdf




**Picture 1**

From the balance of mortgage loans, as of January 1, 2022, the share of the total balance of outstanding mortgage loans amounted to 11.0% (35.8 trillion soums), an increase of 26.8% (7.5 trillion soums) compared to with the corresponding period last year. (Figure 2).

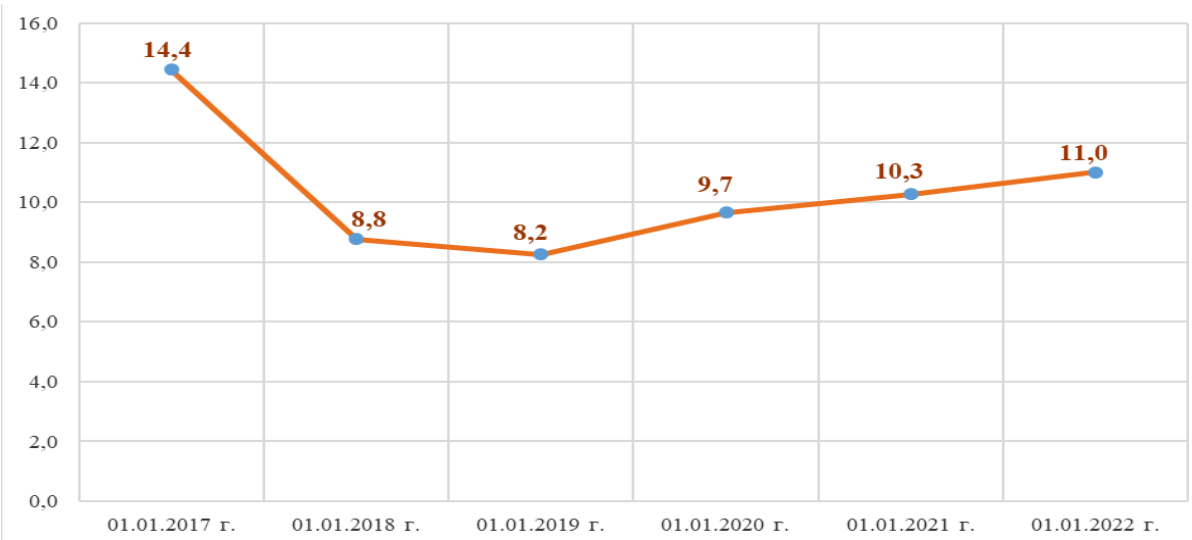



**Figure 2. Share of outstanding mortgage loans in the total loan portfolio, in percent**

In terms of regions, the balance of mortgage loans in the city of Tashkent is 8.3 trillion. soums (5% of the total loan balance), in Samarkand 3.2 trillion. soums (20%), in the Tashkent region 2.7 trillion. sum (14%), in the Fergana region 2.6 trillion. sum (19%), in Kashkadarya region 2.5 trillion. soums (20%). (Fig. 3-4).

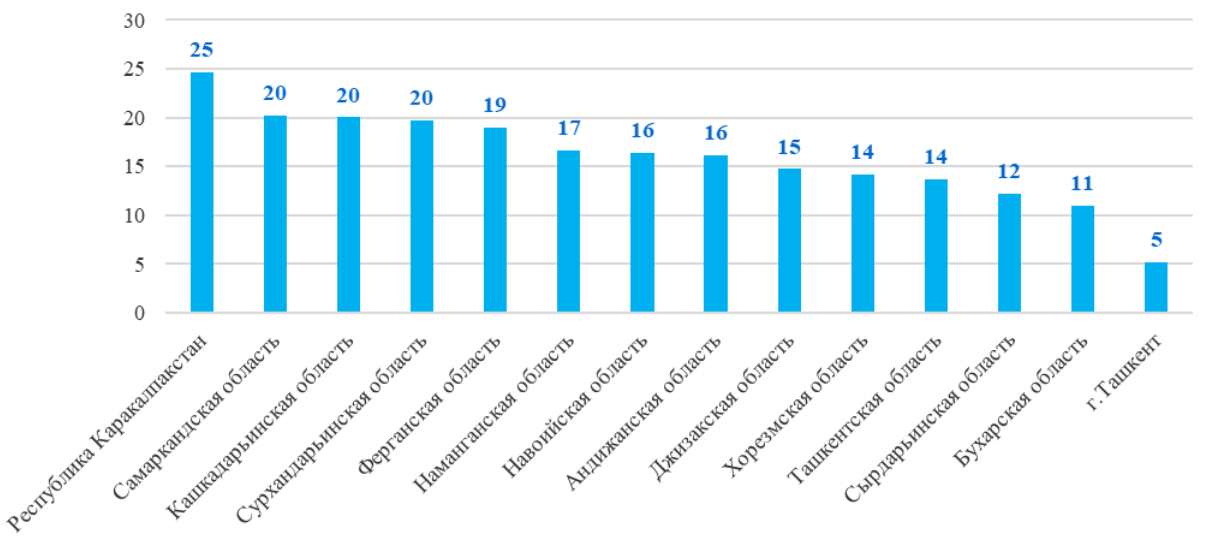



**Figure 3. From the balance of mortgage loans, the share of outstanding mortgage loans in the total loan portfolio by region as of January 1, 2022, in percent**

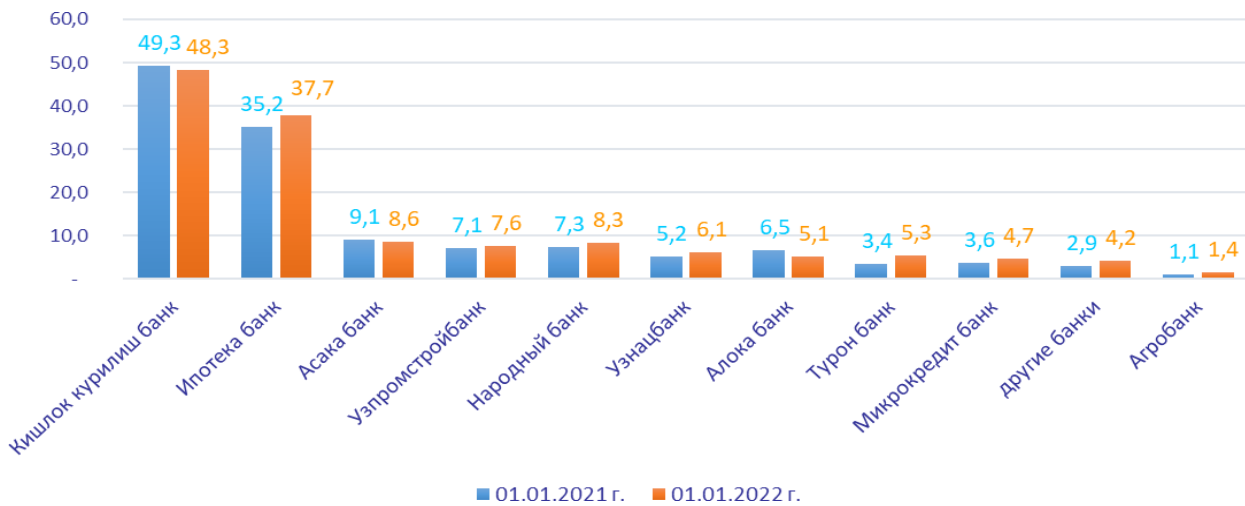



**Figure 4. Share of mortgage loans in the total loan portfolio of commercial banks, in percent**

Of the total balance of allocated mortgage loans, the share of the Mortgage Bank is 30.6% (10.9 trillion soums), Qishloq Qurilish Bank 23.6% (8.4 trillion soums), the National Bank 12.7% (4.5 trillion soums). ), Asakabank 9.1% (3.2 trillion soums), Uzpromstroybank 9.1% (3.2 trillion soums), Xalq Bank 4.6% (1.6 trillion soums) and the share of other commercial banks 10.4 % (3.7 trillion UZS) (Figure 5).

**Figure 5. From the balance of mortgage loans, the share of commercial banks as of January 1, 2022, in percent**

From the balance of mortgage loans (0.6% of the total outstanding mortgage loan balance), the share of loans for up to 7 years is 199.0 billion soums, up to 10 years - 2,037.7 billion soums (5.7%), up to 15 years - 9,136.8 billion soums (25.5%), up to 20 years - 24,452.1 billion soums. (68.3%) (Figure 6).

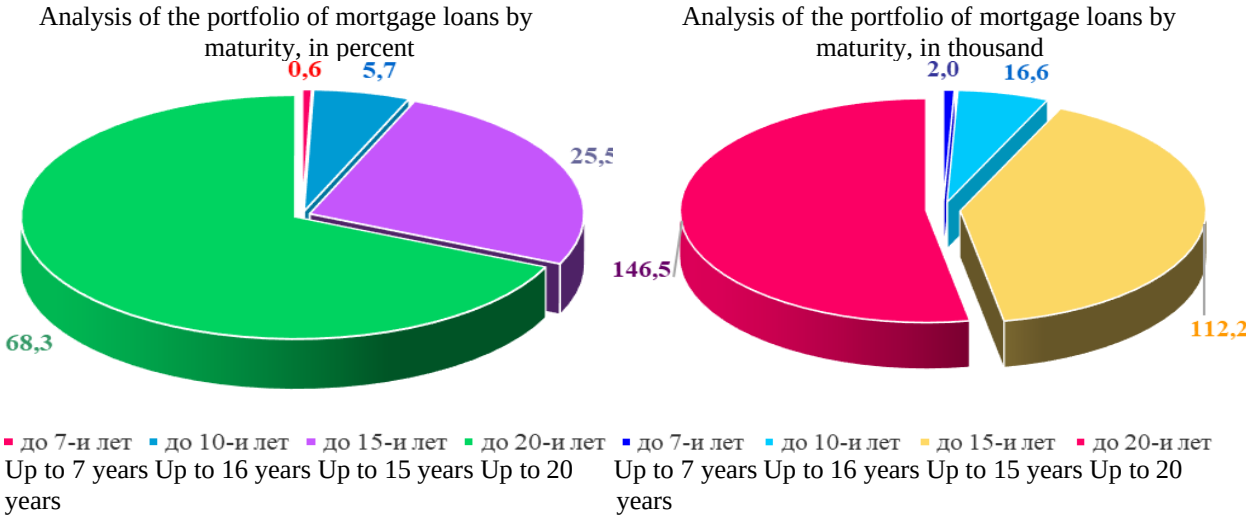



**Figure 6.**

In 2021, the share of mortgage loans in the total amount of loans issued to individuals (69.5 trillion soums) amounted to 51.6% (Figure 7).

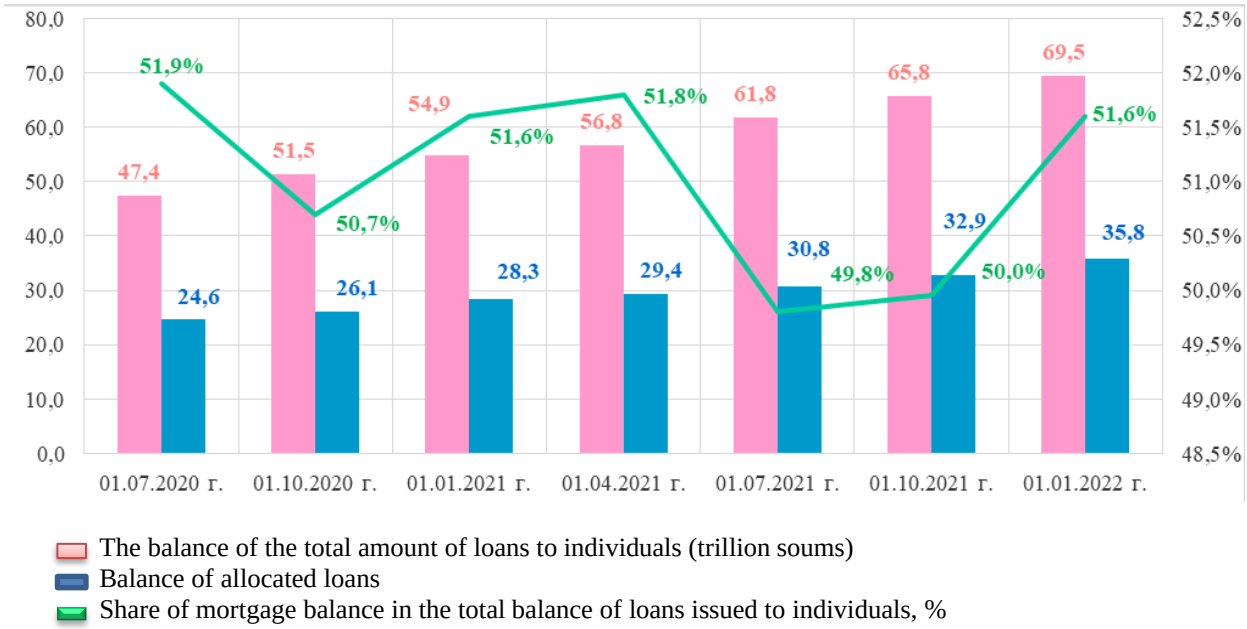



**Figure 7**

The ratio of the balance of mortgage loans to the total balance of loans allocated to individuals. The balance of mortgage loans to individuals increased by 26.6% (14.6 trillion soums) compared to the same period last year, and the balance of mortgage loans increased by 26.5% (7.5 trillion soums).

In addition, the ratio of mortgage loans to GDP in 2021 was relatively high in Tashkent city (2.2%), Surkhandarya region (2.4%), Fergana region (1.9%) and Syrdarya region (1.7%), low rates were recorded in Navoi (0.8%), Tashkent (0.8%) and Kashkadarya (1.0%) areas (Figure 8).

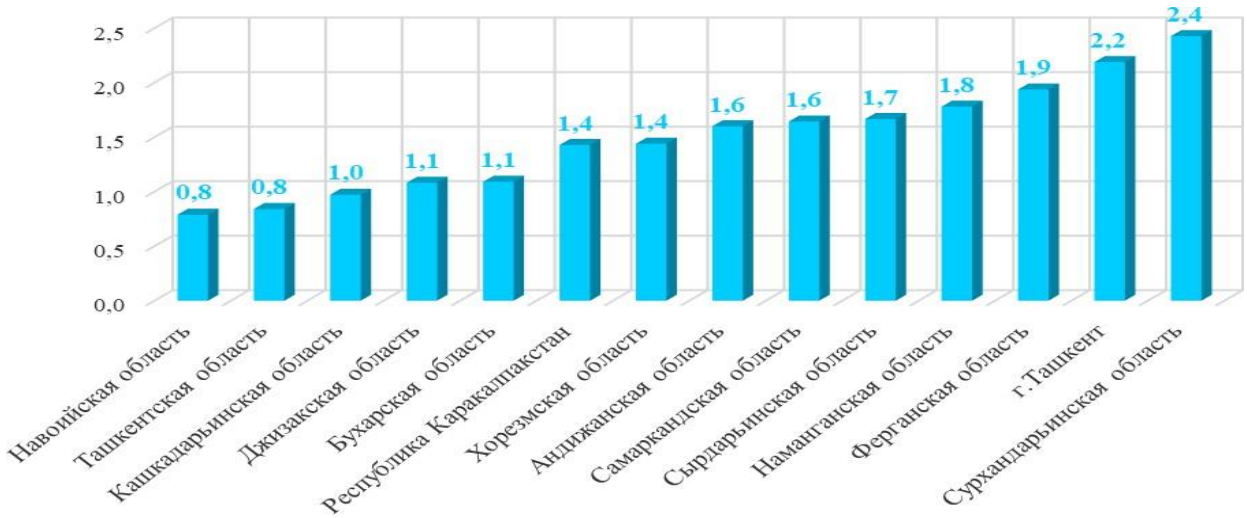



**Figure 8. Share of outstanding mortgage loans and balances in GDP, in percent**

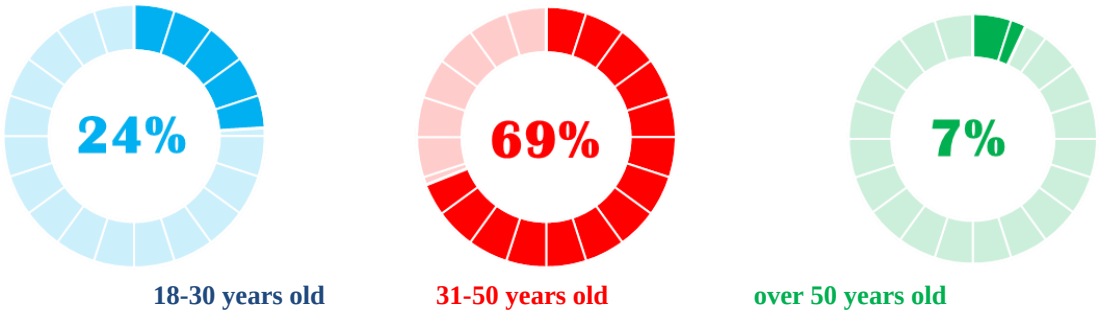



**Figure 9. Classification of Mortgage Loan Clients Disbursed in 2021 by Age, Percentage**

In addition, 46,229 people (78% of the total) received 7,351.5 billion soums for the purchase of housing in the primary market, and 13,341 citizens (22%) received mortgage loans for the purchase of housing in the secondary market.

**Table 2. The amount of monthly payments for the repayment of mortgage loans allocated on the terms effective in 2021**

| № | The value of the loan | Credit term | Annual interest rate on the loan | Payment method | Monthly payment |
|---|---|---|---|---|---|
| 1 | 100 million soums | 20 years | 17 % | Annuity (in equal amounts each month) | 1 466 801 soums |
| 2 | 150 million soums | | | | 2 200 201 soums |
| 3 | 200 million soums | | | | 2 933 601 soums |
| 4 | 250 million soums | | | | 3 667 001 soums |
| 5 | 300 million soums | | | | 4 400 402 soums |
| 6 | 350 million soums | | | | 5 133 802 soums |
| 7 | 400 million soums | | | | 5 867 202 soums |

In terms of regions, the largest share of mortgage loans falls on the city of Tashkent (853.0 billion soums) and Samarkand region (682.3 billion soums), Fergana region (624.4 billion soums) and Andijan region (504.5 billion soums). soums). (Figure 15).

In 2020-2021, according to the "new order", commercial banks provided the population with mortgage loans in the amount of 6,593.2 billion soums. The largest share of issued mortgage loans falls on Ipotekabank (34.3%), Qishloqqurilishbank (24.1%), National Bank (11.6%), Xalq Bank (6.0%), 24% on other commercial banks.

**Table 3. Comparative information on the state of mortgage loans in Uzbekistan and neighboring countries**

| | | Uzbekistan | Russia | Kazakhstan | Kyrgyzstan |
|---|---|---|---|---|---|
| Refinancing rate, % | | 14 | 8,5 | 10,25 | 8 (30.11.2021 y.) |
| Average annual interest rate on a mortgage loan, % | | 17,5 | 7,7 | 8,4 | 12,8 |
| Average mortgage loan term | | 17,1 years | 20,9 years | 9 years | 9,8 years |
| Maximum mortgage loan term | | 20 years | 30 years | 25 years | 25 years |
| Average mortgage loan amount $ | | 18 791 $ | 45 50$ (10/2021y.) | 29 425 $ | * |

| | | | | | |
|---|---|---|---|---|---|
| | 2019y. | 3,8 | 17,5 | 3 | 2,6 |
| Share of mortgage portfolio in GDP, % | 2020y. | 4,9 | 9,4 | 5 | 3,8 |
| | 2021y. | 5,3 | 10.5 (07/2021y.) | 3,8 (08/2021y.) | 2,89 (09/2021y.) |
| Average price of new buildings in the capital (1 sq.m.) | | 811 $ | 3721 $ | 912 $ | 798 $ |
| The average price of houses on the secondary market in the capital (1 sq.m.) | | 740 $ | 3546 $ | 808 $ | 770 $ |

*Source: based on analysis of official websites and economic research centers on macroeconomic analysis; Mortgage refinancing company of Uzbekistan.*

**Conclusion and suggestions**

Taking into account the conditions that have arisen in Uzbekistan, we can make a proposal for the purpose of solving some of the problems that exist in the process of introducing and developing mortgage credit in the country.

They consist of the following:

1. Increasing initiative of universal commercial banks with free funds.

2. in cooperation with the state, to establish an agency that develops and implements the rules on mortgage bonds in connection with the secondary securities market, and creates a comprehensive system of mortgage credit through this agency;

3. using foreign experience, implementing a mortgage model based on the principle of collective credit based on the potential of the People's Bank of the Republic of Uzbekistan;

4. to develop a mechanism to encourage foreign banks to enter the mortgage credit market of our republic;

5. expanding the use of various forms of mortgage loans;

6. The necessity of the laws on "Mortgage", "Mortgage banks" is determined by bringing this process to a legal basis. We believe that the improvement of regulatory and legal documents on mortgages and, in addition, the development of the regulation on mortgage-backed securities is one of the urgent issues.

By observing and studying the dynamics of the social and political reforms carried out by the state and the indicators of their implementation, the following conclusions can be reached:

- all the efforts made to provide the population with housing, like the state's reforms in every field, are aimed at serving human interests;
- all decrees, decisions and regulations adopted in this direction are logically and effectively developed to the extent that the program serves as a legal basis for the work to be carried out strategically;
- if we analyze the dynamics of the indicator of houses built to meet the housing needs of the population, we can see that in the last 4 years, the state has paid a very high level of attention to this area, using timely and effective mechanisms we will witness.

The increase in the volume of mortgage loans directly depends on the adequacy of the long-term resource base of banks. Because mortgage loans belong to the category of medium and long-term loans. In order to strengthen the resource provision of mortgage loans of the commercial banks of the Republic of Uzbekistan, firstly, by reducing the base rate of the Central Bank's mandatory reserve requirements and leaving the amount of the reserve requirement in the "Nostro" representative accounts of commercial banks, the ability of banks to pay interest on term deposits and liquidity should be increased; - In order to further improve the practice of mortgage lending by banks, first of all, it is necessary to put into circulation mortgage bonds whose payment is guaranteed by the government.

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Issue Article

**Konstantin Ivanovich Kurpayanidi**
Fergana polytechnic institute
Ph D in economics,
Corresponding member of the International Academy of Theoretical & Applied Sciences (USA),
Professor of the Russian academy of natural sciences,
Fergana, Republic of Uzbekistan
*ORCID: 0000-0001-8354-1512*
konstantin@ferpi.uz

# TRENDS IN THE DEVELOPMENT OF SMALL AND MEDIUM-SIZED BUSINESSES IN THE REGION: FOREIGN EXPERIENCE (BASED ON THE MATERIALS OF THE RUSSIAN FEDERATION)

***Abstract**: The purpose of this study is to develop measures to improve the system of state support for small and medium-sized businesses on the example of one of the regions of the Russian Federation.*

*Research objectives: 1) to reveal the structural and functional characteristics of the entrepreneurship system;*

*2) to determine the economic aspects of the formation of state support for small and medium-sized businesses;*

*3) to analyze the level of development of the sector of small and medium-sized enterprises of the Belgorod region of the Russian Federation;*

*4) to develop proposals for improving the system of state support for entrepreneurship in the region.*

*The object of the study is the business support system of the Belgorod region of the Russian Federation.*

*The subject of the study was the relationship between business entities and authorities in the system of state support of the region.*

*The theoretical and methodological basis of the research is a systematic approach to the study of socio-economic phenomena and processes, the key provisions of the works of domestic and foreign scientists in the field of entrepreneurship, economic regulation, entrepreneurship support.*

*Results: the problem of improving the system of business support is considered in the work from the positions of both normative and positive approaches to the analysis of economic relations, which allows you to most deeply understand the essence of the institute of entrepreneurship.*

***Key words**:* business, small business, medium business, state support, region, regional economy.

***Language**: Russian*

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## ТЕНДЕНЦИИ РАЗВИТИЯ МАЛОГО И СРЕДНЕГО ПРЕДПРИНИМАТЕЛЬСТВА В РЕГИОНЕ: ИНОСТРАННЫЙ ОПЫТ (НА МАТЕРИАЛАХ РОССИЙСКОЙ ФЕДЕРАЦИИ)

***Аннотация**: Цель настоящего исследования заключается в разработке мероприятий по совершенствованию системы государственной поддержки малого и среднего предпринимательства на примере одного из региона Российской Федерации.*

*Задачи исследования: 1) раскрыть структурно-функциональную характеристику системы предпринимательства;*

*2) определить экономические аспекты формирования государственной поддержки малого и среднего предпринимательства;*

*3) проанализировать уровень развития сектора малого и среднего предпринимательства Белгородской области Российской Федерации;*

*4) разработать предложения по совершенствованию системы государственной поддержки предпринимательской деятельности региона.*

*Объектом исследования выступает система поддержки предпринимательской деятельности Белгородской области Российской Федерации.*

*Предметом исследования стали взаимоотношения субъектов предпринимательства и органов власти в системе государственной поддержки региона.*

*Теоретико-методологическую база исследования составляет системный подход к исследованию социально-экономических явлений и процессов, ключевые положения трудов отечественных и зарубежных ученых в области предпринимательской деятельности, регулирования экономики, поддержки предпринимательства.*

*Результаты: проблема совершенствования системы поддержки предпринимательской деятельности рассматривается в работе с позиций как нормативного, так и позитивного подходов к анализу экономических отношений, что позволяет наиболее глубоко познать сущность института предпринимательства.*

***Ключевые слова:*** *бизнес, малое предпринимательство, средний бизнес, государственная поддержка, регион, экономика региона.*

**Введение**

**УДК 334.021**
**JEL коды: M13; M20.**

***Статья подготовлена в соответствии с программой повышения квалификации на базе Федерального государственного бюджетного образовательного учреждения высшего образования «Белгородский государственный технологический университет имени В.Г. Шухова» (Договор от 20 сентября 2018 года за № 060-PD-18-UzBelg).***

***The article was prepared in accordance with the advanced training program on the basis of the Federal State Budgetary Educational Institution of Higher Education "Belgorod State Technological University named after V.G. Shukhov" (Contract dated September 20, 2018 for No. 060-PD-18-UzBelg).***

Актуальность темы исследования обусловлена тем, что в современных условиях санкционной политики западных стран, повышается роль малого и среднего предпринимательства в России, которое представляет собой основной стратегический ресурс, способный обеспечить экономический рост. И для его развития необходима эффективная поддержка малого и среднего бизнеса на уровне государства [1,4,5]. Развитие государственной поддержки малого и среднего предпринимательства обеспечивает демонополизацию экономики, появление дополнительных рабочих мест, формирование рынков в регионах, развитие инновационной деятельности [7,12]. В настоящее время изменяются организационные формы взаимодействия органов государства с субъектами частного предпринимательства, происходит передача регулирующих функций от государства в руки самих предпринимателей, меняется система регулирования и содействия развитию малого и среднего бизнеса, наблюдаются существенные сдвиги в механизме, целях, аппарате управления, расширение методов поддержки предпринимательской деятельности [2,15,17,18].

Необходимость динамичного развития малого предпринимательства, в условиях экономической изоляции России, по нашему мнению, обусловлена содержанием нового этапа экономической неопределённости развития страны, характеризующегося экономическим кризисом и международными санкциями. Это ставит перед государством следующие задачи [6,16,22,24]: достижение устойчивого экономического роста, обеспечение высокого уровня инвестиций в реальный сектор экономики, осуществление необходимых для эффективного функционирования рыночной экономики институциональных преобразований, стимулирование прогрессивных структурных сдвигов в экономике, рост реальных доходов и потребления населения, решение которых напрямую связано с уровнем развития сектора

малого и среднего предпринимательства в Российской Федерации.

Главной стратегической задачей развития малого и среднего предпринимательства является организация конкурентоспособных малых и средних предприятий в производственном секторе и инновационной сфере, развитие предпринимательства в сельской местности, создание новых рабочих мест и повышение занятости населения.

**Степень научной разработанности темы исследования.**

Теоретические и практические аспекты развития малого и среднего предпринимательства рассматривались в трудах: О. Акимова, С.Аникеева, Ф.Бинштока, Л.Бляхмана, А.Бусыгина, А. Виленского, М. Лапусты, А. Муравьева, О. Плотниковой, Ю. Симионова, В. Чапека, О. Шестоперова и др. Проблемы государственного регулирования и поддержки предпринимательской деятельности нашли отражение в работах российских и зарубежных ученых: Бабайцевой И.К., Галкиной Л.Н., Гибина Е.П., Прудникова В.М., Шаститко А.Е., Г.Б. Поляк, В.Я. Горфинкель, Н.М. Коршунов, и другими. В их работах достаточно глубоко проанализированы особенности развития малого предпринимательства в России, также особое внимание уделено достижениям и недостаткам системы государственной поддержки предпринимательства.

Однако многие вопросы, связанные с темой исследования, решение которых имеет важное научное и практическое значение, в методическом плане проработаны недостаточно. Особенности процесса построения региональной системы государственной поддержки малого и среднего предпринимательства изложены в трудах: А.Алабина, В.Афанасьева, Л. Абалкина, С. Бадмаева, В. Басаревой, Е. Брагиной, И. Буздалова, Н. Голубецкой, А. Давыдова, Б. Злобиной, Е. Карлиной, Л. Колесниковой, В. Онучак, А.Орлова, Н.Петракова, И.Рисина, Ю.Ровенского, В. Савченко, А.Чепуренко, Л. Чередановой, И.Шевченко, А.Шулуса, Е.Ясина и др. Среди зарубежных авторов, исследовавших значение предпринимательства для экономического прогресса и развития экономики рыночного типа, отмечаются Брю С.Л., Веблен Т., Гобсон Д., Зомбарт В., Котлер Ф., Макконелл К.Р., Маршалл А., Шумпетер Й., Фредерик Е. и др.

Несмотря на большое количество работ, посвященных проблемам государственного управления и развития предпринимательства, ощущается потребность более глубокого исследования системы государственной поддержки малого и среднего предпринимательства.

**Теоретико-методологическая база исследования** представляет собой системный подход к исследованию социально-экономических явлений и процессов, ключевые положения трудов отечественных и зарубежных ученых в области предпринимательской деятельности, регулирования экономики, поддержки предпринимательства.

**Анализ и результаты.**

Стратегическим направлением развития Белгородской области Российской Федерации является развитие малого и среднего предпринимательства. Режим наибольшего благоприятствования для бизнеса обеспечивают механизмы организационной, финансово-кредитной и имущественной поддержки субъектов малого и среднего бизнеса в рамках подпрограммы развития этого сектора, предусмотренной действующей государственной программой «О мерах государственной поддержки малого и среднего предпринимательства Белгородской области», утвержденной постановлением правительства Белгородской области от 15 мая 2017 года №162-пп.

Белгородская область, образованная в 1954 году - одна из самых молодых в России. Она расположена на юго-западе Российской Федерации, входит в состав Центрального федерального округа (ЦФО) Российской Федерации. Площадь области - 27 тысяч квадратных километров (0,2% от территории России). На юге и западе она граничит с Луганской, Харьковской и Сумской областями Украины, на севере и северо-западе - с Курской, на востоке - с Воронежской областями. Общая протяженность границ - около 1150 км, в том числе с Украиной - 540 км. В состав области входит 212 муниципальных образований, 9 городских округов, 13 муниципальных районов, 16 городских и 174 сельских поселений. Численность населения на 1 января 2021 года составила 1531,9 тыс. человек[1].

В Белгородской области оказывается приоритетное внимание развитию и государственной поддержке малого и среднего предпринимательства, созданию благоприятного предпринимательского климата в данной сфере. Поддержка малого и среднего бизнеса осуществляется на основе проектного и программно-целевого методов.

Распоряжением Правительства Белгородской области от 6 сентября 2016 г. № 431-РП «О

[1] http://orv.gov.ru/Regions/Details/15

реализации стратегии развития малого и среднего предпринимательства в Российской Федерации на период до 2030 г. на территории Белгородской области» утверждены План мероприятий на 2016–2018 гг. по реализации Стратегии развития малого и среднего предпринимательства в Российской Федерации на период до 2030 г. на территории Белгородской области и Целевые индикаторы развития малого и средне- го предпринимательства на территории области на период до 2030 г. Постановлением Правительства области от 16 декабря 2013 года № 522-ПП принята государственная программа Белгородской области «Развитие экономического потенциала и формирование благоприятного предпринимательского климата в Белгородской области на 2014–2020 годы», содержащая подпрограмму «Развитие и государственная поддержка малого и среднего предпринимательства». Подпрограмма предусматривает комплекс мер по государственной поддержке малого и среднего предпринимательства и устранению избыточного административного влияния на бизнес.

В 2021 году объем инвестиций в основной капитал составил свыше 165,0 млрд рублей, создано более 10,0 тыс. рабочих мест. Белгородская область признается регионом с минимальными инвестиционными рисками и по итогам XXV рейтинга агентства «Эксперт РА» занимает 4 место в Российской Федерации. На протяжении 20 лет Белгородская область входит в число первых десяти регионов страны с наименьшими интегральными инвестиционными рисками. По результатам Национального рейтинга состояния инвестиционного климата в субъектах Российской Федерации АНО «Агентство стратегических инициатив по продвижению новых проектов» Белгородская область входит в топ-10 регионов лидеров.

Значимые доли экономики формируют отрасли обрабатывающей промышленности, сельского хозяйства и торговли.

В 2021 году валовой региональный продукт в Белгородской области вырос с 999,1 млрд до 1,27 трлн рублей, что является показателем в Центральной России после Москвы и Подмосковья и одиннадцатым среди всех регионов страны[2].

По объёму ВРП на душу населения за указанный период – это 827 тыс. рублей – наш субъект занимает третье место в Центральном федеральном округе и 19 место в Российской Федерации. Структуру ВРП на 36,9% составляет промышленность, на 16,9% – сельское хозяйство, на 12,6% – торговля[3].

По прогнозам регионального Минэкономразвития, в 2022 году ВРП вырастет до 1 трлн 328,6 млрд рублей, что говорит о примерном росте на 4,6 %. В региональном правительстве не отказываются от задачи удвоения ВРП к 2030 году, а также от прогнозов роста экономики даже на фоне санкционного давления[4].

Первоочередной задачей для повышения экономического роста является улучшение делового климата и привлечение инвестиций. Ежегодный объём инвестиций в последние три года стабильно превышает 160 млрд рублей (167, 169 и 165 млрд соответственно). В 2022 году прогнозируется, что он будет ещё выше – 192,3 млрд.

Отметим, объём поддержки малого и среднего бизнеса в регионе вырос почти в 5 раз: с 222 млн рублей в 2021 году до 1,125 млрд рублей в 2022 году[5].

Как показывает проведенный анализ, положительные результаты социально-экономического развития Белгородской области признаны в рамках, проводимых различными структурами рейтингов. Так, благодаря эффективной и системной работе Правительства региона с бизнес-сообществом Белгородская область входит в:

— топ 3 региона (2-е место) с минимальными рисками инвестирования по итогам XXIII рейтинга инвестиционной привлекательности регионов (Эксперт РА), в 2018 году — 5-е место;

— топ 10 лидеров инвестиционно привлекательных субъектов по результатам VII ежегодного рейтинга инвестиционной привлекательности регионов России (Национальное рейтинговое агентство);

— топ 10 (7-е место) в Национальном рейтинге состояния инвестиционного климата в субъектах Российской Федерации (АНО «Агентство стратегических инициатив по продвижению новых проектов»), в 2018 году — 8-е место.

— 22-е место в рейтинге уровня развития государственно-частного партнёрства в субъектах РФ (Министерство экономического развития РФ), в 2018 году — 35-е место.

— группа «высший уровень» в рейтинге качества осуществления оценки регулирующего воздействия в субъектах РФ (Министерство экономического развития РФ). В группу «высший уровень» регион входит с 2015 года.

[2] https://regnum.ru/news/economy/3615170.html
[3] https://vremya31.ru/news/ekonomika/2022-04-25/minekonomrazvitiya-belgorodskoy-oblasti-predstavilo-itogi-raboty-za-2021-god-272896
[4] https://www.belpressa.ru/ekonomics/finansy/43103.html
[5] https://plamya31.ru/news/ekonomika/2022-04-25/valovoy-regionalnyy-produkt-belgorodskoy-oblasti-v-2021-godu-sostavil-1-270-trln-rubley-272880

В регионе реализуется Инвестиционная стратегия «Инвестиции в будущее», являющаяся составной частью Стратегии социально-экономического развития области на период до 2025 г. Действуют закон Белгородской области от 01 июля 2014 г. № 284 «Об инвестиционной деятельности в Белгородской области» и Инвестиционная декларация Белгородской области (распоряжение Губернатора области от 20 сентября 2012 г. № 650-Р), в которых закреплены нормы о не ухудшении положения инвестора в период реализации инвестиционного проекта.

Меры поддержки бизнеса, которые запланировали в 2022 - 2023 годах[6].

Целесообразно отметить, что в текущем году на поддержку МСП направили 1 млрд 711 млн рублей. Средства предоставляются в виде субсидий на:

- закупку оборудования;
- продвижение товаров (работ, услуг) через торговые Интернет-площадки;
- транспортировку продукции для организации экспортных поставок;
- возмещение затрат, связанных с уплатой процентов по кредитам;
- возмещение затрат по банковской гарантии на обеспечение госконтрактов;
- гранты Регионального фонда развития промышленности.

Пакет мер поддержки бизнеса разработан, с учетом пожеланий бизнес-сообщества и включает различные направления, начиная от микрофинансирования и заканчивая поддержкой экспортоориентированной продукции.

Для популяризации предпринимательской деятельности и поддержки новых бизнес-идей в Белгородской области в 2022 году проведен конкурс «Новые возможности», благодаря которому зарегистрированы 400 новых предприятий. Планируется, что до конца года будет проведен еще один этап конкурса.

В 2021 объем федеральных и региональных средств на поддержку предпринимательства составил 222 млн рублей[7].

Ключевыми программами финансовой поддержки МСП являются Программа стимулирования кредитования субъектов МСП, Гарантийная поддержка субъектов МСП (НГС), Программа «Инвестиционный лифт» и Лизинговая поддержка. Программа стимулирования кредитования субъектов МСП, разработанная Корпорацией совместно с Минэкономразвития России и Банком России, нацелена на развитие субъектов МСП, работающих в приоритетных отраслях экономики. Эта программа предусматривает установление размера максимальных процентных ставок по кредитам от 3 млн рублей до 1 млрд рублей для малых предприятий на уровне10,6% годовых, для средних предприятий – до 9,6% годовых. В программе принимают участие 47 (2017 г.) уполномоченных банков-партнеров Корпорации МСП. Приоритетными отраслями являются:

- сельское хозяйство;
- обрабатывающее производство;
- строительство;
- транспорт и связь;
- туристская деятельность;
- здравоохранение;
- сбор, обработка и утилизация отходов и некоторые другие.

7 июля 2017 года лимит Программы стимулирования кредитования был увеличен со 125 до175 миллиардов рублей. Национальная гарантийная система (НГС) нацелена на увеличение объемов гарантийной поддержки МСП и повышение эффективности использования гарантийного капитала. НГС функционирует на основе трехуровневой целевой модели оказания гарантийной поддержки субъектам МСП, что включает: АО «Корпорация «МСП»; АО «МСП Банк»; региональные гарантийные организации (РГО).

83 существующих РГО предоставляют поручительства в рамках «поточных» технологий на сумму до 25млн рублей. МСП Банк предоставляет гарантии в рамках «поточных» технологий на сумму от 25 до 100 млн. рублей, а Корпорация МСП предоставляет гарантии и поручительства для средних и крупных проектов в рамках Программы стимулирования кредитования субъектов МСП на сумму от 100 млн рублей[8].

В рамках государственной программы Белгородской области «Развитие экономического потенциала и формирование благоприятного предпринимательского климата в Белгородской области» на создание объектов инфраструктуры промышленных парков только в 2018 году направлено более 150 млн рублей средств областного и федерального бюджетов.

В целях развития предпринимательства на селе реализуется приоритетная новаторская «Программа 500/10 000». В настоящее время портфель бизнес-проектов сельских территорий включает 476 проектов с созданием 3,3 тыс.

[6] http://belgorod-news.net/society/2022/08/12/90248.html

[7] https://www.interfax-russia.ru/center/news/belgorodskaya-oblast-v-2022g-napravit-na-razvitie-malogo-i-srednego-biznesa-1-7-mlrd-rub

[8] О совершенствовании механизмов поддержки субъектов малого и среднего предпринимательства. Available from: https://www.researchgate.net/publication/332348154_O_soversenstvovanii_mehanizmov_podderzki_subektov_malogo_i_srednego_predprinimatelstva [accessed Aug 18 2022].

рабочих мест и объемом инвестиций 9,2 млрд рублей. Только за период реализации Программы (2017–2018 гг.) завершено 96 проектов и создано 424 рабочих места. В стадии реализации находятся 238 проектов с планируемым объемом инвестиций 5,2 млрд рублей и созданием 2,8 тыс. рабочих мест.

С целью активного вовлечения бизнес-пространства Белгородской области в национальную технологическую инициативу реализуется проект «Точка кипения Белгород» на основе франшизы АНО «Агентство стратегических инициатив по продвижению новых проектов». Данный проект является уникальным инструментом поиска и развития лидеров, создания, обсуждения и продвижения команд, проектов и инициатив, способных оказать значимое влияние на развитие предпринимательской деятельности и социально-экономическое развитие региона.

В области постоянно совершенствуется инфраструктура поддержки малого и среднего предпринимательства, развиваются новые формы поддержки бизнеса.

На территории Бизнес-пространства «Контакт» проведено в отчетном году более 180 мероприятий, направленных на развитие и поддержку талантливой молодежи и молодежных проектов в различных сферах, в том числе в сфере IT-технологий, в которых приняли участие более 9,3 тыс. человек.

Систематизируя государственную поддержку МСП в Белгородской области, можно представить его механизм в следующей схеме, рис.1.

**Рис.1. Механизм государственной поддержки МСП в Белгородской области**

В целом, учитывая комплекс проведенных в регионе мероприятий по поддержке малого и среднего предпринимательства, можно сделать вывод, что в Белгородской области созданы достаточно благоприятные условия для ведения предпринимательской и инвестиционной деятельности. Вместе с тем, механизмы регламентации государственного контроля и надзора требуют своего совершенствования в целях ослабления давления на бизнес [8,19].

По состоянию на 1 августа 2022 г. в Едином реестре субъектов малого и среднего предпринимательства, сформированном Федеральной налоговой службой Российской Федерации, состояло 5 748 713 ед. субъектов малого и среднего предпринимательства, из них 5 516 984 ед. микрофирм, 213 833 ед. малых и 17 896 ед. средних предприятий-юридических лиц. В этом секторе занято 15 234 611 человек.

По Белгородской области эти показатели представлены в таблице 1.

**Таблица 1. Количество юридических лиц и индивидуальных предпринимателей, сведения о которых содержатся в Едином реестре субъектов малого и среднего предпринимательства Белгородская область (по состоянию на 10.08.2022 г.)**

| | **Всего** | Из них | |
|---|---|---|---|
| | | **Юридических лиц** | **Индивидуальных предпринимателей** |
| **Всего** | **57 168** | **17 689** | **39 479** |
| Сумма среднесписочной численности работников | 148 823 | 118 296 | 30 527 |
| **Микропредприятия** | **55 047** | **15 837** | **39 210** |
| Сумма среднесписочной численности работников | 66 553 | 44 610 | 21 943 |
| **Малые предприятия** | **1 931** | **1 666** | **265** |
| Сумма среднесписочной численности работников | 22 781 | 22 346 | 435 |

Из приведенной таблицы видно, что количество субъектов малого предпринимательства в Белгородской области составляет около 1 процента от общей численности таких предприятий по стране. Сравнительные показатели таблицы 1 говорят о имеющемся потенциале увеличения доли сектора малой экономики в ВРП Белгородской области. В связи с этим нарастает потребность в государственных программах и мерах по активизации малого предпринимательства в области (рис.2).

**Рис.2. Региональные программы поддержки МСП в Белгородской области.**

Система государственной поддержки как федерального, так и регионального уровня охватывает все категории субъектов предпринимательства и действует через организации инфраструктуры поддержки. На федеральном уровне меры государственной поддержки реализуются в рамках совместных мероприятий с Минэкономразвития России, АО «Корпорации «МСП», ФГАУ «Российский фонд технологического развития», АО «Российский экспортный центр».

По нашему мнению, для достижения поставленных задач, необходимо реализовать ***мероприятия,*** представленные ниже [3,8,9,10,13,14,19,20,21,23].

**Повысить конкурентоспособность субъектов малого и среднего предпринимательства через:**

- развития инновационной инфраструктуры;
- создания и развития сети объектов инфраструктуры поддержки МСП;
- совершенствования финансово кредитных и организационных механизмов;
- развития экспортного потенциала МСП;
- развития производственной, инновационной, природоохранной деятельности, а также деятельности в сфере строительства, сельского хозяйства;
- реализации Программы «500/10000» по созданию в сельских территориях области малых промышленных предприятий и предприятий в сфере оказания услуг;
- реализации проектов по созданию частных промышленных парков;
- стимулирования и поддержки деловой интеграции малых предприятий со средними и крупными предприятиями, в том числе путем развития системы субконтрактации;
- развития кадрового потенциала путем организации информационно образовательных программ;
- упрощения доступа к льготному финансированию путем развития механизма гарантийной поддержки бизнеса и снижения кредитных рисков;
- повышения уровня информированности субъектов МСП с использованием информационного продукта «Бизнес навигатор МСП».

**Сократить административные ограничения при осуществлении предпринимательской деятельности посредством:**

- сокращения количества контрольных и надзорных мероприятий;
- облегчения доступа субъектов малого предпринимательства к объектам инженерной инфраструктуры;
- совершенствования системы закупок, осуществляемых крупнейшими заказчиками у субъектов малого и среднего предпринимательства;
- упрощения налоговой отчетности для предпринимателей, применяющих контрольно-кассовую технику.

**Обеспечить развитие социального партнерства субъектов малого и среднего предпринимательства и органов власти всех уровней через:**

- создания при Правительстве области и органах местного самоуправления муниципальных районов и городских округов координационных органов по защите прав и законных интересов субъектов малого и среднего предпринимательства;
- формирования условий для повышения общественного статуса предпринимателей, деловой активности населения в муниципальных образованиях, имеющих наиболее низкий уровень развития малого бизнеса;
- развития практики обмена передовым опытом поддержки малого и среднего предпринимательства с другими регионами и зарубежными странами;
- совершенствования методического обеспечения, анализа и прогнозирования состояния малого и среднего предпринимательства области.

В результате реализации указанных мероприятий, направленных на стимулирование развития малого и среднего предпринимательства в Белгородской области, к 2025 г. можно достичь следующих качественных и количественных результатов (индикаторов) развития.

**Заключение.**

Для совершенствования системы государственной поддержки малого и среднего предпринимательства Белгородской области предлагается в дальнейшем создать обособленную государственную программу именно по поддержке малого и среднего предпринимательства. При разработке долгосрочной программы развития малого и среднего предпринимательства требуется утверждать этапы реализации программы по несколько лет. Также необходимо формулировать каждую задачу, раскрывающую цель подпрограммы, с сопоставимыми оценочными показателями. Необходимо закрепить целевые индикаторы по каждому этапу, а также в течение этапа по каждому году. Программа поддержки малого предпринимательства должна создаваться как модель процесса скоординированных

действий, обеспечивающей переход от существующей системы малого и среднего предпринимательства в регионе с ее результатами, структурой, потенциалом и имеющимися условиями к желаемой. Оценку результативности и эффективности реализации программы государственной поддержки малого и среднего предпринимательства на региональном уровне нами предлагается проводить по следующим направлениям: оценка качества программы, оценка реализации программы государственной поддержки института малого предпринимательства по мероприятиям, оценка реализации программы в целом по конечным индикаторам, которая позволит оценить уровень качества создания программы и достижения ее результатов, эффективность расходования бюджетных средств, а также будет учитывать социальную эффективность.

Таким образом, становится особенно актуальным создание на основе программных мероприятий условий, обеспечивающих устойчивый рост количества субъектов малого предпринимательства Белгородской области Российской Федерации.

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**Issue** **Article**

**Arslan Geldimyradovich Geldimyradov**
Yagshigeldi Kakaev International University of Oil and Gas
Doctor of Technical Sciences, Associate Professor
Ashgabat, Turkmenistan

# DEVELOPMENT OF GAS CONDENSATE FIELDS BY THE METHOD OF DUAL COMPLETION

***Abstract**: The article analyzes in detail the issues of operation of gas wells, analyzes the existing systems of dual completion (hereinafter referred to as DC) for gas wells.*

*The positive effect of the use of DC technology is expressed in the reduction of capital investments for the construction of wells for each of the operational facilities, in the reduction of operating costs and the term of development of a multi-layer field, in the increase in hydrocarbon production and the term of final oil recovery with cost-effective operation of wells.*

*A feasibility study of three development options for a reasonable choice and recommendations for approval was carried out. The volume and technological factors affecting the level and dynamics of economic indicators are: the volume of production drilling, the number of wells put into operation from drilling, the volume of oil, gas and condensate production, the fund of producing wells.*

*The calculation of economic indicators was carried out in accordance with the projected levels and dynamics of technological indicators according to options using economic standards set depending on changes in technological factors.*

*The use of the latest technologies helps to increase the production potential both by extracting hard-to-reach oil from long-exploited fields, and by putting into development previously inaccessible deep-lying oil horizons. Currently, the oil industry of Turkmenistan is facing the issue of involvement in the active development of hard-to-recover oil reserves, the bulk of which is located in low-permeability reservoirs. The importance of solving this problem is determined by the depletion of reserves in long-exploited areas with a sharp decrease in well productivity*

*The technology with multi-packer-sectional layouts makes it possible to refine the basic highly watered, depleted oil formations with good profitability until the planned oil recovery is achieved, together with the connection of new anhydrous oil fields to dual completion under certain conditions. At the same time, through one well elevator, due to regulation by downhole shut-off valves simultaneously-separately or alternately (periodically), selection and injection into several oil formations is carried out, as well as constant accounting and monitoring of fluid production and injection of the working agent is carried out.*

***Key words**: field, flow rate, jamming, concentric suspension, packer, operational column, depression, dual completion.*

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## Introduction

The Korpedje field is a multi-layer one, where gas condensate and oil and gas condensate fields occur at different depths and are characterized by different parameters.

An alternative to field development by drilling wells for each of the numerous fields is a method of development based on the DC of formations by one well drilled to the lower reservoir, which gives a significant economic effect from reducing the cost of drilling a large number of wells [1, 2].

**The aim and objectives of the study.**

In this regard, various schemes of DC are presented and analyzed in relation to optimal well designs used in drilling practice at the Korpedje field in accordance with the actual geological and technical conditions.

**Materials and methods.**

The development of proposals for the choice of DC technology and a rational set of equipment is consistent with the general requirements for this method of operation of multilayer fields.

In accordance with the general requirements, technical and technological solutions for DC should provide:

- obtaining optimal flow rates for each of the exploited formations (in accordance with the development project);
- the possibility of operational regulation of the total flow rate of the well with a rational ratio of the flow rates of individual formations;
- conducting research work to determine the characteristics of each of the layers;
- effective implementation of operations for the development and silencing of formations and wells as a whole;
- the possibility of effective repair work;
- the presence of elements in the complex of equipment that ensure the prevention of open gushing of the well;
- the possibility of carrying out chemical effects both on the fluid flow in the tubing and on the exploited formations (inhibitors of hydrate formation, etc.).

The technical and technological solutions adopted may vary significantly for specific different conditions of gas condensate fields [3, 4].

At the same time, the fulfillment of all of the above requirements with maximum completeness may not be possible in some specific conditions. The factors of well depth and casing diameter are particularly significant. The large depth of wells (as in the case of the Korpedje field) and the small diameter of the production columns significantly limit the possibilities of using downhole equipment that structurally meets all the requirements for the DC of gas reservoirs.

The task of analyzing existing equipment complexes for DC was to determine the real option for the development of the Korpedje gas condensate field using the method of DC of two layers with one well.

Well complexes of equipment, including equipment of foreign companies, were analyzed in comparison with data on the design of gas wells of the Korpedje field.

The main indicators of the technological characteristics of the equipment complexes are:

- operating pressure;
- maximum gas extraction;
- nominal diameter of lifting pipes;
- minimum diameter of the through hole;
- diameter of passage of replaceable throttle nozzles;
- nominal diameter of the production column (suitable for this complex);
- outer diameter of the packer;
- maximum depth of the packer descent;
- working environment;
- maximum temperature of the working environment;
- dimensions and weight of the packer (without lifting pipes).

Complexes were analyzed:

- Installation of the FCI (fountain concentric instalation) FCI with a concentric suspension of pumping and compressor pipes for DC extraction of gas from two reservoirs by the fountain method.
- Installations of PGI and IG types with parallel suspension of pumping and compressor pipes for dual completion gas production.
- A complex of the KSG type for the operation of a single packed gas reservoir with downhole flow control.

From the consideration of the above materials, it follows that the FCI, IPG and IG complexes cannot be used in the presented modifications for the equipment of gas wells of the Korpedje field, since they require a larger diameter of the production column (146-168mm) and are designed for significantly lower operating pressure [5, 6, 7].

Similar equipment complexes with parallel tubing suspension and with concentric tubing suspension of foreign companies available for our consideration of modifications are designed for lower operating pressure and cannot be directly applied to the wells of the Korpedje field.

A detailed examination of the complex of equipment of the KSG type leads to the conclusion that it can be used at the Korpedje field when some changes are made to the overall layout of the elements, which is permissible, since each of the elements of the complex (above the packer) performs its functions independently of the other nodes.

Our proposal is based on the fact that in a simplified version of the DC (KSG complex could perform all its regulatory functions for the extraction of gas from the reservoir located in the sub-packer zone with the regulation of its flow rate using a "deep" throttle. At the same time, it is possible to introduce products of the upper layer into the tubing column above the packer (with the appropriate design of the input node). At the same time, the tubing column must be equipped with one circulation valve in the upper formation zone (for simultaneous development and silencing of both layers), and the separate gas extraction from two layers carried out as a result of such an arrangement can be controlled by the

discharge by changing the pressure in the tubing in the upper formation connection zone.

The informativeness of the research work can be brought to an acceptable level when calculating the pressure in the annular space at the level of the upper perforation zone of the production column (i.e., at the level of the upper layer) by a known annular pressure.

With a known cross-sectional area of the throttle holes (nozzles) at the upper horizon gas inlet into the tubing, it is possible to determine the flow rate of the upper reservoir and then - the calculated determination of the flow rate of the lower reservoir by the total well flow rate measured on the GMU (group measuring unit).

An important necessary element of such an arrangement of equipment is a check valve built into the upper horizon gas inlet chamber into the tubing string.

The need to install a check valve is determined by a significant difference in the reservoir pressures of objects whose products are combined in a common tubing string.

For such an DC scheme, an important technological factor is the ratio of the values of the projected depressions to the exploited layers [8].

When jointly lifting the production of NK-7d and NK-7g formations on one tubing string, a sufficiently large difference in depressions on the upper and lower layers and a relatively small amount of depression on the upper layer, providing a given gas extraction, should be taken into account.

It is obvious that if, for some reason, the pressure at the level of the upper layer increases, for example by 25 kgs/cm$^2$, in a well equipped according to the proposed option and operating with depression on the upper layer of $\Delta P$ = 23,9 kgs/cm$^2$ and on the lower layer of $\Delta P$ = 92,5 kgs/cm$^2$, for some reason, the pressure at the level of the upper layer increases, for example by 25 kgs/cm$^2$, then this will mean the occurrence of repression to the upper layer with the lower layer working (with a reduced flow rate), i.e. the flow of gas from the lower layer to the upper one.

The reason for the increase in pressure in the filter zone of wells may be, for example, the sealing of tubing in the wellhead zone or in the well plume with a corresponding increase in wellhead pressure. The danger of interplastic flows is somewhat reduced with the joint operation of horizons in the remote period of field development, which, however, does not change the general requirements for the equipment complex used.

Three options for the development of gas fields of the Korpedje field are considered.

The first option is basic. Development is provided by the existing well fund.

In the second option, drilling of 20 new producing gas wells is recommended.

In the third option, it is recommended to refrain from drilling five new wells on the horizons of NK-7b, NK-7g and NK-7d by opening these horizons with the use of DC in wells projected on the underlying horizons. Thus, according to the third option, 15 new production gas wells are recommended for drilling.

The placement of wells recommended for drilling in the third variant along the horizons is given below.

Horizon NK-9. Block III - 6 wells (№№ 001, 002, 003, 004, 005 and 006);

Horizon NK-8: Block 1-2 wells (№ 008, 009);

Block II - 1 well - № 007;

Block III - 1 well - № 0015 (drilled with the opening of the NK-9 horizon);

Horizon NK-7d. Block NTa - 3 wells (№ 0010, 0011, 0012);

Horizon NK-7g. Block IV - 2 wells (Nos. 0013, 0014).

At the same time, instead of drilling producing wells, it is recommended to attach the overlying horizons indicated below to the design horizon for operation with an DC for five wells: in well № 0010 - NK-7g horizon, in well № 0011 - NK-7g horizon, in well № 0012 - NK-7g horizon, in well № 0013 - NK horizon-76, in well № 0014 - horizon NK-76.

The project provides for a reserve fund - 2 project wells.

In all variants for wells of the existing fund, it is planned, after working off the exploited horizon, the production of well returns to the overlying horizons.

It is also recommended to continue the operation of wells using new technologies at the same time-the separate operation of two horizons in one well and the operation of wells using an in-well gas lift.

In addition to gas reserves of industrial categories, natural gas reserves of category $C_2$ are taken into account on the balance sheet at the Korpedje field. Exploration of them with their transfer to industrial categories and commissioning into development will increase the production capacity of the field for gas [9].

The main economic indicators characterizing the effectiveness of the proposed development options are capital investments, operating costs, total costs, as well as the cost of oil production.

We take discounted annual cash flow (income-expenses) as the criterion for choosing development options.

The calculation of economic indicators was carried out in accordance with the projected levels and dynamics of technological indicators according to options using economic standards set depending on changes in technological factors.

The volume and technological factors affecting the level and dynamics of economic indicators are: the volume of production drilling, the number of wells put into operation from drilling, the volume of oil, gas and condensate production, the fund of producing wells.

Using technological indicators and accepted economic standards, capital investments in drilling

wells and in the areas of oilfield construction, depreciation charges for new wells, operating costs by cost items are calculated.

To date, a significant part of the oil and gas reserves has been taken from the field, and reservoir pressures on fields have significantly decreased. As a result, the existing system of natural gas collection and transportation does not correspond to the current conditions of well operation. In the coming years, it is planned to reconstruct the oil and gas collection system and build a new compressor station for receiving low-pressure gas, which was taken into account when predicting the technological indicators of the development for the future [10].

The need for capital investments for the long-term period is due to the commissioning of new gas wells and their arrangement, therefore, for the first option (basic), in which drilling of wells is not provided, annual capital investments were not calculated. The largest volume of capital investments is noted for option II.

The calculation of operating costs for the production of oil, gas and condensate for the long-term period according to the options was made in accordance with the current calculation methodology, depreciation rates and approved rates of deductions for geological exploration [11].

The upcoming costs represent the sum of capital and operating costs in the corresponding accounting year of the inventory development period under consideration.

In case of DC of two horizons, the layers are separated from each other by a packer. One or two rows of pumping and compressor pipes descend into the well, which are lowered in parallel or concentrically. With DC of two or more horizons, reservoir development can be carried out according to the following schemes: fountain-fountain; fountain-pump; fountain-gas lift; fountain-injection; gas lift-pump; gas lift-gas lift, gas lift-injection; pump-pump; pump-injection; pump-injection [12]. The field experience of operating two layers with one well by the DC method indicates its high efficiency. On average, capital investments and operating costs are reduced by 30% in comparison with the costs of drilling and operating fields with independent grids for each formation. The DC method makes it possible to seal the grid of wells (producing and injection) without additional drilling footage (Fig.1).

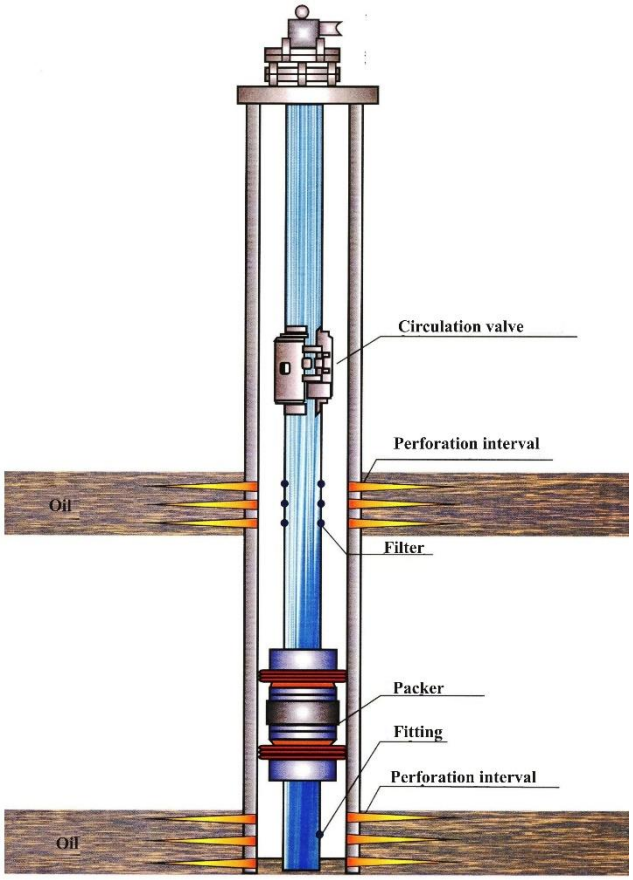


**Figure 1. The scheme of the DC of a gas condensate well.**

The choice of the optimal development option is made by a comparative analysis of costs and results by options for the entire period of inventory development. This period for each of the considered

options is assumed to be equal to the time from the beginning of field development to the year of reaching the enlarged standard of the economic limit of development.

According to the results of technical and economic calculations, option 3 - for gas fields and option I - for oil fields was economically feasible.

Currently, the oil industry of Turkmenistan is facing the issue of involvement in the active development of hard-to-recover oil reserves, the bulk of which is located in low-permeability reservoirs. The importance of solving this problem is determined by the depletion of reserves.

The rise of the production of two layers in the well by one tubing column leads to a significant pressure drop between the filter zone and the wellhead, which required special calculations of the temperature regime of the wells to identify the conditions of hydrate formation in the wellhead zone of the tubing.

Using the methodology described in [13], calculations were performed according to the formula:

$$T_x = T_{downh.} - G_x \frac{1-e^{-a_m x}}{a_m}\left[G_m - \frac{D_i(P_{downh} - H_x}{x}\right]\beta \quad (1)$$

where $T_x$ - is the temperature of the gas at a depth of x, °C;

G - average geothermal gradient, °C/m;

$D_i$ - is the Joule-Thomson differential coefficient in the borehole.

°C/kgs/cm$^2$;

$P_x$ - pressure at depth h, kgs/cm$^2$;

A- thermal equivalent of mechanical work, 1/427, kcal/kg*m;

$C_r$ - is the average heat capacity of the gas at

$$P_{aver} = \frac{(P_{downh.} + P_x)}{2} \text{ kcal/kgs;}$$

α - is the coefficient , $\alpha = \frac{2\pi\lambda}{GC_r(\tau)}$;

here λ - is the thermal conductivity of rocks, kcal/m *hour*°C;

$f(\tau)$ - is a dimensionless function of time

$$f(\tau) = Ln(1) + \sqrt{\frac{\pi\lambda_g \tau}{C_n R_c^2}};$$

The calculation was made for the projected (conditional) well intended for dual completion (DC).

The temperature at the wellhead is calculated with the following received data:

Total gas flow rate $\Sigma Q_g$ = 54 thousand m$^3$/day;

Downhole pressure (NK$_7$d) $P_{downhole}$ =398 kgs/cm$^2$;

Wellhead pressure (up to the fitting) $P_{wellhead}$ = 215 kgs/cm$^2$;

Total condensate (liquid) flow rate $G_c$ -1108,33 kg/hour;

The total weight flow rate of the mixture $G_m$ = 18052,45 kg/hour;

Downhole temperature $T_{downhole}$ =73 °C;

Estimated length of tubing x = H, H = 3360m;

Geothermal gradient G = 0,023 °C/m;

Average thermal conductivity coefficient of rocks $\lambda_r$ = 3 kcal/m * h * °C; Volumetric heat capacity of rocks $S_r$ = 4,697 kcal/kg °C;

The thermal equivalent of mechanical work A = 2,34* 10-3kcal/kg * m.

In accordance with the calculation methodology, given the final temperature corresponding to the equilibrium conditions of hydrate formation (T=23 °C at $R_{wellhead}$ = 215 kgs/cm$^2$) after determining the given values of pressure and temperature:

$$P_{giv} = \frac{P_{aver.}}{P_{cr.}} = 6.51$$

where $P_{cr}$ - is the critical pressure,

$$T_{giv.} = \frac{T_{aver.}}{T_{cr.}}$$

where $T_{cr}$ - is the critical temperature according to the corresponding functional dependencies, the following are determined:

- the heat capacity of the mixture

$$C_r = C^0{}_r + \Delta C_r = 17{,}26 \frac{kcal}{kmol^0 C},$$

where $\Delta C_r$ = f ($T_{giv}$, $P_{giv.}$) is the function of $f$ ($D_i$) = 0.4 (according to the values of $P_{giv}$ and $T_{giv}$ ), the value of the Joule-Thomson coefficient is further determined

$$D_i = \frac{T_{cr} f(D_i)}{P_{cr} C_r} = 0{,}158 \frac{^0C}{kgs/sm^2}$$

After substitution in formula (1), T = 23,7 °C was obtained, which corresponds to the equilibrium condition of hydrate formation for a gas with a relative density $\overline{\rho}$ = 0,6.

The calculation result in terms of determining the Joule-Thomson coefficient was also verified by the analytical formula of I.A. Charny, derived on the basis of thermodynamic calculations in accordance with the Vander-Waals real gas model [14,15].

The average throttle effect according to I.A. Charny is calculated by the formula:

$$T_o - T = \frac{(k-1)T_{cr.}(P_o - P)(7.12\,T_{cr.} - T_o)}{8kT_o P_{cr}} \quad (2)$$

where $T_0$ is the initial temperature of the throttled flow, °K;

k = 1,3- adiabatic index;

$T_{cr}$=190.55°C according to the calculation conditions;

$P_{cr}$ = $46.95 \frac{kgs}{cm^2}$ according to the calculation conditions;

$P_0$ = $397 \frac{kgs}{cm^2}$ - initial pressure before throttling;

P = $P_{wellhead}$ = $215 \frac{kgs}{cm^2}$ - final pressure (wellhead).

**Results and discussion.**

As a result of calculations, we obtain a temperature drop ($T_0$ - T) equal to 62,05 °C and the final temperature $T_f$ = 10.95 °C, which corresponds to the Joule-Thomson coefficient $D_i = 0.024 \frac{^0C}{kgs/cm^2}$, taking into account the correction (lowering) coefficient of I.A. Charny, taking into account the imperfections of the real gas model formula adopted in the derivation [14].

Taking into account the value of the Joule-Thomson coefficient obtained in the second calculation, we come to a positive conclusion about the possibility of hydrate formation in the near-mouth zone of the well, the operation of which is calculated according to the specified conditions and the need to provide for the possibility of supplying a hydrate inhibitor to the tubing column (in the connection zone of the upper reservoir) in the complex of equipment.

Pressure losses in downhole equipment are taken into account in cases when the formations are high-flow and the flow rate strongly depends on a slight change in depression on the formation.

The most characteristic elements of underground complexes in determining "additional" pressure losses (in relation to the total pressure drop in the tubing string) are packers and valves. Practical methods for determining pressure losses in downhole equipment have been developed, for example, described in [13]. The design features of packers and shut-off valves used in the CIS countries and by foreign firms make it possible to determine the losses arising in them as pressure losses when gas passes through a pipe segment or diaphragm.

The calculations made by us according to the methodology set out in [13] for the packer included in the KSG complex (calculation of pressure losses in a pipe segment with flow parameters reduced to the average length of the packer section) showed that the pressure losses do not exceed $\Delta P = 3 \frac{kgs}{cm^2}$ for the NK-7d and NK-7g horizons.

Calculations of losses in valves of various designs, including foreign firms, based on the dependences of the flow coefficients of valves on their diameters determine the pressure losses in them in the area of $\Delta P = 3 - 4 \frac{kgs}{cm^2}$

When comparing the pressure losses in the downhole equipment compared with the values of depression on the formations established by the conditions of their development, it was concluded that taking into account these losses does not affect the technical and technological decisions taken and allows the use of fountain fittings used according to the basic version of the DC at the Korpedje field.

When choosing objects for the application of technology dual completion (DC) of two horizons in one well, the following geological and technical conditions of field development are taken into account:

- coincidence on the plan of the main parts of the productive areas of the horizons intended for DC;
- comparability of the amount of gas reserves drained by one well;
- absolute value of current reserves;
- the distance along the section between the horizons intended for the DC;
- the degree of depletion of horizon reserves;
- the value of reservoir pressure and temperature;
- modes of drainage of fields;
- productive characteristics of formations;
- the possibility of reducing the number of wells for drilling.

The development of proposals for the choice of technology for DC and a rational set of equipment is consistent with the general requirements for the method of operation of multi-layer fields.

In accordance with the general requirements, technical and technological solutions for DC should provide:

- obtaining optimal flow rates for each of the exploited formations (in accordance with the development project);
- the possibility of operational regulation of the total flow rate of the well with a rational ratio of the flow rates of individual formations;
- conducting research work to determine the characteristics of each of the layers; - effective implementation of operations for the development and silencing of formations and wells as a whole;
- the possibility of effective repair work;
- the presence of elements in the complex of equipment that ensure the prevention of open gushing of the well;
- the possibility of carrying out chemical effects, both on the fluid flow in the tubing and on the exploited layers (inhibitors of hydrate formation, etc.).

The technical and technological solutions adopted may vary significantly for specific different conditions of gas condensate fields. At the same time, the fulfillment of all of the above requirements with maximum completeness may not be possible in some specific conditions. The factors of well depth and casing diameter are particularly significant. The large depth of wells (as in the case of the Korpedje field) and the small diameter of the production columns significantly limit the possibilities of using downhole equipment that structurally meets all the requirements for the DC of gas reservoirs

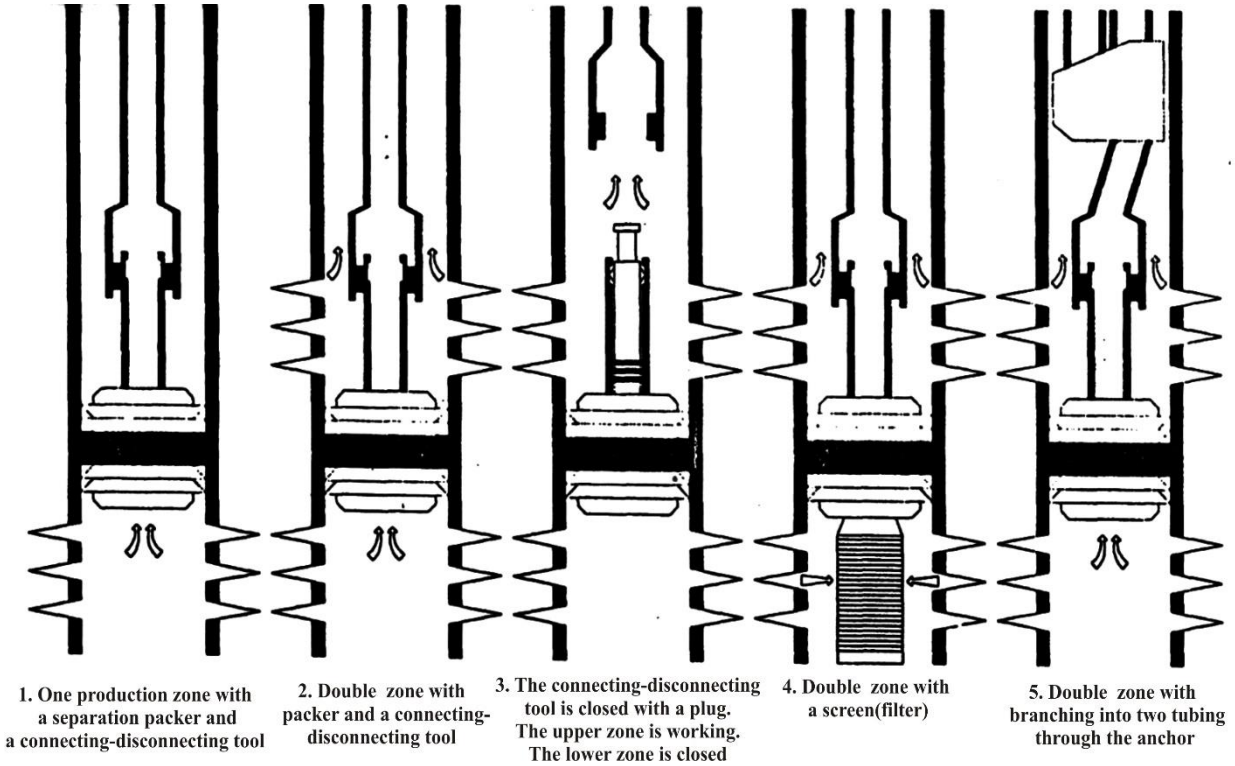


**Figure 2. Functional diagram of the KSG equipment complex for DC operation of two layers**

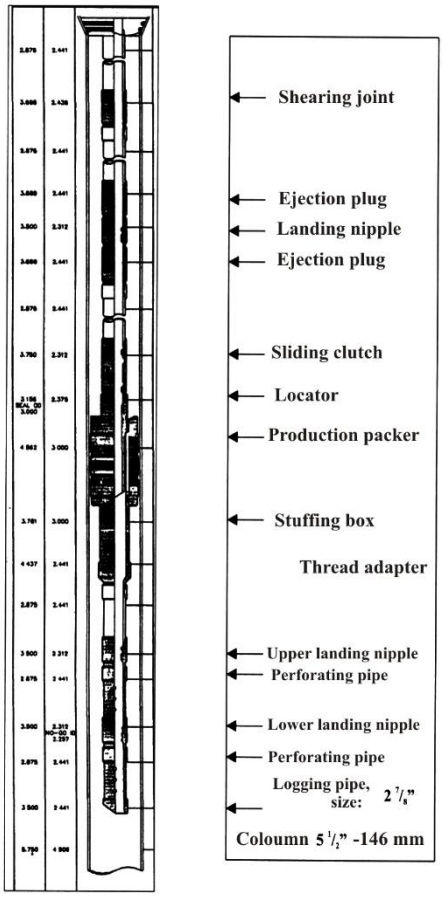


**Figure 3. Downhole equipment for DC operation of two layers of the Korpedje field**

When analyzing the technical documentation available to us (of an advertising nature), it was found that for simultaneous joint extraction of gas from two reservoirs with the lifting of their products to the surface with one lift of the tubing column at the Korpedje field, the principal possibility is the use of a set of equipment from Cummings Oil Tools Inc., designed for the operation of two reservoirs. This corresponds to the basic dual completion (DC) technology we have adopted and is a technical alternative to the well equipment option based on the KSG complex.

The basic functional diagram of the company's equipment complex is shown in Fig.2 with the design refinements shown in Fig.3.

The essence of this technological scheme can be defined as a variant of planned and operational regulation of the operation of reservoirs, which is carried out by installing at appropriate depths regulating throttle devices that provide any ratio of gas flow rates of two reservoirs [16,17,18].

This arrangement is characterized by the fact that it does not exclude, under certain conditions, the occurrence of gas flow from one formation to another, but, at the same time, provides opportunities for regulatory action on any of the two formations in operation in order to bring the well to the design operating mode. The regulating effect (change of throttle devices) is carried out from the surface with the help of rope equipment at the sealed mouth of a working well.

The component composition of the gas (almost complete absence of aggressive impurities) and the projected parameters of the development of productive formations do not exclude the possibility of the DC of two layers with the rise of the production of the upper layer in the annular space.

The technology and technique of such an DC method has been well studied and tested at various fields, and could be applied when using a complex of equipment such as KSG. However, the implementation of such a technological scheme cannot be recommended for the Korpedje field, which is due to the problem of reliability of operational columns. Thus, when using an operational column as a hydraulic channel, significant pressure fluctuations in the near-mouth zone are possible with corresponding changes in the stressed state of the column and, as a consequence, with the risk of intercolonial manifestations [19].

When analyzing the actual data on the operation of the fund of gas wells, cases of defects in production columns are identified.

This, when implementing the DC scheme, determines some changes in the recommended layout of underground equipment, namely the need to install a second packer above the upper productive horizon.

Installing the packer above the upper production horizon makes it possible to reduce the pressure in the annular space of the well between the production column and the tubing column (to the limits determined by the permissible pressure drop on the packer). Pressure reduction in the near-mouth zone of the well is especially effective in the case of filling the annular space with any liquid (which simultaneously reduces the pressure drop on the packer).

When installing the second packer over the upper productive reservoir, however, it is necessary to take into account the one-time introduction of a number of technological restrictions, namely the difficulty in developing and silencing the well, the supply of inhibitors, etc., in addition, the ability to control the pressure in the filter part of the upper reservoir is limited [20].

**Results.**

With this variant of the layout of the underground equipment of the well, control over the development of formations can be carried out either by deep, for example, geophysical instruments (flowmetry, manometry) in the intervals above and below the upper formation, or with selective wellhead regulation of the flow rate of one formation when silencing another by setting the appropriate plug (disconnecting tool) using cable equipment, as provided by the recommended complexes of equipment.

Another significant change in the design version of the DC according to the recommended schematic diagram is the use of 3" tubing in a 140 mm operational column, which will significantly reduce pressure losses in the tubing column.

However, with such a variant of the equipment layout, pipes with a diameter of 3” should be replaced with 2.5" in the packer installation area, since the design dimensions of the packer should be consistent with both the diameter of the production column and the diameter of the tubing column. In the recommended set of KSG equipment, the design of the packer corresponds exactly to this ratio of the diameters of the operational and tubing columns.

**Discussion of results.**

The technological capabilities of the KSG complex recommended for use, as well as the equipment of foreign firms, expand when they are placed in operational columns with a diameter of 168mm. At the same time, a packer with two through holes can be used as part of the KSG complex, i.e., an DC scheme is implemented with the lifting of products of various layers along two columns of elevator pipes.

Similar opportunities are provided when using Cummings Oil Tools Inc. equipment.

**Conclusion Acknowledgments.**

The review of materials advertising gas and oilfield equipment revealed significantly greater

functionality of underground equipment corresponding to operational columns of at least 168 mm, which gives reason to recommend the use of these columns in the design of well construction in the near future, with the aim of improving the efficiency and reliability of the DC at the Korpedje field.

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Issue Article

**Annaguly Rejepovich Deryaev**
Scientific Research Institute of Natural Gas of the State Concern „Turkmengas"
Candidate of Technical Sciences, Senior Researcher,
Ashgabat, Turkmenistan
annagulyderyayew@gmail.com

# THE METHOD OF DRILLING MUD TREATMENT WITH THE INHIBITED COMPLEX ADDITIVE «PACS» AND THE RESULTS OF FIELD TESTS

***Abstract**: In this article, the method of drilling mud processing using the PACS and PACS-T (thermally stabilized) systems, as well as the results of their field tests, are highlighted and considered in detail. Inhibited solutions after prolonged stoppages (for the period of geophysical research and others) restoration of the circulation of the solution is carried out intermittently after the drilling tool is lowered into the cased part of the borehole (casing shoe). This causes the sedimentation stability of the solution for a long time and reduces the likelihood of the drill string being seized due to the retention of the suspended state of barite particles and drilled rock.*

*When using the PACS and PACS-T (thermostabilized) systems on the oil and gas areas of Turkmenistan, in sections containing clay rocks, the narrowing of the borehole, collapses and tacks of drilling tools stopped.*

*(translated article)*

***Key words**: inhibitor, collapse, plastic viscosity, water loss, chemisorption. sludge, inhibitory additives, reagent, cavern formation, heat stabilizer, filtration property, viscosity.*

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## Introduction

Inhibited solutions have increased clay capacity, fastening properties of the filtration crust, thereby increasing the stability of the borehole zone of the well. Therefore, the solutions transferred to the inhibited system can withstand large values of water yield by 1.5-2.0 times in comparison with the required values laid down in the geological and technical order (GTO) and at the same time are able to maintain the stability of the wellbore for a long time.

One of the properties of inhibited solutions is a set of structural strength over time. Therefore, after long stops (for the period of geophysical research and others) restoration of the circulation of the solution is carried out intermittently after the drilling tool is lowered into the cased part of the borehole (casing shoe). This causes the sedimentation stability of the solution for a long time and reduces the likelihood of the drill string being seized due to the retention of barite particles and drilled rock.

When drilling in unstable deposits of clay rocks in the zone of moderate and elevated temperatures, it is necessary to use inhibited drilling fluids for successful trouble-free wiring of wells.

The ability of clay rocks to spontaneously disperse and swell complicates the whole process of drilling wells. Inhibited solutions are used where the use of conventional clay solutions causes complications when drilling wells. Complications are expressed in the form of scree and landslides, narrowing of boreholes, cavern formation caused by swelling of clay rocks and their transition into solution. Clay sludge undergoes peptization and dispersion, which leads to thickening of the solution and deterioration of its parameters.

Inhibited solutions reflecting domestic and foreign experience of drilling wells are known [1, 2].

Salts of NaCl, KCl, $CaSO_4$, $CaCl_2$, silicates, fatty acid soaps, lime are used as inhibitory additives in these solutions. However, when using them, the inhibition effect is lower, since inhibitors neutralize, as a rule, only one of the two lyophilic sections of the mosaic surface of clay particles: either along the planes – negatively charged areas, or along positively charged faces and fractures. Since clays are diphilic and rigidly amphoteric, unilateral inhibition will be much less effective than multilateral. There is a known method of processing clay solution with a combined reagent [3], including, by weight %:

| | |
|---|---|
| Cement | 10,0 – 25,00 |
| Clay | 10,0 – 25,00 |
| Caustic soda | 0,20 – 0,40 |
| Viscosity | |

reducing agent: Sulfite-alcohol bard (SAB) or its derivatives 4,00 – 8,00

Water (the rest)

Cement is included in the reagent as a supplier of inhibitory components, and after its introduction, the preparation time of the inhibited reagent is 20-30 hours.

However, the inhibited system containing the above reagent has disadvantages, which are that clay (10-25%) is additionally introduced into the reagent, which accordingly increases the content of the clay phase in the solution to 40-45%. Such concentration thickening causes an additional load on the clay capacity of the solution and the solution cleaning system. In addition, sulfite-alcohol bard or its derivatives cause strong foaming, which affects the parameters of the inhibited solution: the solution "swells", its volume increases, density decreases and viscosity increases. The disadvantage of the inhibited reagent also includes a long time of its preparation [3, 4].

The technical task of successful drilling operations is to develop a method for processing drilling mud with an inhibited complex additive, and to determine the qualitative and quantitative composition of its constituent components. This will increase the efficiency of inhibition of drilling mud and reduce the preparation time of the inhibited complex additive.

The technical problem is solved when drilling mud is treated with a combined reagent consisting of cement, caustic soda, a viscosity reducing agent (lignosulfonates), a surfactant and potassium chloride (KCL) and water, with the following component ratio, weight %:

| | |
|---|---|
| Portland cement | 10,0 – 12,0 |
| Lignosulfonates | 10,0 – 15,0 |
| Caustic soda | 4 – 5 |
| Surfactants | 1-2 |
| Potassium chloride | 10 – 15 |
| Sea water | |
| Technical, reservoir - | the rest. |

If there is a shortage in some systems, then in moderate (from +61°C to +100°C) and elevated (+101°C and more) zones, the temperature loses the mobility of the drilling fluid and lowers the protective properties of the reagents, which are reflected in the inhibited solution parameter: density increases, structural-mechanical, rheological and filtration properties.

The technical task of the invention is due to an increase in the inhibition efficiency and stability of the drilling fluid in the zone of moderate and elevated temperatures.

The solution of the technical problem is achieved by the fact that when carrying out the possibility of processing drilling mud, including the introduction into the drilling mud of a complex ingested supply of "PACS", consisting of portland cement, potassium chloride, caustic soda, lignosulfonates, powerfully active substances (surfactants) and water, which include additional sources: sodium bichromate ($Na_2Cr_2O_7$) or potassium ($K_2Cr_2O_7$) with the subsequent joint component, weight %

| | |
|---|---|
| Portland Cement - | 10 - 12 |
| Potassium chloride - | 10 - 15 |
| Lignosulfonates - | 10 - 15 |
| Caustic soda- | 4 - 5 |
| Sodium or potassium bichromate- | 3 - 4 |
| Surfactants - | 1 - 2 |
| Sea water, technical, reservoir- | the rest. |

The specified composition is called a complex inhibited thermostabilized supply "PACS-T" (Calcium-potassium-Aluminate Inhibited Solution - Thermostabilized). It is a conciliatory composition consisting of inhibitors, stabilizers, thermostabilizers, caustic soda, powerfully active news and water.

As stabilizers and humbling substances, lignosulfonates are used-salts of lignosulfonic acids, which impose an additional hydrophobic force. Although lignosulfonates tolerate foaming in drilling fluids and are not amenable to aesthetic degassing [5, 6, 7].

Combined surfactants (HT-48) are soy nitrogenous surfactants in a mixture of block polymers of polyoxyalkyl - ethylene and propylene oxides, and also have an active defoamer. The defoaming mechanism is involved in the fact that HT-48 binds the hydrophobic part of the lignosulfonate molecule. Chrome is also due to the adsorption of HT-48 on clay genera that adsorbed HT-48 molecules, active substances are produced on the secrecy of clay, flattening them into interdependence with hydrogen.

The roll of the heat stabilizer will perform salts of chromic acid-sodium bichromate ($Na_2Cr_2O_7$) or potassium ($Na_2Cr_2O_7$).

Rolling inhibitors produce potassium chloride and slotted hydrolysates of Portland cement, forming acid-potassium chloride and acid-slotted hydrolysates with sodium or potassium bichromates, which

anticipate hydration, swelling and disintegration of clay genera in the zone of moderate and elevated temperatures. The increase in immersion in water occurs due to the transition to water, consisting of potassium and calcium compounds present in potassium chloride and Portland cement-in the form of potassium and calcium monochromate.

Acid-base hydrolysates of Portland cement contain water-soluble and insoluble compounds, the mineralogical composition of which contains:

tricalcium silicate-58.0-62.0%; - $3CaO\text{-}SiO_2+H_2O+K_2Cr_2O_7$;

bicalcium silicate-14.5-18.5%; - $2CaO\text{-}SiO_2+H_2O+K_2Cr_2O_7$;

tricalcium aluminate-4.0 - 6.0% - $Ca_3Al_2O_6\text{-}SiO_2+H_2O+K_2Cr_2O_7$;

four-calcium aluminoferrite -13.0 - 15.0%; - $Ca_4(Al_2O_6)(Fe_2O_5)+H_2O+K_2Cr_2O_7$.

Water-soluble compounds of calcium, aluminum, silicates, iron are in dissociated form and are effective anionic-active inhibitors of clays.

Acid-potassium chloride (KCl) enhances the inhibitory effect of the complex additive due to the unique properties of the potassium ion. The potassium ion is not hydrated and, therefore, has a minimum size in an aqueous medium. This allows it to penetrate into the interplane space of clays, preventing their hydration and swelling.

The combination of essential features provides a new technical result. This is explained by the fact that the developed system provides a multi-sided, more effective inhibition of clay particles due to water-soluble acid and alkaline hydrolysates of Portland cement containing both cationic and anionic forms of mineral inhibitors enhanced by the inhibitory action of potassium ions and chromic acid salts capable of penetrating into the inter-pack distance of clays, and the hydrophobic action of combined surfactants based on their chemisorption on hydrophilic and hydrophobic exposed clay particles. This makes it possible to obtain a combination of inhibitors: calcium, potassium, aluminate, silicate, polymineral. The anions and cations released as a result of acid and alkaline hydrolysis under the action of surfactants actively affect the state of the drilling mud, clay rocks composing the walls of wells, due to the filtrate of the drilling mud, and the clay rock being drilled itself. In addition, the complex surfactant in hydrocarbons completely degasses the foam and prevents its formation.

The inhibited thermally stabilized complex additive "PACS-T" can be treated with various types of drilling fluids, including clay ones.

A comparative analysis of the technical solution with the prototype shows that a significant difference between the claimed invention is an increase in the inhibitory effect in the zone of moderate (+61 ° C to +100 °C) and elevated (+101 °C and more) temperatures, which affects the parameters of the solution - a decrease in viscosity (due to a decrease in the swelling of clay particles) and static shear stress in one and ten minutes.

When viewing other technical solutions known in this field, the proposed set of essential features that allows achieving a technical result is not found.

The method is carried out as follows.

The implementation of the method is shown by the example of processing clay drilling mud in field conditions. First, a complex inhibitory thermostabilized additive "PACS-T" is prepared. To do this, pour 2 - 2,5 $m^3$ of seawater into a 4 $m^3$ clay mixer, load 120 kg - 160 kg of chrome powder and mix for 15-20 minutes, add 400 kg - 500 kg of Portland cement - mix for 1-2 hours, then add 160 kg - 200 kg of caustic soda - mix for 20-30 minutes, add 400 kg - 600 kg of lignosulfonate and 40 liters - 80 liters of HT-48. After that, with continuous stirring, 400 kg - 600 kg of potassium chloride is loaded, mixed for 1-2 hours. Sea water is added to the clay mixer to the full level. All this is mixed for 1-1.5 hours. After preparation, the complex inhibitory thermostabilized additive "PACS-T" is released into a circulating clay drilling mud for one cycle. Injected into clay drilling mud in an amount of 8% - 15% by volume of the solution. The cooking time is 3-4 hours.

The effectiveness of the complex inhibitory thermostabilized additive "PACS-T" has been proven by laboratory studies at room temperature (+24 °C) and under thermostatic conditions (+80 °C and +105 °C).

The viscosity values of the solutions studied at a temperature of +24 °C. after the introduction of the additives "PACS" and "PACS-T" (solutions 3, 4) practically do not differ. To study solutions at a temperature of +80 °C and +105 °C, samples of solutions weighted with barite up to a density of 2020 g/$cm^3$ were used. The viscosity values of solutions 6 (+80 °C) and 7 (+105 °C) with the addition of "PACS-T" were 48 s and 41 s, respectively, and solutions of the prototype "PACS" - 71 s and 112 s. That is, with increasing temperature, the viscosity of solutions with the addition of "PACS-T" decreases.

Static shear stress for 1 min and 10 minutes also tends to decrease, and in the prototype (samples 6 and 7), with increasing temperature, the values of viscosity and static shear stress of drilling fluids increase.

Thus, a new method for processing drilling mud with an inhibited thermally stabilized complex additive "PACS-T", with the following component content (weight %):

| | |
|---|---|
| Portland Cement- | 10 - 12 |
| Potassium chloride- | 10 - 15 |
| Lignosulfonates - | 10 - 15 |
| Caustic soda- | 4 - 5 |
| Sodium or potassium bichromate - | 3 - 4 |
| Surfactants - | 1 - 2 |
| Sea water, technical, reservoir - | the rest. |

To conduct field tests on drilling rigs, a working program was drawn up for acceptance tests of complex inhibited additives "PACS" at the Southern Gamyshlydzha, Akpatlavuk and Northern Goturdepe fields.

Inhibited system "PACS-T" (thermostabilized) this is a multi-sided highly effective inhibited system, the level of inhibition of which is Ca+2=900-1500mg/l, K+=3000-8000mg/l and aluminates 3500-4000mg/l.

Inhibited system "PACS-T" (calcium – potassium aluminate inhibited solution) this is a multi-sided inhibited system, its application ensures a reduction in the consumption of chemicals and materials, increases the stability of the wall of the borehole zone of the borehole and increases the relief of the trunk, bringing it closer to the nominal diameter.

In connection with the successful field tests, the inhibited system "PACS-T" (calcium – potassium aluminate inhibited solution) was patented by the author and registered with the State Intellectual Property Service of the Ministry of Economy and Development of Turkmenistan for № 604 dated 06.06.2014.

As a preventive measure in these conditions, inhibitory additives are used in solution using salts of NaCl, KC1, $CaC_{12}$, $CaSO_4$ , silicates, fatty acid soaps, lime, etc. However, when using them, the inhibition effect is lower, since inhibitors neutralize, as a rule, only one of the two lyophilic sections of the mosaic surface of clay particles: either along the planes – negatively charged areas, or along positively charged faces and fractures. Since clays are diphilic and rigidly amphoteric, unilateral inhibition will be much less effective than multilateral inhibition [8].

The developed inhibited additives PACS and PACS-T prevent hydration swelling and disintegration of clay rocks.

PACS – provides multilateral inhibition of clay particles due to hydrolysates of Portland cement and potassium chloride containing both cationic and anionic forms of mineral inhibitors enhanced by the inhibitory action of potassium ions capable of penetrating into the interplane space of clays, and the hydrophobic action of combined surfactants based on their chemisorption on hydrophilic and hydrophobic exposed clay particles. In addition, the complex surfactant in lignosulfonate solutions completely degasses the foam and prevents its formation.

PACS-T (thermally stabilized) is one of the homologues of the general additive of inhibited calcium-potassium solutions of PACS. PACS-T differs from PACS by a high level of inhibition and a large temperature range. These advantages are achieved by converting the calcium compounds present in Portland cement and potassium chloride into a water-soluble state in the form of calcium and potassium monochromate [9, 10].

The solubility of this compound is two orders of magnitude higher than the solubility of lime and is 16%. Due to the increased solubility and subsequent conversion of calcium and potassium chromates into mixed lignosulfonate salts, the content of water–dissolved $Ca^{+2}$ and $K^{+}$ inhibitors in PACS-T filtrates is $Ca^{+2}$ –900–1500mg/l and $K^{+}$–1000–2000mg/l, against calcareous 400-600mg/l drilling mud systems. Therefore, in the system of the inhibited additive PACS, the positive effect of inhibition is manifested up to a temperature of +70 °C, and in PACS–T due to the use of chromates, the positive effect of inhibition is already manifested at a temperature of +30 °C, and not at a temperature of +70 °C and above, which usually occurs in other types of solutions where chromates they are used only as a thermally stabilizing additive [11].

Drilling of well № 19 of Altyguyi field is due to the high content of clay rocks along the entire section of the well, reaching 70% or more. These clays during drilling present certain difficulties associated with the complication caused by narrowing and collapses of the walls of the borehole. All this is due to unstable rocks composing colloidal clays.

For the successful opening of the clay, a solution was chosen with a complex inhibited additive of the PACS system to a temperature of +70 °C and the thermally stabilized PACS-T system over +70°C drilling to a projected depth of 3950 m.

Drilling of the well from a depth of 655 m was carried out with a bit Ø393.7mm, the temperature at the bottom was +35 °C. Due to the fact that the temperature in the well increases intermittently and reaches the limits of +70 °C in the interval of 2500m, it was decided to transfer the drilling fluid to the inhibited solutions of the PACS system. The transfer was carried out without stopping during the drilling of the well in the range of 655–700m.

The main materials for the transfer of drilling mud with a complex inhibited additive PACS: Portland cement PCT1–100, potassium chloride (KS1), KSSB-2, caustic soda (NOH), surfactant HT-48 [12].

Drilling mud parameters before translation: density - $\rho$ =1.47g/cm$^3$; viscosity – T = 63sec; water output – V = 3 cm$^3$; thickness of clay crust – K = 1mm; static shear stress in 1min. – $Q_1$ =48dPa; in 10min. – $Q_{10}$ = 96dPa; plastic viscosity – $\eta_{res}$ =34sPz; dynamic shear stress – $\tau_0$ = 45dPa.

Parameters of drilling mud after conversion to inhibited PACS: specific gravity $\rho$ = 1.45g/cm$^3$; viscosity T = 30sec; water output B = 2 cm$^3$; thickness of clay crust K = 0.5 mm; static shear stress in 1min. $Q_1$= 6dPa; in 10min. $Q_{10}$ = 9dPa; plastic viscosity $\eta_{res}$ = 15sPz; dynamic shear stress $\tau_0$ = 21dPa.

Drilling of the well from a depth of 2187m was carried out with a bit Ø295.3 mm, the temperature at the bottom was +65 °C. Due to the fact that the temperature in the well increases intermittently and reaches the limits of +96 °C at the design depth of

3950 m, it was decided to transfer the drilling fluid to the thermally stabilized inhibited PACS-T system. The transfer was carried out without stopping during the drilling of the well in the interval 2187 – 2234m.

The main materials for the transfer of drilling mud with a complex inhibited thermally stabilized additive PACS-T: Portland cement PCT1–100; potassium chloride (KCl); FHLS; Chrompik ($Na_2Cr_2O_7$ or $K_2Cr_2O_7$), caustic soda, surfactant HT-48 [13].

Drilling mud parameters before translation: density – ρ = 1.45g/cm$^3$; viscosity – T = 71sec; water output – V = 3 cm$^3$; thickness of clay crust – K = 1mm; static shear stress in 1min. - $Q_1$ = 51dPa; in 10min. - $Q_{10}$ = 108dPa; plastic viscosity – $\eta_{res}$ = 42sPz; dynamic shear stress - $\tau_0$ = 57dPa.

Parameters of drilling mud after conversion to the inhibited thermally stabilized PACS-T system: specific gravity ρ = 1.45g/cm$^3$; viscosity T = 32sec; water output B = 2 cm$^3$; thickness of clay crust K = 0.5 mm; static shear stress in 1min. $Q_1$= 3dPa; in 10min. $Q_{10}$=9dPa; plastic viscosity $\eta_{res}$ = 12sPz; dynamic shear stress $\tau_0$ =18dPa.

As the well deepened, complex inhibited solutions of the PACS system and thermally stabilized PACS-T to maintain their properties were carried out by injecting PACS and PACS-T inhibitors into the solutions. The oil was well emulsified in solutions, having lubricating properties. The values of the hydrogen pH of the solutions were maintained to the limits of 10-12, with caustic soda additives. The decrease in water output was achieved by treating the solution with KSSB-2 and FHLS reagents. The decrease in viscosity was achieved by treating the solution with water or water reagents KSSB-2 and FHLS. With an increase in the structural and mechanical properties of the solutions, the solutions were inhibited to.

Drilling of the well on the inhibited solution of the PACS system in the range of 655 - 2187m and on the thermally stabilized PACS-T system in the range of 2187m and up to the actual depth of 3922m was completed without complications, the casing strings Ø324mm, Ø245mm and Ø140mm were lowered without planting and cemented.

Drilling of well № 156 Northern Goturdepe field in the range of occurrence of the Akchagyl tier there are 2 stratigraphic bundles of the same black clay: the first bundle is in the range 2368-2485m (117m); the second bundle is lower in the range 2545-2625m (80m). These black clays during drilling present certain difficulties associated with the complication caused by narrowing and collapses of the walls of the borehole. All this is due to unstable rocks composing high-columnar plastic black clays.

It was recommended to open packs of black clays with solutions of a complex inhibited additive PACS to a temperature of +60 °C and PACS-T above +60 °C and below by drilling to a projected depth of 4300m.

The tests were carried out to confirm the technological and economic efficiency of PACS and PACS-T solutions.

Drilling of the well from a depth of 2000 m was carried out with a bit Ø295.3 mm, the temperature at the bottom was +60 °C. Due to the fact that the temperature in the well increases intermittently and reaches +104 °C at a depth of 4300m, it was decided to convert the drilling mud into a complex-inhibited PACS-T solution. The transfer was carried out without stopping during the drilling of the well [14].

The main materials for the transfer of drilling mud with a complex inhibited additive PACS-T: Portland cement PCT 1-100; potassium chloride (KCL); FHLS; Chrompik ($Na_2Cr_2O_7$ or $K_2Cr_2O_7$), caustic soda (NOH), surfactant HT-48.

Drilling mud parameters before translation: density ρ = 1.48g/cm$^3$; viscosity T = 45sec; water output B = 3 cm$^3$; thickness of clay crust K = 1mm; static shear stress in 1min. $Q_1$ = 27dPa; in 10min. $Q_{10}$ = 56dPa; plastic viscosity $\eta_{res}$ = 27sPz; dynamic shear stress $\tau_0$ = 36dPa.

Parameters of drilling mud after conversion to inhibited PACS-T: density ρ = 1.45g / cm$^3$; viscosity T = 30sec; water output B = 2 cm$^3$; thickness of clay crust K = 0.5 mm; static shear stress in 1min. $Q_1$ = ZdPa; for 10min. $Q_{10}$=6dPa; plastic viscosity $\eta_{res}$ = 10sPz; dynamic shear stress $\tau_0$ = 15dPa.

As the well deepened, the inhibited thermally stabilized drilling fluid of the PACS-T system was maintained by injecting the PACS-T inhibitor into the solution. The oil was well emulsified in solution, having lubricating properties. The values of the hydrogen pH of the solution were maintained in the range of 10-12, with caustic soda additives. The reduction of water loss was achieved by treating the solution with the FHLS reagent. The decrease in viscosity was achieved by treating the solution with water or an aqueous FHLS reagent. With an increase in the structural and mechanical properties of the solution, the solution was inhibited by the addition of PACS-T by entering into the circulating solution during well drilling.

The interval 2000-4300m was passed without complications, the casing columns Ø 245mm and Ø 178mm were lowered without planting and cemented.

Drilling of well №. 202 field Northern Goturdepe in the interval of occurrence of the Akchagyl tier there are 2 stratigraphic bundles of identical black clay: the first bundle is in the range 2364-2482m (118m); the second bundle is lower in the range 2552-2632m (80m). These black clays during drilling present certain difficulties associated with the complication caused by narrowing and collapses of the walls of the borehole. All this is due to unstable rocks composing high-columnar plastic black clays.

In this regard, the black clays were opened with

solutions of a complex inhibited additive PACS to a temperature of +60 °C and PACS-T above +60 °C and below by drilling to a projected depth of 5100m.

The tests were carried out to confirm the technological and economic efficiency of PACS and PACS-T solutions.

Drilling of the well from a depth of 2224m was carried out with a bit Ø393.7mm, the temperature at the bottom was +60 °C. Due to the fact that the temperature in the well increases intermittently and reaches +119 °C at a depth of 5100 m according to the project, it was decided to convert the drilling mud into a complex-inhibited solution of PACS-T. The transfer was carried out without stopping during the drilling of the well.

The main materials for the transfer of drilling mud with a complex inhibited additive PACS-T: Portland cement PCT 1-100; potassium chloride (KCL); PHLS; Chrompik ($Na_2Cr_2O_7$ or $K_2Cr_2O_7$), caustic soda (NaOH), surfactant HT-48.

Parameters of drilling mud before translation: density ρ = 1.35g/cm$^3$; viscosity T = 58sec; water output B = 3 cm$^3$; thickness of clay crust K = 1 mm; static shear stress in 1min. $Q_1$ = 32dPa; in 10min. $Q_{10}$ = 65dPa; plastic viscosity $\eta_{res}$ = 27sPz; dynamic shear stress $\tau_0$ = 36dPa; hydrogen pH = 8,7; temperature at the mouth 30 °C.

Parameters of drilling mud after conversion to inhibited PACS-T: density ρ = 1.45g / cm$^3$; viscosity T = 40sec; water output B = 2 cm$^3$; thickness of clay crust K = 0.5 mm; static shear stress in 1 min. $Q_1$ = 15dPa; in 10min. $Q_{10}$ = 21dPa; plastic viscosity $\eta_{res}$ = 11sPz; dynamic shear stress $\tau_0$ = 18dPa; hydrogen pH = 11.

Parameters of the inhibited PACS-T drilling mud when opening productive formations in the drilling interval of 5012 m: density p = 1.86g/cm$^3$; viscosity T = 40-50sec; water output B = 2 cm$^3$; thickness of clay crust K = 0.5 mm; static shear stress in 1min. $Q_1$ = 15dPa; in 10min. $Q_{10}$ = 21-33dPa; plastic viscosity $\eta_{res}$ = 11-15sPz; dynamic shear stress $\tau_0$ = 18-21dPa; hydrogen pH = 10-11; temperature at the mouth 45-50 °C.

As the well deepened, the inhibited thermally stabilized drilling fluid of the PACS-T system was maintained by injecting the PACS-T inhibitor into the solution. The oil was well emulsified in solution, having lubricating properties. The values of the hydrogen pH of the solution were maintained in the range of 10-12, with caustic soda additives. The reduction of water loss was achieved by treating the solution with the FHLS reagent. The decrease in viscosity was achieved by treating the solution with water or an aqueous FHLS reagent. With an increase in the structural and mechanical properties of the solution, the solution was further inhibited by the addition of PACS-T by entering into the circulating solution during well drilling.

The drilling interval from 2224m to 5012m was passed without complications, the casing strings Ø324mm, Ø245mm and Ø139.7mm were lowered without planting and cemented.

Drilling of well № 30 field Nebitlidje This is also due to the high content of clay rocks throughout the well section reaching 70% or more. These clays during drilling present certain difficulties associated with the complication caused by narrowing and collapses of the walls of the borehole. All this is due to unstable rocks composing colloidal clays.

In this regard, it was proposed to open the clays with solutions of a complex inhibited additive PACS to a temperature of +70 °C and PACS-T above +70 C° and below drilling to the projected depth of 3550m.

The tests were carried out to confirm the technological and economic efficiency of PACS and PACS-T solutions.

Drilling of the well from a depth of 1600 m was carried out with a bit Ø295.3 mm, the temperature at the bottom was within +55 °C. Due to the fact that the temperature in the well increases intermittently and reaches within +90 °C at the design depth of 3550 m, it was decided to convert the drilling mud into a complex inhibited solution of PACS-T. The transfer was carried out without stopping during the drilling of the well [15]

The main materials for the transfer of drilling mud with a complex inhibited additive PACS-T: Portland cement PCT 1-100; potassium chloride (KCL); PHLS; Chrompik ($Na_2Cr_2O_7$ or $K_2Cr_2O_7$), caustic soda (NOH), surfactant HT-48.

Drilling mud parameters before translation: density – ρ = 1.47g/cm$^3$; viscosity – T = 63sec; water output - B= 3 cm$^3$; thickness of clay crust – K = 1mm; static shear stress in 1min. - $Q_1$ = 48dPa; in 10min. - $Q_{10}$ = 96dPa; plastic viscosity – $\eta_{res}$ = 34sPz; dynamic shear stress - $\tau_0$ = 45dPa.

Parameters of drilling mud after conversion to inhibited PACS-T: specific gravity – p = 1.45g / cm$^3$; viscosity T = 30sec; water output B = 2 cm$^3$; thickness of clay crust K = 0.5 mm; static shear stress in 1min. $Q_1$ = 6dPa; in 10min. $Q_{10}$ = 9dPa; plastic viscosity $\eta_{res}$ =15sPz; dynamic shear stress $\tau_0$ = 21dPa.

As the well deepened, the inhibited thermally stabilized drilling mud of the PACS-T system was maintained by injecting the PACS-T inhibitor into the solution. The oil was well emulsified in solution, having lubricating properties [6]. The values of the hydrogen index of the pH of the solution were maintained in the range of 10-12, with caustic soda additives. The reduction of water loss was achieved by treating the solution with the FHLS reagent. The decrease in viscosity was achieved by treating the solution with water or an aqueous FHLS reagent. With an increase in the structural and mechanical properties of the solution, the solution was inhibited.

The interval 1600-3550m was passed without complications, the casing columns Ø245mm and the

shank Ø140mm were lowered without planting and cemented.

**Conclusions:**

1. Inhibited solutions with PACS and PACS-T additives are economical and technological. Their use in sealed sections provides an increase in the mechanical drilling speed due to the suppression of colloidal clays.

2. Inhibited solutions with PACS and PACS-T additives prevent the rapid moistening of clay minerals due to water-soluble alkaline hydrolysates of Portland cement and potassium ions, which are able to bind water into very resistant hydrates.

3. PACS-T, due to the unique action of the chromic acid salt, provides a higher inhibition of the solution at reservoir temperatures reaching +100 °C and more.

4. With the use of complex inhibited solutions of the PACS and PACS-T system (thermostabilized), the narrowing of the borehole, collapses and tacks of drilling tools stopped in the oil and gas areas of Turkmenistan in sections containing clay rocks. All casing columns are lowered without planting and cemented.

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Issue Article

**Go`zal Amirkulovna Khimmatova**
Termez State University
Senior teacher,
Doctor of Philosophy in Philology (Phd)
Termez, Uzbekistan
guzalx@tersu.uz

# PSYCHOLOGICAL IMAGERY IN PROSE (EXAMPLE OF THE STORY «КЎЗЛАРИНГНИ КЎРГАНИ КЕЛДИМ» BY KOCHQOR NORQOBIL)

***Abstract***: *This article deals with the impact of the Afghan war on the human psyche in the works of Q.Norqobil, as well as the psychological states of the inner world of the protagonists in his works, the contradictions.*

***Key words***: *Spiritual experience, artistic expression, plot, work of art, process, youth, hero, technique, spiritual world, period, sociology.*

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## Introduction

Psychology is one of the most important components of fiction. In literary studies, the problem of psychologism in artistic creation has been widely studied.

According to A. B. Esin, "Psychology is a sufficiently complete, detailed and deep description of the feelings, thoughts and experiences of an imaginary (woven) person (literary character) with the help of specific means of literature"[1]. L.Ya. Ginzburg said, "Artistic psychologism begins with unexpected, accidental, accidental contradictions in the character's behavior."

V.V. Kompaneets gives the following definition: "The appearance of psychological analysis in the work, its form and typology often depends on the writer's worldview, purpose, character of talent and personal qualities, and the situation in the work. At the same time, apparently, evaluating psychological analysis as an aesthetic principle based on consciousness, it is not necessary to relativize the fact that one or another of its features was deliberately chosen by the word artist"[2].

A. Jezuitov notes that the concept of psychologism in the literature has many meanings. While studying this problem in detail, he comes to the following conclusions: "1) the innate sign of the art of words, its inherent characteristic, the proof of its artistry...; 2) the expression and reflection of the psychology of society (class, caste, social group, era, etc.) revealed through the product of artistic creation, the author, his characters and, more widely, the personality of the writer and the image of the characters he created...; 3) a conscious and defining aesthetic principle" [3,].

## Analysis of Subject Matters

The term "literary psychology" is mentioned in the book "Literary Theory" by R. Wellek and O. Warren. According to him, "it is possible to understand the study of the psychological typology and laws of the creation of this or that artistic work." Therefore, "Artistic psychologism is an artistic form that embodies the ideological and psychological research of heroes, the formation of human character, the basis of the worldview of a person is mastered by literature. The educational, problematic and artistic value of psychology can be seen first of all" [4,]

S. L. Rubinstein says the following about the depiction of the human psyche in a work of art: "While describing the psychology of a hero, it is not without reason that word artists strive to highlight his (the

hero's) experiences - the turning points of his life - his individual path to maturity. Union, human experiences are the subjective side of his real life, the subjective aspect of the individual's life path.

In literature, a deep artistic study of the human inner world is called "artistic psychologism". In other words, psychologism means a deep description of the mental and spiritual experiences of a person in literature and art. Here is Hotam Umurov's "Hero's Spiritual World and Epicness" in the scientific research entitled "Artistic psychology is the result of the perception and analysis of the human psyche, the image of mental states reflected in the artistic work, the product of the writer's artistic psychological interpretations. The writer describes and reflects the spiritual world and mental states of his character. That is why V. Belinsky uses the phrase "the great artist of the human soul" in relation to the artist. Since man is the subject of literature, it is impossible to imagine him as a whole without his psyche. So, in any artistic work, no matter when and in what genre and method it was created, it is natural that the human psyche is reflected in it in one way or another" [5,]" are very appropriate.

In the "Dictionary of Literary Studies" compiled by D. Kuronov and others, artistic psychologism is defined as follows: "Artistic psychologism is one of the important means of creating a complete human image in an artistic work; disclosure of the psyche of the character, psychological justification of actions and words, a collection of methods and tools serving these purposes. A writer can describe the psyche of a character directly or indirectly. A description of the character's thoughts and feelings in the form of "inner monologue", "stream of consciousness" or in the author's language (the author's speech, which is not his own) is a direct form of psychological image. Revealing the psyche of the character in the work by showing his actions, words, facial expressions (mimicry), physiological changes in him is an indirect psychological image. These two types of mental images complement each other, so when describing the psyche of a certain character, the writer uses both of them. Also, when revealing the psyche of a character, the writer can use the image of nature or the image of something else, which is also a form of indirect psychologism" [6,].

**Research Methodology**

Psychologism becomes an important concept, especially in works created on the theme of war. The spiritual experiences of a person are clearly visible in such works. By researching the problem of psychologism in the psyche of a hero who is a participant in the war, it allows to study and draw conclusions from the psychopoetic point of view of this problem in fiction.

Historical events and changes have always had an impact on the socio-economic, spiritual, moral and spiritual world of a person. The rapid passage of time, progress is in one place it's true that it won't sink. At the same time, a person's thinking and consciousness grows continuously. Any political processes: big and small wars, revolutions, high inventions of science and technology, they affect the lives of people of that time. First of all, these are reflected in the human heart and soul. Fiction is a picture window that imprints this phenomenon of the time in history with all its fullness. There are many fields that study real-time realities and society. History, sociology, social studies, philosophy, etc.

However, literature and art are not able to seal the inner world and spiritual experiences of a person in a certain period and society. Take, for example, war. Whether it's history or any other field, it shows numbers, events, losses. But it cannot express the inner experience, pain and suffering of a war participant, that is, a person. And a work of fiction or art records in history the psychology of human character, the influence of time and society on his life. Periods, years may pass. Through the work of art, we can feel the pains, dreams, pains, and spiritual experiences of the people of that time.

Until the 70s of the last century, the theme of war was leading in literature. As each era has its own ideas, later our writers rarely addressed this topic. Despite this, in some samples of our modern prose, a certain branch of the plot is dedicated to the description of the war and the wounds it left in the life of the hero.

Kochkor Norqabil's war-themed works show us not only the events and horrors of the war on Afghan soil, but also artistically express the spiritual experiences of the people who participated in it.

Through these works, we fully feel and understand how the war brought disaster to the entire humanity, changed people's fate, turned their dreams into dreams, and injured them both physically and mentally.

In the works of Q. Norqabil, the inner world of the characters is dominated by psychological situations consisting of suffering and mutual conflicts.

According to researcher Sh. Botirova, "Psychological details embody the inner world of a person. Heart vibrations - a method of not fully expressing the thought, but limiting it to a gesture, or elements belonging to "dialogue not expressed through speech": kinesic states - elements of behavior, mimicry and pantomime, and paralinguistic elements such as laughter, crying, speech tempo represent a form of psychological detail (I .V. Strakhov) or the details of the character's dynamic portrait (mimicry, plasticity, meaningful movements, speech aimed at the listener, physiological changes)"[7]

Q.Norqabil skillfully describes the inner world of heroes not only through experiences, mental evolutions, conflicts, but also through their external

appearance: facial expressions, facial expressions, gestures, crying, laughter.

The character's appearance, that is, his portrait, also gives the reader a first impression of him. For example, in the story "I came to see your eyes", the portrait of the hero is drawn like this: “In a moment I glanced at them. Tim tied his black hair in a bun, his big brown eyes were shining, the bright charm of his thin moon-lit face is a beautiful figure that can enchant anyone, next to him is another perfect creation of nature - blue eyes, golden hair, arched eyebrows are as proud as his beautiful face. the owner of the air is sitting in the air" [8]

**Analysis and results**

From the above passage, we can learn from the portrait of the heroes of the work that one of them is a representative of a different nation from the image of "blue eyes" and "golden hair". The first impressions about the spiritual and moral world of the characters are created through their appearance, behavior, and clothes.

The story is told in the first person. The first acquaintance of the heroes of the play takes place on the train. The first meeting, external appearance is not enough to recognize a person. It is known from the story that the young man and his daughter are guests from a distant country, i.e. representatives of a foreign nation. Juvan and his daughter it is felt from the outside that there is a conflict, disagreement between them. The girl looks like a jizzaki, swinging, mischievous, in a disaffected mood.

Conversation is an important factor in learning the inner world of the characters of the story:

"... The woman shook her head. It was obvious that the girl was embarrassed by her condition...

... - The woman looked at her daughter with a smile, - the people of this place are bad, she wondered if it would be possible to travel by train for two days.

- Why does he say bad things about the people of this land? It is not like that, our people are kind, gentle, humble people. Hospitable people. Masha, you don't know Uzbeks well, do you? - I looked at the girl questioningly.

Masha's eyebrows furrowed. That's when I noticed that the girl's face was confused and worried. I put this down to the restlessness some people experience in a foreign place. The girl's answer was short: "My mother told me a lot about Uzbeks..."

The speech of the character in the above dialogue and the characterization of the narrator are also important factors in revealing the inner portrait of the hero. As you get acquainted with the work, you will understand the inner world, pain and experiences of the characters. The writer keeps the chain of events in a rhythm. The conversation on the train reveals the bitter fate of the characters. The cheerfulness of Irina's appearance evokes the impression that she is full and happy in every way. But during the conversation, it becomes clear that there is a lot of pain, pain, and suffering inside.

Irina meets Roma from Khorezm, who was seriously wounded in the Afghan war, in a hospital in Moscow. Treats and cares for him. Then the relationship ends with marriage. Then Maria is born. Roma, who has a son in the family, does not oppose his desire to return to his homeland, that is, to Khorezm. Maria is raised alone without a father. When asked about her father, Maria makes all kinds of excuses. When Maria grows up, Irina brings her to Khorezm in order to meet her father.

On the train, meeting the narrator, that is, the poet, Irina tells about all her experiences.

We know that in the analysis of a work of art, paying attention to the harmony of all elements leads to important conclusions. For example, "The plot describes the chain of events, the changes in space and time, the life of the characters in alternating situations and situations with the help of artistic psychology, and the psychological world, feelings and experiences of the literary hero find their expression in the reality of the plot" [9] .

Plot and composition, style is the main factor of the composition of an artistic work. The skill of the writer can be seen in combining this chain of elements together with the image of the psyche of the heroes, that is, in expressing artistic psychologism.

In general, Q. Norqabil reveals the spiritual world and psychological world of his hero through psychological imagery. It skillfully describes the human heart, inner world, evolution and experiences.

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Issue Article

**Shaxlo Ochilovna Tashpulatova**
Navai state pedagogical institute
Doctor of Philosophy (PhD) of Pedagogical Sciences
assistant professor, Republic of Uzbekistan


# THEORETICAL ASPECTS OF ASSESSING STUDENTS' LOGICAL THINKING BASED ON INTERNATIONAL TIMSS PROGRAMS


***Abstract**: TIMSS (The Trends in International Mathematics and Science Study)— this is an international study of the quality of mathematical and natural science education. The article examines the theoretical aspects of assessing logical thinking, which allows comparing the level and quality of mathematical and natural science training of secondary school students in different countries of the world, as well as identifying and comparing changes taking place in national education systems.*



***Key words**: TIMSS, science, integration, logical thinking, creativity, technology, non-standard tasks.*

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## Introduction

Today, the change of the educational paradigm has made assessment not just a statement and a test, but also a formative of logical thinking, defining and predicting, stimulating, motivational, school and professional orientation. Assessment ceases to be an application to the educational process, it is constantly progressing, becoming one of the most important factors of learning, capable of influencing the areas and conditions of learning and upbringing.

In order to meet the requirements of the new information society, assessment functions acquire a new meaning, change the goals of education and assessment. It should be aimed not just at identifying shortcomings, it should be a mechanism that ensures the continuity of the process of improving the quality of education, should provide a constructive connection for all subjects of the educational process. It should not just sum up what has been achieved, but become a starting point, followed by a new round of development, reaching a new level of education. Awareness of the importance and attention to the modernization of the system for assessing the logical thinking of students gives hope for the creation of its new model and not repeating the mistakes of history.

It is advisable to preserve and disseminate all the positive that has been accumulated and change what hinders the development of the education system (subjectivism, focus on checking factual material, insufficient use of control tools that form the interest of each student in the results of their cognitive activity, the incompatibility of control results across schools, etc. .e).

The freedom of choice provided in this matter has led to a variety and diversity of forms, types, methods, models, which is a certain obstacle to choosing the optimal and acceptable option for all participants. At the same time, this also reflects the objective need to use this multidimensionality in full volume. Analyzing the work done in this direction, we can divide all options into 2 groups: Quantification (options with a point system):

- no marks assessment;
- extended evaluation;
- rating assessment;
- criteria-logical;
- multi-point system (from 10 to 100).

Much has already been said about the inconsistency of the existing 5-point system, but it is obvious that it has advantages without which it would

not have existed for so long (simplicity, clarity for the subjects of the process, tradition, rootedness, universality, strength, modernization potential) and which we would like to see in a future model.

Authentic assessment options:

- portfolio;
- a chest of regalia (a collection of works made by the students themselves);
- Scottish certificate (entries in the certificate are the result of a discussion of progress with the tutor);
- creative book (all independent work done in excess of the curriculum);
- notebook-passport (answers questions want, can, eat, should be);
- profile of skills, development of logical thinking.

The teacher should not forget that cognition is a process, it is extended in time, with stages. It is psychologically unjustified to give marks to something that is still in its infancy, that will change, be refined in the future when assimilating new knowledge.

The new goal of education was proclaimed the upbringing of a self-developing personality, that is, “the goal of teaching a child is to make him able to develop without the help of a teacher” (E. Hubbard). This model, no doubt, includes basic knowledge and skills, but the most important component is the student's ability to organize independent activities and implement reflexive actions in case of difficulties encountered, master the system of orientation in the sea of information, as well as the formation of skills to constantly replenish and complete their personal knowledge system. Alvin Toffler wrote about this 40 years ago: “The new education must teach the individual how to classify and reclassify information, how to assess its validity, how to change categories if necessary, how to move from the concrete to the abstract, how to look at problems from a new angle, how to educate oneself ... The illiterate in the future will be the wrong a person who cannot read, and one who has not learned to learn. Naturally, in this case, the degree of individual advancement in the mode of self-development should be assessed. Based on this, the assessment of achievements should be carried out on 2 grounds: on the conformity of the results of educational activities to a certain educational standard.

On the personal advancement of students on the ladder of achievements in the process of mastering knowledge, skills, development of mental processes, formation of value orientations, personal qualities.

When considering evaluation, another difficult question arises: what is to be evaluated. The abundance of planned educational outcomes are formulated in such a way that they turn out to be unverifiable within the framework of the educational process by means of pedagogical diagnostics (for example, “to form knowledge about ...”, “broaden one's horizons ...”). The number of objects of assessment is large. For example, what types of work to evaluate, what level of complexity. Consideration of the system for evaluating the dynamics involves diagnosing a personality on a regular basis according to a fairly large number of criteria, which is certainly a difficult, but solvable task. Each task can be evaluated in terms of deadlines, compliance with the form, goal compliance, resource compliance, and stability of competencies. Within the framework of the modern structure of the content of education, an objective assessment system cannot exist. It is necessary either to highlight the so-called key elements of the content, the measurement of which is sufficient to obtain the desired result, or to change the structure of the content of the education system.

The finalization of the calculation algorithm for all subjects, for different ages and, possibly, for different learning systems, remains relevant. It is impossible to equate the activities of a second-grader and a fifth-grader, even, it would seem, of the same objectivity. Therefore, the assessment system should have a bank of assessment materials for at least 5 levels of intra-school control: at the entrance to the elementary school, at the entrance to the main school, at the turn of 11-12 years (middle of the main school), at the end of the main school, at the end of the senior schools. For each, materials are developed that allow assessing the level of formation of key competencies characteristic of a given age interval.

The new school should have an approach to evaluating the results of schoolchildren's performance that is adequate to the ideas of developmental education, and the implementation of the ideas of a competency-based approach, the development of new criteria for evaluating the results of schoolchildren's performance should have a pronounced focus on the development of relevant competencies and self-assessment skills.

The volume of problems in solving this issue is astonishing. Many are under development, many are under development. But the goal of all transformations is the same - assessment from a means of compulsory education that was unloved for a student in the past should turn into a way to rationally determine a personal rating - an indicator of a person's significance in a civilized society.

The Trends in International Mathematics and Science Study (TIMSS) is a periodic monitoring study of the quality and trends in the development of mathematics and science in national education systems. Allows you to compare the level and quality of mathematical and natural science training of secondary school students in different countries of the world, as well as identify and compare changes taking place in national education systems. It is carried out by the International Association for the Evaluation of Educational Achievements (IEA) in consortium with

leading international scientific organizations, with the participation of national centers. The international focal point for the study is Boston College (International Study Center, Boston College), USA.

The purpose of the study is a comparative assessment of the general educational preparation of secondary school students in mathematics and natural science in countries with different education systems, and the identification of factors affecting the level of this preparation. The study is conducted in such a way that its results make it possible to track trends in mathematics and science education every four years, when students in grades 4 become students in grades 8. Additionally, the features of the content of mathematical and natural science education in the countries participating in the study, the features of the educational process, as well as factors related to the characteristics of educational institutions, teachers, students and their families are studied.

The methodological basis of the study is a conceptual model for assessing the educational achievements of students, which allows analyzing the relationship between the planned and implemented levels of education, on the one hand, and the achieved level of education (learning outcomes), on the other hand.

Within the framework of this model, education is considered from the position of three levels:

• The planned level is a social order for an educational institution. At the planned level, the official goals of education and the totality of pedagogical and methodological ideas accumulated in society are formed, which is reflected in curricula and teaching aids.

• Realized level — the real educational process of an educational institution. At the implemented level, the teacher of the educational institution forms the planned content of education in the real educational process.

• Achieved level - the results of training in an educational institution.

This is done so that countries can identify the strengths and weaknesses of math and science education in their countries based on international comparisons.Research tools include:

- tests of students' achievements;
- Questionnaires of respondents (students and teachers, administration of the educational institution, national coordinator and international observer for the quality of the research);
- methodological complex (guidelines for national and school coordinators on the organization and conduct of research, sampling, testing, checking tasks with free answers, data entry);

software package (international and national databases of schools, classes and students, research results).

The main component of the study are blocks of tests, which are developed on the basis of the following principles:

- adequate coverage of the checked content and types of educational and cognitive activities;
- maximum correspondence of their content to the studied materials of the participating countries;
- the significance of the educational material being tested in terms of the development of mathematical and natural science education;
- compliance of tasks with the age characteristics of students.

The IEA management gladly accepted the offer of Uzbekistan to participate in this study and made recommendations on what educational conditions in Uzbekistan correspond to the TIMSS educational system. In addition, the IEA invited our country to the first meeting of national research coordinators, scheduled to be held in Hamburg, Germany in February 2021, and announced that it will provide an opportunity to discuss with Boston College specialists various evaluation models, discuss the benefits and shortcomings of research directions. TIMSS (Trends in International mathematics and science study) is a program for assessing the level of proficiency of 4th and 8th grade students in mathematics and science subjects, and this study is carried out every four years.

In addition to comparing the level and quality of knowledge acquired by 4th and 8th grade students in mathematics and science, as well as identifying differences in the national education system, TIMSS also examines the content of education received in mathematics and science in schools, the educational process, opportunities of an educational institution, the potential for its development.

Pedagogical tasks can be presented both in the traditional form in the form of questions, tasks, term papers, practical tasks, and in test form, which are more technologically advanced and can be used in various teaching technologies.

Task systems in the test form form such tasks that have all the features inherent in tasks in the test form, but do not have the properties of test tasks. Task systems in test form are developed and used for pedagogical assessment, which does not claim to meet the strict requirements of the scientific and pedagogical measurement.

***Principles for selecting test content***

***Significance*** - this principle indicates the need to include in only those elements of knowledge that can be attributed to the most important, key, without which knowledge becomes incomplete, with numerous gaps. Therefore, only those materials that play the role of learning elements in individual knowledge should be included in tests.

***Scientific reliability:*** the test includes only that content of the academic discipline that is objectively true and lends itself to some rational argumentation. Accordingly, all controversial points of view; it is

recommended to include in test tasks, you conclude the essence of test tasks; since they require a clear, pre-known answer, it is recognized by the process of developing tasks as objectively true.

***Correspondence of the content of the test to the level of modern consciousness*** - this principle follows from the natural need to train specialists, test their knowledge and skills on modern material, an adequate level of development of science and the content of the academic discipline.

***Representativeness:*** the test not only includes significant elements of the content, but also pays attention to the completeness and sufficiency of control. Representativeness does not mean that all significant elements of the content must be included in the test. After all, many of them are clearly interconnected in the general structure of knowledge, included in one another in whole or in part.

***Content variability:*** the content depends on the development of science, scientific and technological progress, the new content of the academic discipline, and new textbooks. As the content of the academic discipline changes, the content of the test should also vary. At the same time, it is necessary to take into account the contingent of students, their level of preparedness, training.

***Consistency of content*** - this means the selection of the content of test items that would meet the requirements of systematic knowledge, that is, in addition to the selection of items with systemic content, it is important to have tasks that are interconnected by a common knowledge structure. The complexity and balance of the test content: a test designed for the final control of knowledge and skills cannot consist of the material of only one topic, even if this topic is the most key in the academic discipline. It is necessary to look for assignments that comprehensively reflect the main, if not all, topics of the training course.

Requirements for tasks in the test

V.S. Avanesov emphasizes that tests are used to objectify the control of learning outcomes. To activate the current educational activity, not tests are used, but sets of tasks in a test form, which, unlike test tasks, do not form a test.

The tasks in the test form are subject to the following set of requirements:

- brevity,
- manufacturability,
- the correctness of the form,
- content correctness,
- the logical form of the statement,
- the same rules for evaluating answers,
- the presence of a certain place for answers,
- correct arrangement of task elements,
- the same instructions for all subjects,
- Adequacy of instructions to the form and content of the task.

The brevity of tasks in the test form follows from the advantages of the logical form of the statement, so tasks are always shorter than tasks and questions. Brevity is ensured by a careful selection of words, symbols, graphics, allowing a minimum of means to achieve clarity of the meaning of the content of the task. Repetitions, obscure, rarely used, as well as symbols not known to students, foreign words that make it difficult to perceive the meaning are excluded.

The correct location of the task elements is a requirement that helps students not to waste time determining the place for answers and quickly fix their solution.

The similarity of the rules for evaluating answers within the accepted form is an objectified means of organizing testing. No student is given an advantage over another: everyone answers the same tasks, everyone is given the same time. Evaluation rules are predetermined and apply exactly the same to everyone.

The answer to the task is a brief judgment related to the content. The criterion for the correctness of answers is determined in advance by the author of the task. The adequacy of the instruction to the form and content of the task means the mutual correspondence of the listed components, which is necessary for the task to perform its function. The condition of adequacy allows you to bring to the consciousness of students the requirements inherent in the content of the task. The discrepancy causes errors in understanding the meaning of the task, and, accordingly, leads to erroneous answers.

In addition, when compiling test tasks, the following basic rules must be observed:

• it is impossible to include in the totality of answers those, the incorrectness of which at the moment cannot be recognized by the students;

• wrong answers should be formulated on the basis of typical mistakes and should seem plausible;

• correct answers among all answers must be placed in a random order;

• questions should not repeat the wording of the textbook;

• answers to some questions should not be "hints" for answers to others;

"Non-standard tasks are those for which there are no general rules and regulations in the course of mathematics that determine the exact program for their solution.

"Non-standard tasks must be selected in accordance with the age characteristics of schoolchildren and the requirements of the program of the state standard of general education. The effectiveness of teaching schoolchildren to solve non-standard problems depends on several conditions.

*First, tasks should be introduced into the learning process in a certain system with a gradual increase in complexity, since an overwhelming task will have little effect on the development of students.*

*Secondly, it is necessary to provide students with maximum independence in finding solutions to problems, to give them the opportunity to go to the end along the wrong path, to be convinced of the error and return to the beginning and look for another, right way of solving.*

*Thirdly, students need to be helped to understand some ways, techniques, general approaches* к solving non-standard problems in physics.

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**Issue** **Article**

**Akmal Raupovich Ziyodullayev**
Bukhara state university
doctoral student, Bukhara,
Republic of Uzbekistan
Phone:+99893 688 37 78
ziyodullayevakmal@mail.ru

# UZBEK EPONYMS

***Abstract****: The article describes Uzbek eponyms which have not been studied in the field of linguistics. An eponym is a person's or the name of a place from which another term or word comes. Every language is full of eponyms which can be observed in all branches of social life and the Uzbek language is not the exception to it. Uzbek eponyms like other language are based on anthroponyms, toponyms and mythonyms. The paper emphasizes on eponyms derived from anthroponyms.*

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**Introduction**

It is apparent that proper nouns are a universal linguists category[3]. When we want to denominate a concept or thing it is obvious that the significant aspect of focus in naming is based on one of its important signs or the name of its discoverer. In enriching the vocabulary of a particular language, it is essential to study eponyms that's to say linguistic units that give a word a new meaning. As defined in the Cambridge Dictionary "the name of an object or activity that is also the name of the person who first produced the object or did the activity"[11]. The genesis of eponyms is interpreted as a phenomenon of eponymy, and the ways of their formation are of interest to representatives of various fields. In the spheres such as exact sciences, Social-Humanitarian, natural, etc. eponymous units in each social sphere appear not as a person's name, but as a named object or process.

For example, eponymous terms in the field of mathematics, equations, mathematical terms, methods of physical movement in the field of sports, types, heroes of works in the branch of literary studies, physical quantities related to physics, phenomena, medical terms as *Basedov, brucellosis* are examples of eponyms. The comparative study of eponym terms within the framework of two languages allows clarifying the linguistic nature of the terms, their cross-cultural characteristics.

Eponyms, not only in English, but also in Uzbek, are of interest to scientists in various fields in terms of the range of topics.

As a result of the observations made within the framework of the research, the units of Uzbek eponyms based on anthroponyms, toponyms and mythonyms have been determined.

The article outlines anthroponym based eponymic units of the Uzbek language. Eponyms differ in structure, and their transition from one term to another is common not only in the scope of anthroponomy, but also in the scope of other onym - names, which are not considered as eponyms and are not generalized.

Eponymy is a comprehensive phenomenon which includes such models as *toponym + zoonym (topozoonym), anthroponym + toponym (anthropotoponym), anthroponym + zoonym (anthropozoonym), anthroponym + phytonym (anthropophytonym), anthroponym + oronym (anthropooronym), anthroponym + cosmonym (anthropocosmonym)* etc.; so it is of scientific importance to study such terms as eponyms in essence. Based on the researched sources, Uzbek

eponyms which have been formed from the anthroponym roots can be classified as follows:

**In mathematics**: the words *algebra (al-jabr), algorithm* are related to the name of al-Khorazmi;

**In the field of geography**: according to the decision of the President of Uzbekistan Shavkat Mirziyoyev, *Tashkent International Airport* was named after the First President of Uzbekistan Islam Karimov in 2017[4], or the name of Navoi region was named in honor Alisher Navoi, the great Uzbek poet, philosopher and statesman.

The results of research showed that a large percentage of Uzbek eponym units are anthroponym + toponym based eponyms, and some of them are listed in the following table (table 1):

**Table 1.**

| Type of Eponym | Eponym | Description |
|---|---|---|
| Anthroponym + toponym | *Gagarin* | A city in Jizzakh region. The administrative center of Mirzachol District. (Gagarin was a former Soviet pilot and cosmonaut who was the first man to travel into space. The origin of the name of the place goes back to his name)[2] |
| | *Iskandari* | A city-type settlement in the Tashkent region. It is part of Bostanliq district[2]. (Brother of the Russian Emperor Alexander II. Grandson of Nicholas II, cousin of Alexander III. In Turkestan, Duke first lived under the name of Colonel Volynsky. Later he called himself Alexander. The settlement of Iskanderi also originated from this name) |
| | *Mirzo Ulughbek* | Mirzo Ulugbek district is one of the 12 districts (districts) of Tashkent city. It was named after the astronomer, mathematician and sultan Ulugbek. The city-type Ulug'bek is part of the district. Mirzo Ulugbek is located in the northeastern part of the city. Mirzo Ulug'bek borders Yunusabad and Yashnabad districts, adjacent to Tashkent region. |
| | *Ulugbek town* | A city-type settlement located in Tashkent region. Administratively, it belongs to Mirzo Ulugbek district of Tashkent city. |
| | *Sharof Rashidov district* | Sharof Rashidov district (until 2016: Jizzakh district) is a district in the Jizzakh region of the Republic of Uzbekistan. Its centre is located in Uchtepa[2]. |
| | *Shaikhontakhur* | One of the 12 districts of the city of Tashkent. It was taken from the name of Shaykh Khavandi Tohur (Shaikhontohur) from the shaykhs of the Yassaviya sect[5]. He was a shaykh who lived at the end of the 13th century in the village of Bogistan, Bostanliq district. |

**In astronomy**: (name of minor planets) 2755 *Avicenna asteroid* [9] - 1973-09-26 it was discovered by Chernix L. at the Nauchny observatory (Ibn Sina, known in the West as Avicenna, was a great scientist, physician, musician. He lived in Central Asia and Iran, and was a physician and minister under different rulers.

Asteroid 9936 *Al-Biruni* (7057) - August 8, 1986, in Smolyan. It was discovered by E. V. Elst and V. Ivanova. (Al-Biruni (973-1048) made major contributions to anthropology, mathematics, and astronomy. He developed methods for adding series, summarizing algebraic equations, and triangulating distances on the Earth[7]

11156 *Al-Khwarismi Asteroid* - December 31, 1997, P. G. was discovered by Comba in Prescott[8]; Asteroid 16413 *Abulghazi* (Abulghazi Bahadir)- on January 28, 1987, at the European Southern Observatory E. V. Discovered by Elst. In 1643-1663.(the historian Abulghozi Bahadir (1603-1663) ruled the Khanate of Khorezm)[6];

**The names of craters on the Moon**: *Avicenna crater, Al Biruni crater, Al Kwarismi crater;*

Eponyms denoting astronomical objects which are named after outstanding Uzbek people mostly low motivational as the names they possess are not related directly to the person. Such naming allows the name to be honored and rememberd.

**Food and snacks**: *Tokhtanyoz ota sausages, Rozmetov sausage, Rizamat ota grapes, Amir melon, Amiri bread;*

Let's consider about *Rizamat ota grapes.* It is a prolific grape variety grown in the Institute of Plant Science of Uzbekistan and regionalized in Uzbekistan, Tajikistan. It was named Rizamat in honor of Rizamat Musamuhamedov, the viticulturist and innovator of viticulture practices, an agronomist who served in Uzbekistan.

**In biology:** *Hojimatov drink, Hojimatov collection*[10]; Khodjimatov's choleretic collection is an original and effective drug that has no analogues in medical practice. This drug has shown high efficiency in the treatment of various forms of hepatitis, the initial stages of liver cirrhosis and diseases of the biliary tract. The drug has been named after biologist Kakhkhar Hodjimatov.

**Eponyms related to fauna and flora**: the "flying fox" mentioned by Zahiruddin Muhammad Babur in his memoirs, the animal which was equated with the flying squirrel Baber (Afghan flying squirrel *Yeoglaucomys Baberi Blyth*) and given the scientific name Baber. Zoologists have not agreed on the habitat and taxonomic status of Baber. Some scientists suggest that it is only a subspecies of the Kashmir flying squirrel, Yeoglaucomys fimbriatus, and that its existence in the mountains of northern Afghanistan and Pakistan[1].

*Juldasch* - Juldasch's mouselike rodent Neodon juldasch. This mouse-like rodent is found in the region from the northeast of Afghanistan to Tibet. This species is found in Kyrgyzstan, near Aksuv, Uzbekistan. Juldasch is actually an Uzbek name, for example, the Uzbek politician Yuldosh Okhunboboev (1885-1943), but the authors could not identify who this Juldasch was[1].

**Names of tarikats(doctrines)**: these names are ideological systems, movements and sects, including: *Yassaviya, Kubraviya, Naqshbandiya*

There are also names of places and objects that are considered sacred, associated with personal names. There are numerous eponymous units indicating the names of such places and structures based on anthroponyms, which reflect cognitive information about religious beliefs, places of worship (mosque, house, church), the position of priests and religious scholars, holy places, historical figures, for example: Abdulaziz Khan Madrasah, Bahauddin Naqshband Complex, Abdullah Khan Timi, Nodirdevonbegi madrasa.

During the process of the provided research on eponyms of the Uzbek language in the sources of dictionaries and internet materials the following conclusions were made:

1. The scope of the anthrponym based eponyms is great like other languages;
2. Each eponym unit has its function in the culture of the area such as honoring and remembering;
3. Some eponyms are directly related to the proper name – highly motivational (*Hojimatov drink*), others are not directly linked to the name- low motivational(*Avicenna asteroid*).

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| | GIF (Australia) = 0.564 | ESJI (KZ) = 8.771 | IBI (India) = 4.260 |
| | JIF = 1.500 | SJIF (Morocco) = 7.184 | OAJI (USA) = 0.350 |

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Issue Article

**Dildora Khabibullayevna Yulchieva**
Research Institute "Mahalla va Oila"
Independent researcher
Republic of Uzbekistan

# WORK ON THE EFFECTIVE ORGANIZATION OF THE ACTIVITIES OF WOMEN ACTIVISTS IN COOPERATION WITH THE COMMUNITY AND FAMILIES

***Abstract**: The article outlines the work carried out in the country on the effective organization of women's activities in cooperation with communities and families, the maintenance of the "Women's Book" (special book for registering women with low income and unfavored social circumstances), because today's women activists work with women in our families providing moral education.*

***Key words**: family, neighborhood, women's activities, women entrepreneurs, women's committee, Women's Book.*

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## Introduction

The family is a social group of people connected by natural-biological unity of life and mutual responsibility based on marriage, kinship, economic, legal, spiritual relations. It has basic functions such as social, economic, demographic. For all the peoples of the world, the essence and functions of the family look the same. However, the social, economic, cultural, religious, national relations formed on the basis of society and period have their impact on each family as a way of life, customs, religious beliefs, national values.

The term "mahalla" is Arabic and means "place." It is called mahallot (place), guzar, community, elat, elod in different regions. There is information in the literature that mahallas have a history of many thousands of years. For example, Narshakhi in his book "History of Bukhara" noted that Bukhara had several mahallas 1100 years ago. Alisher Navoi, in his work Hayrat ul-abror, describes the Mahalla as a "neighborhood within a city," noting that the city of Herat is made up of mahallas with the significance of a hundred towns. Neighborhoods flourished, especially during the reign of Amir Temur. Neighborhoods are formed on the basis of the professionalism of citizens and are named accordingly.

President of Uzbekistan Shavkat Mirziyoyev chaired a video conference on March 1 this year on the system of support for women and further strengthening their position in society.

In the history of our people, along with the great scholars, our great ancestors, there were many noble women who gave birth to such people, brought them up and inspired them to great deeds. Today, our women are still dedicated to the upbringing of children, in various fields and neighborhoods. A number of laws, decrees and resolutions have been passed in recent years to alleviate their burdens and ensure their rights and interests.

In 2021, 2 trillion soums of loans and subsidies have been allocated for more than 200,000 projects under women's entrepreneurship programs, and 320,000 women have found permanent jobs. 190,000 women were trained. More than 4,000 women have been allocated the initial cost of housing. 2,000 girls were admitted to higher education on the basis of a special grant. As a result, 60 percent of the students who entered higher education last year were women.

In general, starting from 2020, the system "Women's Book" was launched, which provided socio-economic, medical, legal and psychological assistance to about 900,000 women. The next topical issues in this regard were discussed at the meeting. Currently, the Women's Book lists more than 630,000 women, 200,000 of whom are unemployed. Cases of crime, domestic violence and oppression among women, unfortunately, still exist.

The head of our state said that the role and influence of mahalla activists, the public and the luminaries in solving these problems is not felt.

- Both our prosperous life today and our bright future depend on women. If we want our people to be pleased with us, first of all, we must create decent living conditions for our mothers and sisters. If the mother agrees, the family agrees, if the family agrees, the society agrees, - said Shavkat Mirziyoyev.

This goal is identified as one of the most important directions in the development strategy of our country. The Presidential Decree on the establishment of the State Committee on Family and Women was adopted to implement this goal in a systematic way, in each mahalla. The heads of regional, district and city departments of the Committee are the deputy governors. The committee supports the Women's Support Fund and the Women's Book Fund. The positions of 9,309 mahalla chairmen for women and family chairmen of the country will also be transferred to the committee system, and the position of a women's activist will be re-introduced in each mahalla.

– Now every mahalla will have a system, addressing each woman's pain. There will be a fair data on my desk on what a woman needs: to study, receive medical treatment and raise her children - the head of state said.

It is known that women's issues were in the system of the Ministry of Mahalla and Family Support. Due to the creation of a separate committee, this ministry was also reorganized as the Ministry of Mahalla and Nurani Support. It is planned to create a new system in this area as well. In places, this task is directly assigned to the governors, the post of deputy governor is reduced. The mahalla chairman ensures that the assistant governor, youth leader and women's activist work together in their area.

In order to protect the rights of women, to ensure their full participation in the political, social, economic and cultural life of the country, to improve the spiritual and intellectual level of women and youth are the main tasks of the Women's Committee of Uzbekistan, as well as to critically assess the work being done to increase the social and political activity of girls, their role in the family, society and state building, and to raise them to the level of democratic reforms and innovations in our country. There is a special issue in the whole enlightened world called the interest of women, and it is no coincidence that great attention is paid to its study and finding a solution. If women are not given enough attention, there is no need to talk at length about the future of such a society. Of course, in order to achieve such aspirations, the state, the state system and the government must contribute to raising the level of implementation of women's rights and interests to the level of public policy. As Muslim children, we all follow the traditions associated with this religion. That is undoubted truth. Therefore, it is true that these traditions are fully observed among the women of the mahallas. It is impossible not to see and feel it. Therefore, it is necessary to include such women in the mahalla administration, to strengthen the work of local khokimiyats, mahalla and women's committees, and religious organizations by providing them with the necessary assistance and support. Activating the role of women can be a process that is encouraged from the outside in order to increase the independence of women, to create conditions for achieving equality of choice in practice. This requires the development and implementation of special programs and projects by the state and society, taking into account the impact of socio-economic policies of the state on the situation of women in society, ie the government's protection policy against women. The effectiveness of such policy measures will increase if the status of women in the household and society, as well as the economic, legal and social environment, is taken into account. Women's activism requires women to be spiritually active, productive, based on a specific goal, action to achieve it, and most importantly, to mobilize her physical and mental strength. There are many forms of human activity, they will be irrigated with faith, ability, talent, confidence. Activity in social and spiritual life implies that a person (women) works diligently and efficiently in all spheres of society.

The social environment encompasses existing customs, traditions, psyche, religious beliefs, and so on. It is obvious that the effectiveness of policies and measures in the field of gender relations requires the study of economic, legal and other aspects of gender relations in society. This, in theory, makes it possible to protect the interests of women at all levels of government. Preparing women for leadership roles is one of the areas included in the work program of the Women's Committee of the Republic of Uzbekistan. At present, there are women's non-governmental women's organizations in Uzbekistan. This indicates the emergence of new buds of social relations and the emergence of the women's movement. At the same time, it should be noted that the women's movement in Uzbekistan also faces certain problems. They are primarily related to the peculiarities of the mentality in which patriarchal values predominate, which are inherent in the notion that the role of the woman is secondary. All oral and written opinions about women show that she is perceived as a complement to a man, a performer of some kind. Therefore, today's women

are required to fulfill the main tasks of educating young people on an equal footing with men. The need for raising children facing global social problems requires special attention from parents, mahallas and our society.

The Resolution of the President of the Republic of Uzbekistan dated July 28, 2017 No. PP 3160 "On increasing the effectiveness of spiritual and educational work and raising the development of the industry to a new level" states: Globalization is intensifying in the world today, and new threats and dangers to peace and stability are growing. Such a complex and dangerous situation requires a critical assessment of the work done in the field and the improvement of its activities in line with modern requirements. In particular, the upbringing of young people in families, neighborhoods and educational institutions, the superficial conduct of targeted ideological and educational work with unorganized youth in remote areas and neighborhoods, misguidance of crime, religious extremism and terrorism, disregard for national values, early marriage, family divorce. The fact that advocacy efforts to prevent negative events often do not yield the expected results requires serious attention to these issues. Today, there is a need to develop a scientific-practical guideline aimed at organizing systematic work with women in need of social and spiritual support. In particular, the alien ideological influences faced by the mahallas, their socio-pedagogical, scientific, theoretical and practical study, the organization of ideological propaganda in the mahallas are more relevant than ever. To this end, increase the socio-political and social activity of women in our country, create conditions for them to realize their potential in various fields and sectors, ensure unconditional observance of their rights and legitimate interests, comprehensive support for motherhood and childhood, as well as extensive work is being done to strengthen the institution of the family.

Given that the development of social activity of young people in society is a requirement of the time, this article discusses the psychological and pedagogical aspects of increasing the social activity of female students on the basis of a gender approach.

To women - the practice of traditionally treating them as mothers and wives has begun to prevail at all levels. Such practices have had a significant impact on the choice of women, especially rural women. Even today, discriminatory views, customs, and beliefs are sometimes encountered. Today, the level of legal culture of the population is growing. The fact that educated women do not know their rights or how to exercise them exacerbates the situation. Positive work is being done in our country to eliminate the shortcomings in this area, to transform women into new, equal creators of civil society based on democratic principles. The concept of gender as a category of socio-economic analysis is a novelty for the CIS region. Currently, in Russia, Kazakhstan, Kyrgyzstan, Ukraine and other republics, work is underway to increase the social activity of university students on the basis of gender studies. Research on the theory and practice of development of social activity of female students in higher educational institutions of the Republic on the basis of gender approach will help to shape the social activity of future professionals on the basis of the latest analytical achievements in the world. In this regard, research on the gender approach will help to train women students with a well-developed, broad outlook on a professional basis and to use them to the fullest to increase the spiritual and material well-being of our society. In the history of pedagogy, the formation of women's social activity in society has formed the basis of the scientific directions of our scholars, such as Eastern thinkers Abu Nasr Farobi, Alisher Navoi, Abdulla Avloni, Elbek (Mashriq Yunusov). In modern conditions, research work on the formation of women's social activity in society is carried out in philosophical, social, psychological and economic areas. In the scientific researches of pedagogical scientists M.Kuronov, S.Nishonova, O.Musurmonova, N.Egamberdieva, E.Turdikulov, A.Zunnunov, S.Ochil, J.Hasanbaev, U.Makhamov, R. Safarova paid attention to some features of the formation of the social activity of women in the society.

In our independent republic, social protection is one of the main principles, the state guarantees the protection of family, motherhood and childhood, the creation of the necessary conditions for their full development and well-being, financial support for the disabled, orphans, low-income families and the elderly. -strengthening is an example of compassion that has risen to the level of public policy. During the years of independence, the adoption of the laws "On state pensions", "On social protection of the disabled in the Republic of Uzbekistan", "On public health", "On additional benefits for women" and a number of other laws on family, motherhood and childhood in general has played an important role in the legal protection of the interests of citizens, in supporting families in need. As A. Mukhsieva noted, “The family is built on the basis of legal and moral principles, the foundations of democratic upbringing are laid. In the family environment, the spiritual and moral needs of new generations are determined, family traditions and values are formed.” During the period of independence, a radically new reliable social guarantees of social assistance and a differentiated system of social support have been formed.

The results of the study show that today young women activists do not have enough knowledge on the application of modern management methods in the leadership, they do not have enough courage to mobilize for new successes in community and family

cooperation through innovation and management efficiency. their inability to address them in a timely manner is also leading to an increase in the problems of women today. In order to eliminate these shortcomings, the State Women's Committee was established in our country to appoint women activists and further enrich the human resources.

In particular:

1) Given the lack of women in the leadership of young women activists, it is recommended that the authorities, state and public associations pay special attention to the selection and training of young leaders from among women;

2) Proper formation of values in the leadership of young women activists, in particular, the importance of values such as high morality, compromise, tolerance, objectivity in modern management, retraining and training of young promising women This knowledge should also be included in the content of lessons in enhanced curricula.

Only then, in cooperation with the community and our families, will the activities of women activists be effectively organized and will be able to contribute to solving today's family problems.

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Issue Article

**Rita Zaxidovna Matmuratova**
Nukus State Pedagogical Institute
Teacher of the department of distance education
of social and humanitarian sciences

# THE ESSENCE OF THE THEATER OF YOUNG AUDIENCES IN THE DEVELOPMENT OF PRESCHOOL CHILDREN'S INTEREST IN KARAKALPAK DRAMA

***Abstract***: *The importance of interactive methods for achieving effective result in teaching children's drama to young children in preschool organizations is great. In our article, we tried to study the issue of skill formation in young children about the comedy «Togız tonqıldaq, bir shinkildek» using the cluster method.*

***Key words***: *young spectator theater, puppet theater, children's drama, comedy, dramatization, actor.*

***Language***: *English*

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## Introduction

Undoubtedly, all the beautiful literary and artistic works have an educational value in the education and upbringing of young children. Therefore, in the physical and spiritual development of young children, each child has a role to play. Riddles make it difficult for children to learn to say letters, but puzzles ensure the development of intelligence. If children develop the ability to memorize and remember proverbs, sayings, and phrases, then teaching fairy tales has a direct impact on the expansion of their worldview, the formation of their ability to think and think. Children's drama plays an important role among these problems. The reason why we mention this area to you is that its dramaturgy has its own power of influence**.** Any dramatic work of art is staged and presented to the audience with live action. There is a significant gap between the process of reading a work of art in a book or on social networks, or watching it on television, and watching live action on the stage of a classroom. Each movement and sound of young children is quickly accepted in their minds and skills are formed. Children's going to the classroom and watching the actions being performed arouses their various emotional feelings (joy, sadness, pity, laughter, etc.), and through that dramatic work of art, good and bad, decency and rudeness, wit and the basis for understanding the meaning of a number of aesthetic feelings, such as stupidity, truth and falsehood. Taking into account the important aspects of dramaturgy, we believe that it is necessary to pay a lot of attention to teaching and teaching children's dramaturgy to the pupils of preschool educational institutions.

Before the younger children are taken to the Theater of Young Spectators, the children are given a brief introduction to the play being staged. For example, if we want to take children to K. Rakhmanov's comedy "Togiz tonqildaq, bir shinkildek" [1], the coach should give the children general concepts based on the main plot of this work. This comedy by K. Rakhmanov was written based on the plot of a Karakalpak folk tale called "Togiz tonqildak, bir shinkildek". The individual characteristics of the author are visible in the comedy. For example, teaching people to be good and hardworking, that evil does not go unpunished, and the consequences of those who look at the light side of life can be seen. The ending of the comedy with a good ending, with the reconciliation of the nine elves and the one vassal, is different from the plot of the fairy tale. Including episodes such as the nine children, and the death of their mothers in the meantime, were not included in the comedy. Along

with telling children about the story of the work and characters, it is necessary to introduce children to the concepts of good and evil, trickery, deception, and slander in comedy. When you go to the theater, you will be informed about the etiquette of sitting in the theater. After the children have finished watching the drama, in the next lesson they will be asked about their understanding of the work of art. It is appropriate for the educator to use the Cluster method to identify these concepts.

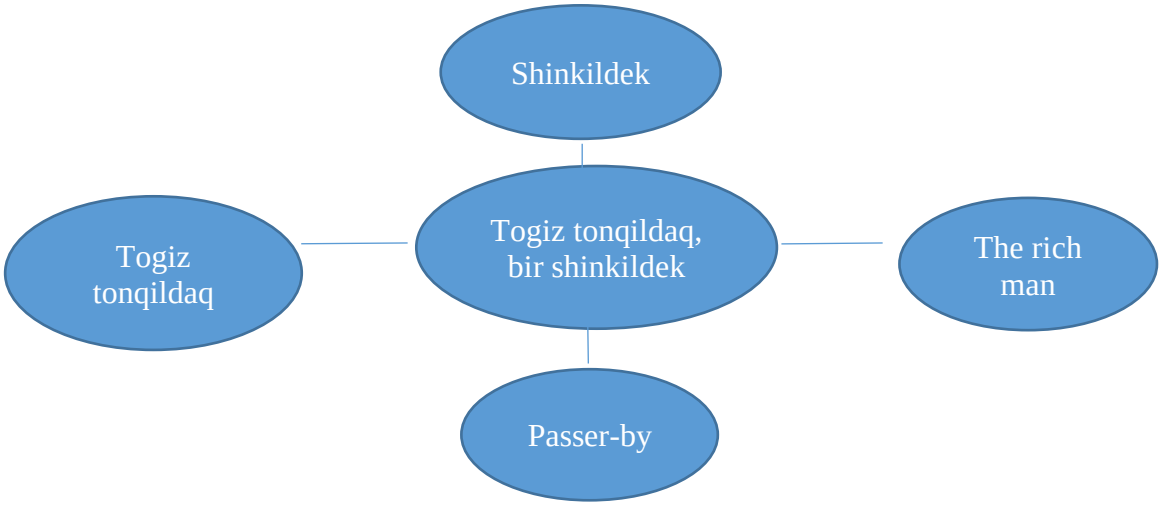
The concept of cluster was first introduced into scientific practice in the 19th century by the German economist Johann Heinrich von Tuenen and his student W. Launhard and A. Weber. Then, B. Lundvall and B. Jonson proposed the concept of "blocks of development" related to the cluster theory and determined that industry and production unions, the process of continuous training of the entire country's population, are the source of national economic development [2]. Cluster is an English word meaning "head, one cluster". It divides the text into units and places the main concept that connects them in the main center. This method helps young children to study a single topic in depth, and teaches them to freely and clearly divide a specific idea related to the topic into networks connected to each other with a sequence. In this case, it can serve to accelerate and expand the thinking of young children before the in-depth study of the comedy "Togiz tonqildaq, bir shinkildek". Including, it teaches young children to develop, consolidate, generalize and show their thoughts on that topic in the form of a drawing.

In the cluster method, a fairy-tale-drama-related dream is written in the middle. Words related to that concept are written on the grids.

**The purpose of the method**: to develop the skills of working together on a given task in young children. To develop learning skills, to develop the skills of gathering information, to help strengthen the knowledge of young children in a free and sequential manner.

**Instruments:** For each group, you can get stickers of different shapes, batman paper or two pages of paper. Markers or ordinary pens can be used.

**Process**: children are divided into groups. Groups will receive the necessary tools (a poster or two pages of paper). Tasks are given to the groups: The groups draw the picture highlighted in the picture.




**Pic.1.**

The desired word is written in the middle of the picture, and the information related to this word is written in the circle.

Application of this method in pre-school education organizations helps young children to think freely and clearly about a specific topic.

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Issue Article

**Gulzoda Shukurjonova**
Chonnam National University
Graduate student of Diaspora Department

# FACTORS OF CONTRIBUTING TO THE RISE IN INTERNATIONAL AND GLOBAL MIGRANT CASES

***Abstract**: In the modern world, the majority of countries are aimed at attracting qualified specialists, which allows women who have education and have competencies in their professional field, when looking for work abroad, they are able to get a job in their specialty. The gender theory of migration identifies independent labor migration of women as the main one.*

***Key words**: The international labor market, female labor migration, genital theory of migration, cross-cultural and social adaptation of staff.*

***Language**: English*

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***Scopus ASCC**: 3300.*

## Introduction

In the second half of the XX century. Humanity has become a witness to the insurmountable and irreversible power of globalization processes, which one way or another covered all spheres of public life and create a global system of mutual dependence of the countries and peoples of the world.

Globalization processes in combination with rapid changes in global political and economic systems contributed to a sharp inconsistent of world migration flows, led to the formation of a rewarding new migration situation in the world, the most important characteristic blacks are[1]:

• unprecedented expansion of the scope and geography of international miracle;

• transformation of the structure of international migration flows;

• the decisive importance of economic and, above all, labor migration;

• Curly growth and structural "insurmount" of illegal immigration;

• growth in scale and expansion of the geography of forced migrations;

• increase in the significance of the international migration of the population in the demographic development of the modern world;

• dual nature of modern migration policy.

## MATERIALS AND METHODS

Already only the scale of international migration makes it possible to talk about it as a phenomenon of global significance. According to the UN population, in 2019, there were more than 190 million "classic" international migrants (that is, people living in the countries where they were born) were almost 61 % of them in developed countries (see Table 1). Otherwise, at present, one of every 35 inhabitants of the globe is a "class" international migrant, while in developed countries, every tenth resident is an international migrant, while in developing countries- only every 70-th resident.

## RESULTS AND DISCUSSION

We note that these figures do not include illegal migrants, the number of which, according to various estimates, is from 20 to 35 million people,

[1] Abdurazakova N. G. Gender and migration: (to the formulation of the problem) // Bulletin of the Chuvash University. 2017. No. 3. P. 326-330.

international tourists, whose number in 2020 exceeded 900 million people, as well as long-term, seasonal, pendulum and episodic migrants . In fact, if we talk about all categories of the population, in one form or another involved in international migration flows, then, in essence, every sixth resident of the globe is an international migrant!

**Table 1. The number of international migrants, 1960–2019.**

| | The number of international migrants, million people | | | | | |
|---|---|---|---|---|---|---|
| | 1960 | 1970 | 1980 | 1990 | 2000 | 2019 |
| The world as a whole | 75,46 | 81,34 | 99,28 | 154,95 | 176,74 | 190,63 |
| Developed regions | 32,31 | 38,36 | 47,46 | 82,37 | 105,00 | 115,40 |
| Developing regions | 43,15 | 42,97 | 51,82 | 72,58 | 71,73 | 75,24 |
| Europe | 14,24 | 18,79 | 21,89 | 49,38 | 58,22 | 64,12 |
| Africa | 9,13 | 9,94 | 14,10 | 16,35 | 16,50 | 17,07 |
| Asia | 28,48 | 27,82 | 32,11 | 49,89 | 50,30 | 53,29 |
| Latin America and the Caribbean | 6,01 | 5,68 | 6,08 | 6,98 | 6,28 | 6,63 |
| North America | 12,51 | 12,99 | 18,09 | 27,60 | 40,39 | 44,49 |
| Australia and Oceania | 2,13 | 3,03 | 3,75 | 4,75 | 5,05 | 5,03 |

***Source**: Trends in Total Migrant Stock: The 2019 Revision. Интернет-источ- ник. Режим доступа: http://esa.un.org/migration*

The indicator of the growth of international migration is also an increase in the share of international migrants in the population of the host countries. Despite the fact that in the world context, the share of international migrants in the total population increased slightly (from 2.5 % in 1960 to 3.0 % in 2019), changes at the level of individual countries were much more significant. So, if in 1960 only in 27 countries of the world the share of migrants in the population exceeded 10 %, then in 2019 there were already 502 such countries.

The regional features of the international migration of the population deserve undoubted attention. Despite the fact that most international migrants come from developing countries, modern migration are not just a movement "from south to north" or "from east to west"; About a third of legal international migrants move from one developing country to another and the same share moves from developing to developed countries. In other words, the number of migrants who are stomping from the south to the south approximately balances the number of migrants moving from the South to the North.

**Table 2. Regional structure of international migration, 1960–2019.**

| | 1960 | 1970 | 1980 | 1990 | 1995 | 2000 | 2019 |
|---|---|---|---|---|---|---|---|
| World at large | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 |
| Developed regions | 42,8 | 47,2 | 47,8 | 53,2 | 57,5 | 59,4 | 60,5 |
| Developing regions | 57,2 | 52,8 | 52,2 | 46,8 | 42,5 | 40,6 | 39,5 |
| Europe | 18,9 | 23,1 | 22,1 | 31,9 | 33,5 | 32,9 | 33,6 |
| Africa | 12,1 | 12,2 | 14,2 | 10,6 | 10,9 | 9,3 | 9,0 |
| Asia | 37,7 | 34,2 | 32,4 | 32,2 | 28,6 | 28,5 | 28,0 |
| Latin America and the Caribbean | 8,0 | 7,0 | 6,1 | 4,5 | 3,7 | 3,6 | 3,5 |
| North America | 16,6 | 16,0 | 18,2 | 17,8 | 20,3 | 22,9 | 23,9 |
| Australia and Oceania | 2,8 | 3,7 | 3,8 | 3,1 | 3,1 | 2,9 | 2,6 |

***Source**: United Nations. Trends in Total Migrant Stock: The 2019 Revision. Интер- нет-источник. Режим доступа: http://esa.un.org/migration*

Over the past 50 years, significant changes have occurred in the regional diversion of international migrants. If in 1960 most of the international migrants (57.2 %) were in developing regions, then at present more than 60 % of international migrants falls on developed regions of the world. Currently, the region with the greatest number of international migrants is Europe (more than 64 million people in 2019), followed by Asia (53.3 million people), North America (44.5 million people) and Africa (17 , 1 million people).

Thus, international migration flows have turned into a global phenomenon that has an impact on all aspects of the life of the global society.

At the present stage of development, three levels of migration policy can be distinguished: international, regional and national. At the same time, the dual nature of the migration policy is clearly manifested at all three levels: both on the international (as a result of the contradictions between the interests of interior organizations and the national interests of individual states), and on the regional and interstate (as the existence of counteracting tendencies of liberalization of migration regimes Inside the integration regional unions and the tightening of their migration policy in relation to the citizens of the third that are not included in this association), and at the national level (as a contradiction between demographic and economic interests, on the one hand, and considerations of political and social safe-style-on the other)[2].

Labor migration gives women the opportunity to secure a higher standard of living for themselves and her family, change housing to more comfortable, give good education to children, which was confirmed by 91.0 % of migrated women surveyed.

High wages, the ability to undergo training and improve their qualifications, career prospects, obtaining professional experience, an attractive compensation package - these are the main driving motives for the search for work for women in the international labor market. When employing in a foreign company, in addition to material motivation by women, the desire for professional growth, self-realization, the desire to occupy a prestigious position in a promising organization.

The statistics of international labor migration shows that, despite the decent wages, a good compensation package, from 20.0 to 40.0 % of migrants coming to work from another country, return home during the first year of work. For companies, this means that all investments will be lost, and for migrants - disappointment and unfulfilled hopes.

A poll of migrants who returned to their homeland shows that the main reason for returning is an inability to adapt in a new cultural environment. Sticking up to work in a foreign company, women face the main types of adaptation: cross-cultural, social and professional. According to the majority, the most difficult are cross-cultural and social adaptations.

There are three main stages of adaptation in the new cultural environment of the employee who came to work[3]:

1) He or she likes everything, interestingly, he wanted this for a long time and is happy to take work;

2) inspiration passes, a cultural shock arises. The survey shows that this stage begins 3-4 months after arriving in the country and labor and lasts from 3 to 6 months. It is during this period that disappears. A person does not understand his/her new situation, feels lost, asks himself/herself: “Why did I do this?”, “Why am I here?”;

3) If the second stage is successful, then an ordinary life begins: he/she safely integrates into society- “gets used”, starting to enjoy both from work and from living in a new country. If the stage of cultural shock is delayed, the employee comes to the conclusion that “everything is terrible”, he/she does not like working in this company and life in the new country. In this case, he returns to his/her homeland.

**CONCLUSION**

The main measures of cross-cultural adaptation, which are currently used, are the following:

- trainings for employees, during which a complete income about the country is provided (features of residence, communication, culture, etc.);
- trainings for family members of a new employee;
- additional courses of intensive study of the country's language of the country, where emphasis is on professional vocabulary;
- Preliminary introductory visits to the country.

In a package of support measures of social adaptation, such benefits are most often included::

- help in hiring housing;
- compensation for costs associated with the move of the family;
- Ensuring the education of children.

An analysis of current trends shows that the higher the level of the treatment of women-migrants, the more often they take all children with them, and this is what accelerates the process of socialization in the new country. According to sociological surveillance, the migrants who are moving with children are much higher in the local society: it is carried out not only through labor activities, but including through children, their school or kindergarten life, visits to children's institutions.

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**Impact Factor:**

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|---|---|---|---|---|---|
| **ISRA** (India) | = **6.317** | **SIS** (USA) | = **0.912** | **ICV** (Poland) | = **6.630** |
| **ISI** (Dubai, UAE) | = **1.582** | **РИНЦ** (Russia) | = **3.939** | **PIF** (India) | = **1.940** |
| **GIF** (Australia) | = **0.564** | **ESJI** (KZ) | = **8.771** | **IBI** (India) | = **4.260** |
| **JIF** | = **1.500** | **SJIF** (Morocco) | = **7.184** | **OAJI** (USA) | = **0.350** |

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**Taufiqurrahman**
University of Riau
Jl. Binawidya Km 12.5, 28291,
Pekanbaru Riau, Indonesia
Faculty of Economics and Business

**Aryo Pernando AZ**
University of Riau
Jl. Binawidya Km 12.5, 28291,
Pekanbaru Riau, Indonesia
Faculty of Economics and Business

# THE EFFECT OF DISCOUNT PRICING AND BONUS PACK ON POSITIVE EMOTION AND IMPULSE BUYING OF INDOMARET CUSTOMERS IN PEKANBARU

***Abstract***: *This study aims to investigate the effect of Discount Pricing (X1) and Bonus Pack (X2) on Positive Emotion (Y1) and Impulse Buying (Y2) Indomaret Customers in Pekanbaru. The population of this study was Indomaret Customers in Pekanbaru that is unknownin numbers, and the samples were 120 peoplebased on Hair formula. Structural Equation Model (SEM) with SmartPLS version 3.2.8 was used to analyze the data. The results shown that: 1) discount pricing had a positive and significant effect on positive emotion; 2) bonus pack had a positive and significant effect on positive emotion; 3) discount pricing had a positive and significant effect on impulse buying; 4) bonus pack had a positive and significant effect on impulse buying; 5) positive emotion had a positive and significant effect on impulse buying; 6) discount pricing had a positive and significant effect on impulse buying through positive emotion; 7) bonus pack had a positive and significant effect on impulse buying through positive emotion.*

***Key words***: *Discount Pricing, Bonus Pack, Positive Emotion, Impulse Buying.*

***Language***: *English*

***Citation***: Taufiqurrahman, & AZ, A. P. (2022). The Effect of Discount Pricing and Bonus Pack on Positive Emotion and Impulse Buying of Indomaret Customers in Pekanbaru. *ISJ Theoretical & Applied Science, 09 (113),* 61- 69.

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***Scopus ASCC***: *2000.*

## Introduction

Red The business world in Indonesia is developing rapidly, which fuels an intensifying level of competitiveness. The retail industry is one of the developments. The retail business possibility is growing extremely quickly due to the ever-increasing necessities of people's life and the increasingly contemporary and advanced times that follow.

According to the 2018 Global Retail Development Index (GRDI) issued by the A.T. Kearney survey agency, Indonesia is in the top 10 most attractive countries in the retail industry sector. Indonesia is on the 8thrank out of 30 developing countries in the world. This is supported by information submitted by the Indonesian Retail Company Association (Aprindo) that the growth of the retail business in Indonesia in 2018 reached 15%, much different from the last three years which grew only 7%. However, during 2020, retail growth continued to decline. This happened due to the decline in people's purchasing power due to the Covid-19 pandemic that hit in December 2019. Based on the Real Sales Index (RSI), December 2020 was the worst period because retail sales decreased by -

20.7% compared to the same period the previous year (year-on-year).

This phenomenon is driving a growing number of businesses to build marketing plans that can draw customers in by offering the finest service possible to fulfill their demands.

One of the retail companies in Indonesia is Indomaret Group or also known as PT Indomarco Prismatama. Indomaret is a minimarket network that provides basic needs and daily needs with a sales area of less than 200 m2. Indomaret as one of the franchise businesses in Indonesia continues to strive to develop its business, one of which is by examining the distinctive characters possessed by Indonesian customers. The distinctive character in this case is consumer behavior which has its own characteristics compared to most other customers. According to Irawan in Sabilla (2018), Indonesian customers have ten unique characters, namely short-term thinking, unplanned, technological stutter, context orientation, likes foreign brands, religious, prestige, strong in subculture, less concerned about the environment, and likes to socialize. As a result, the majority of Indonesian customers have a spontaneous character and like to act at the last minute, which frequently leads to impulsive buying.

One indicator of the success of a retail can be seen from sales that continue to increase. Unplanned purchases (impulse buying) made by customers are the biggest factor in influencing sales volume in retail businesses. This is supported by the results of the Point-of-Puschase Advertising Institute (POPAI) research which shows that 75% of purchasing decisions are made while in the store, which is done unplanned.

However, impulse buying as a purchase that overrides rationality and is associated with quick and unplanned buying often causes conflicts of mind and strong emotional impulses. These emotional impulses are related to intense feelings, indicated by making purchases because of the urge to buy the product immediately or in a hurry, ignoring negative consequences, feeling dissatisfied, and experiencing conflicts in thinking that cause regret after making an unplanned purchase.

Other factors that also affect impulse buying according to Kotler and Keller (2012) are discount pricings and bonus packages. Discount pricingis a form of promotion by giving a discount on a product for a certain period. According to Kotler (2012), discounts are seen as beneficial in promotional methods since, logically, customers believe that with discounts, they would be able to make more purchases with less money. This is what encourages customers to make impulse purchases.

Indomaret usually gives discounts on certain products every month in order to attract customers to visit their stores. However, giving a discount pricingis often considered a problem because customers feel disadvantaged by this system.

Another factor that also affects impulse buying is bonus pack. According to Shimp (2012), bonus pack is a strategy that is applied by giving a small note to the product in the form of "buy 1 get 1" or "buy 2 get 1" so that customers will indirectly be interested in making purchases, especially impulse purchases. However, the provision of bonus packs is also often complained of by Indomaret customers because it is not considered to provide benefits and some can even harm customers.

An initial survey on 30 Indomaret customers in Pekanbaru done by the authors reported that there are still some respondents who answered disagree with the statement submitted. On the positive emotion variable, the majority of the respondents are not satisfied with the service of Indomaret employees. Furthermore, in the discount pricing variable, many customers think that Indomaret rarely gives discounts on the products. Also, discounts are only given to certain or limited products. Meanwhile, in the bonus pack variable, customers also complained about the infrequent giving of bonuses by Indomaret to its customers.

Based on the problems that have been described previously, the authors are interested in conducting a research study entitled "The Effect of discount pricing and bonus pack on positive emotion and impulse buying of Indomaret Constumers in Pekanbaru."

Based on the description on the background, the authors determine the limitations of the problem to be discussed as follows: 1) Is there an effect of discount pricingon the positive emotion Indomaret Customers in Pekanbaru? 2) How is the effect of the bonus pack on the positive emotion Indomaret Customers in Pekanbaru? 3) How is the effect of discount pricingon impulse buying Indomaret Customers in Pekanbaru? 4) How is the effect ofbonus pack on impulsebuying Indomaret customers in Pekanbaru? 5) How is the effect of positive emotion to impulsebuying Indomaret Customers in Pekanbaru? 6) How is the effect of discount pricing on impulsebuying throughpositive emotion of Indomaret customers in Pekanbaru? 7) How is the effect of bonus pack on impulse buying thorugh positive emotion Indomaret Customers in Pekanbaru?

Meanwhile, the purpose of this study is to investigate the effect of: 1) discount pricingon the positive emotion Indomaret Customers in Pekanbaru. 2) bonus pack on positive emotion Indomaret Customers in Pekanbaru. 3) discount pricing on impulse buying Indomaret Customers in Pekanbaru. 4) bonus pack on impulse buying Indomaret Customers in Pekanbaru. 5) positive emotion to impulse buying Indomaret Customers in Pekanbaru. 6) discount pricingon impulse buying through positive emotion Indomaret Customers in Pekanbaru. 7) bonus pack on impulse buying through positive emotion Indomaret Customers in Pekanbaru.

**Literature Review**

**Impulse Buying**

Impulse buying or unplanned purchase is an act of buying that is not planned in advance and occurs as a result of the stimuli received, and this action is immediately decided on the spot. Mowen and Minor (2012) define impulse buying as an act of buying that is done without having the intentionto buy before entering the store.

Meanwhile, according to Schiffman and Kanuk (2012), impulse buying is an emotional decision or according to impulse. Emotions can be very strong and sometimes serve as the basis for the dominant motive for making a purchase. Meanwhile, Utami (2012) defines impulse buying as a purchase that occurs when customers see certain products or brands due to attractive stimuli so as to increase interest in making purchases.

Another definition was given by Sutisna (2012) thatimpulse buying is a purchase that occurs when customers make sudden purchasing decisions. The urge to make a purchase is so strong that customers no longer think rationally in their purchases.

Based on some of the opinions above, it can be concluded that impulse buying is a buying decision taken by customers because of emotional impulses and attractive stimuli so that customers no longer think rationally in making purchases.

According to Aprilliani (2017), the impulse buying variable is measured by using the following indicators: 1) Spontaneity of purchases; 2) Purchasing products recommended by employees or cashiers; 3) Ignoring consequences; 4) Purchasing any new products; 5) Buying something that looks good; 6) Buying because of an attractive offer.

**Positive Emotion**

Positive emotions are emotions that are able to bring positive feelings to people who experience them.Positive emotions can arise from factors such as anticipation of one's mood, the propensity of one's emotive nature, and responses to a supportive environment such interest in products, services offered to customers, or as a result of sales promotions.

According to Seligman (2011), positive emotions are feelings of pleasure, joy, happiness, hope, love, and peacewhich are part of positive emotions. Customers with positive emotions show a greater urge to make impulse purchases because they have feelings that are not limited by the surrounding environment.

The definition of positive emotion according to Kim and Young (2012) is feelings of enthusiasm and happiness felt by a person, so that it can influence his decision to shop. Meanwhile, according to Saputro (2019), positive emotion is a positive evaluation reaction from the nervous system to external or internal stimuli and is often conceptualized as a general dimension. customers who are experiencing or have positive emotions tend to make impulse purchases. However, if a consumer is experiencing or has negative emotions, it is more likely to encourage customers not to be able to make unplanned purchases.

Based on some of the expert opinions above, it can be concluded that positive emotion is an emotion that presents positive feelings towards people who experience it, so that it will cause feelings of happiness and can affect the actions to be taken.

According to Seligman (2011), positive emotion indicators are as follows: 1) Feeling comfortable when shopping; 2) Feeling comfortable with the store environment; 3) Feeling happy when shopping; 4) Feelings of pleasure because of the friendliness of employees; 5) Feeling satisfied with employee service; 6) Feeling satisfied after shopping.

**Discount Pricing**

Discount or discount pricing is one form of sales promotion that is often applied by marketers which is aimed at the final customers. Customers like discounts because customers get reduced losses from direct discount pricings on a product.According to Kotler (2012), discount pricingis the savings offered to customers from the normal price of a product, which is listed on the label or packaging of the product.

Meanwhile, according to Sutisna (2012), discount pricingis a reduction in the price of a product from the normal price within a certain period. Meanwhile, according to Sigit (2012), discount pricingis a reduction to the set price because the buyer meets the specified conditions. Tjiptono (2014) defines discount pricingas a discount given by the seller to the buyer as a reward for certain activities from the buyer that are pleasing to the seller.

Thus, it can be concluded that the discount pricingis a cut in the normal price so that the price offered is lower than usual.

Discount pricing variable is measured using the following indicators: 1) The amount of the discount; 2) Discounts due to the number of purchases; 3) The period of the discount; 4) Choice of discounted time; 5) Types of products that get discounted prices; 6) Discounts for special products.

**Bonus Pack**

Bonus pack is a form of offering of extra loads of a product at normal prices to customers. Kotler (2012) defines bonus packsas bonuses in packs that are sold at a reduced price. The bonus pack is included in one of the components in the sales promotion which is used to increase impulse buying purchases made by customers. The definition of bonus packs according to Harper (2012) is bonuses in packaging as an effort to attract purchases by offering free products or services at reduced prices to

encourage the purchase of other products.

According to Shimp (2012), bonus packs are additional products from the company to be given to customers at the same price. Meanwhile, Mishra (2014) stated the bonus pack is a quantity-based sales promotion strategy in which customers are offered more quantity of products at the same price.

Therefore, bonus pack is a sales promotion carried out by the company in offering additional products for free at normal prices and even prices that have been previously lowered to encourage customers to make purchases.

According to Mishra (2014), the indicators used to measure bonus packs are as follows: 1) Attractive prizes are given; 2) The quality of the prizes given; 3) Types of prizes given; 4) The gifts given are liked by customers; 5) Benefits of gifts given 6) Gifts given are needed by customers.

**Research Framework**

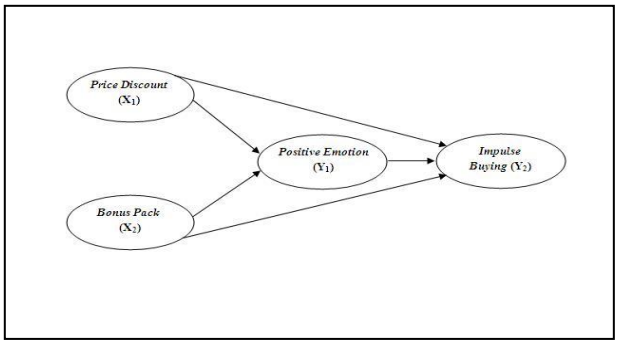


**Figure 1 - Research Framework**

*Source: Savira (2020); Larasati (2021); Suryana and Sari (2021).*

**Research Hypotesis**

Based The proposed hypothesis is as follows:

1. Discount pricinghas an effect on positive emotion.
2. Bonus pack effect has an on positive emotion.
3. Discount pricinghas an effect on impulse buying.
4. Bonus packhas an effect on impulse buying.
5. Positive emotion has an effect on impulse buying.
6. Discount pricing has an effect on impulse buying through Positive Emotion.
7. Bonus packhas an effect on impulse buying through positive emotion.

**Research Method**

**Research sites**

This research was conducted at Indomaret stores in Pekanbaru. This is because the number of Indomaret in Pakanbaru is more than other regencies/ cities in Riau Province.

**Population and Sample**

The population of this research study was Indomaret customers in Pekanbaru whose number is not known with certainty.

Meanwhile, the sample of this study was calculated using the Hair formula, then the total number of 120 respondents was obtained. Because the respondents of this research study are Indomaret customers throughout Pekanbaru, the cluster sampling technique was used for sampling.

**Data Analysis Method**

The data analysis method used is Structural Equation Modeling-Partial Least Square (SEM-PLS) using SmartPLS software version 3.2.8.

According to Abdillah and Jogiyanto (2015), SmartPLS is a reliable tool for testing predictive models because it is not based on various assumptions, can be used to predict models with a weak theoretical basis, and can be used on data that has problems with classical assumptions (such as data that is not normally distributed, multicollinearity problems, and heteroscedasticity phenomena), can be used for small sample sizes, and can be used for formative and reflective constructs.

Ghozali and Latan (2014) also explain that Smart PLS is a variant-based structural equation analysis that can simultaneously test the measurement model (outermodel) as well as testing the structural model (innermodels). The measurement model shows how the manifest variable or observed variable represents the latent variable to be measured. Meanwhile, the structural model shows the power of estimation between latent variables or constructs.

**Research Findings**

Evaluation of the Measurement Model (Outer Model)

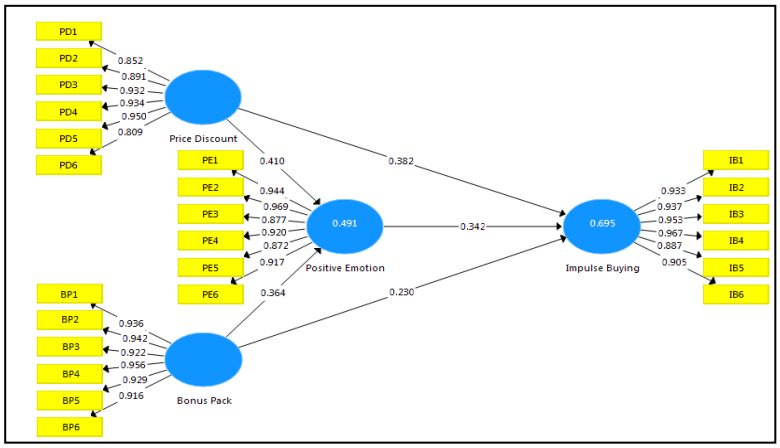


**Figure 2 - Measurement Model (Outer Model)**

*Source: SmartPLS Processed Data, 2022*

Based on Figure 2, it can be seen that:

1. The most dominant indicator in forming the discount pricing variable is PD5 with a value of 0.950. This shows that the type of product that gets a discount is a factor that really determines the effectiveness of the discount pricing program carried out by Indomaretbecause the more diverse the product that gets a discount, the more it will be able to influence customers to make a purchase.
2. BP4 is the most dominant indicator in forming the bonus pack variable, which is 0.956. This means that the bonuses (gifts) that are preferred by customers greatly affect the effectiveness of the bonus pack program to customers. If the bonus given is in accordance with the preferences of customers, it will be able to influence them to make a purchase.
3. PE2 is the most dominant indicator in forming the positive emotion variable with a value of 0.969. This shows that the convenience of the store environment greatly affects the feelings of customers when making purchases at Indomaret.
4. The most dominant indicator in forming the impulse buying variable is IB4 with a value of 0.967. This means that the new products sold by Indomaret are very influential in increasing the impulse buying decisions made by customers because of their curiosity and interest in trying new products that have never been tried before.

**Validity Test Results**

Based on the results of the validity test, the loading factor value > 0.7, AVE value > 0.5, AVE root > Latent variable correlation, and cross loading value > 0.7. Thus, it can be concluded that all indicators on each variable have met the validity test criteria, both convergent and discriminant.

**Reliability Test Results**

Cronbach's alpha value on all variables is greater than 0.60 and the entire composite reliability value on all variables is greater than 0.70. Thus, in this research model, all the variables used have met the reliability test requirements and further testing could be carried out.

**Evaluation of the Structural Model (Inner Model)**

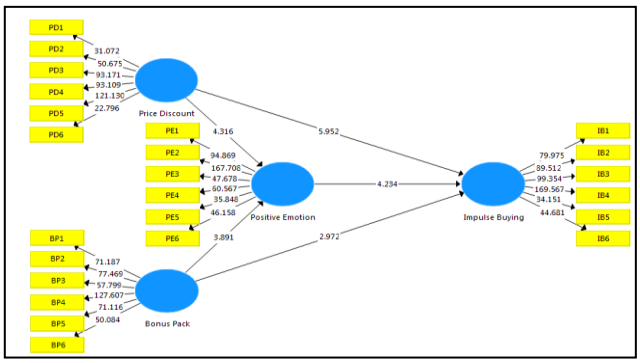


**Figure 3 - Structural Model (Inner Model)**

*Source: SmartPLS Processed Data, 2022*

Based on Figure 3, it can be seen that:

1. Discount pricingvariable is the PD5 value of 121.130. This means that the variety of types of products that receive discounts is a very important factor in increasing customers' positive emotions. This is because the better the consumer's emotions when shopping, the more motivated the consumer will be to immediately make a purchase without thinking.
2. Bonus pack variable namely BP4 of 127,607 showed that the bonuses (gifts) that are liked by customers are very influential in influencing the positive emotions that customers have so that they will cause feelings of pleasure when shopping and will ultimately increase spontaneous (unplanned) purchases by the customers.
3. Positive emotion variable is PE2 as much as 167.708. This reflects that the convenience of the store environment will affect the impulse purchases made by customers. A comfortable store environment will increase the pleasant feelings of customers so that they will make purchases spontaneously.
4. The greatest influence value on the impulse buying variable is IB4 of 169.567. This shows that the purchase of new products at Indomaret is influenced by the convenience of the store environment because it can increase customers' pleasant feelings when shopping. Furthermore, purchases of new products sold by Indomaret are also determined by the discounts and bonuses or gifts offered to customers.

**Hypothesis Testing Results**

**Table 1. Hypothesis Testing Results**

| Influence | Path Coefficients | T-Statistics | P-Values |
|---|---|---|---|
| discount pricing->Positive Emotion | 0.410 | 4,316 | **0.000** |
| Bonus Pack ->Positive Emotion | 0.364 | 3,891 | **0.000** |
| discount pricing->Impulse Buying | 0.382 | 5,952 | **0.000** |
| Bonus Pack ->Impulse Buying | 0.230 | 2,972 | **0.003** |
| Positive Emotion ->Impulse Buying | 0.342 | 4,234 | **0.000** |
| discount pricing->Positive Emotion ->Impulse Buying | 0.140 | 3,466 | **0.001** |
| Bonus Pack ->Positive Emotion ->Impulse Buying | 0.124 | 2,493 | **0.013** |

*Source: Processed data of SPSS Statistics21.0, 2022*

Based on the results of hypothesis testing in Table 1, it can be seen that:

1. The path coefficients value is 0.410 and the t-count value is 4.316 with a p-value of 0.000. These results indicate that the value of t-count (4.316) >t-table (1.96) or p-value (0.000) <0.05. A positive path coefficient value means that discount pricinghas a positive and significant effect on positive emotion Indomaret Customers in Pekanbaru. Thus, the first hypothesis of this study is accepted.
2. The path coefficients value obtained is 0.364 and the t-count value is 3.891 with a p-value of 0.000. These results indicate that t-count (3.891) >t-table (1.96) and p-value (0.000) <0.05. This shows that bonus pack has a positive and significant effect on Positive Emotion Indomaret Customers in Pekanbaru. Thus, the second hypothesis of this study is accepted.
3. The path coefficients value is 0.382 with a t-count value of 5.952 with a p-value of 0.000. These results indicate that t-count (5.952) >t-table (1.96) or p-value (0.000) <0.05. The path coefficient value is positive (0.382) which means that it is 0.05. A positive path coefficient value means that discount pricinghas a positive and significant effect on impulse buying Indomaret Customers in Pekanbaru. Thus, it can be concluded that the third hypothesis of this study is accepted.
4. The path coefficients value is 0.230 with a t-count value of 2.972 with a p -value of 0.003. These results indicate that t-count (2.972) >t-table (1.96) or p-value (0.003) <0.05. That is, the bonus pack has a positive and significant effect on impulse buying Indomaret Customers in Pekanbaru. Thus, it can be concluded that the fourth hypothesis of this study is accepted.
5. The path coefficients value obtained is 0.140 and the t-count value is 2.972 with a p-value of 0.000. These results indicate that t-count (2.972) >t-table (1.96) and p-value (0.000) <0.05. This result means that positive emotion has a positive and significant effect on impulse buying Indomaret Customers in Pekanbaru. Thus, it can be concluded that the fifth hypothesis of this study is accepted.

6. path coefficients value is 0.402 with a t-count of 3.466 with a p-value of 0.001. This shows that t-count (3.466) >t-table (1.96) or p-value (0.001) < 0.05. It shows that discount pricinghas a positive and significant effect on impulse buying through positive emotion Indomaret Customers in Pekanbaru. Thus, the sixth hypothesis of this study is accepted.
7. The path coefficients value obtained is 0.124 and the t-count value is 2.493 with a p-value of 0.013. These results indicate that t-count (2.493) >t-table (1.96) and p-value (0.013) <0.05. This means that the bonus pack has a positive and significant effect on impulse buying through positive emotion Indomaret Customers in Pekanbaru. Thus, the seventh hypothesis of this study is accepted.

**Discussion**

**The Effect of Discount Pricing on Positive Emotion**

Based on the tests that have been carried out, it shows that discount pricing has a positive and significant effect on positive emotion Indomaret Customers in Pekanbaru. That is, the better the implementation of the discount policy, the more positive customers' emotions when shopping.

These findings corroborate Saputro's (2019) study, which found that discount pricing significantly and favorably affects Yogyakarta minimarket customers' positive feelings. Suryana and Sari's research study in 2021 further demonstrates that discount pricing affects customers of Ace Hardware Sidoarjo's positive emotions.

**The Effect of Bonus Pack on Positive Emotion**

The results of this study indicate that bonus packhas a positive and significant effect on positive emotion Indomaret Customers in Pekanbaru. This shows that the more optimal the giving of bonuses or gifts to customers will increase positive emotions during shopping.

This result is in line with the opinion of Mowen and Minor (2012), one of the factors that can evoke positive consumer emotions is by giving bonuses or gifts as a strategy to promote the products being sold. This is usually done by companies to add new customers or to increase the number of purchases made by customers.

Furthermore, Savira's research (2020) shows that bonus pack has a positive and significant effect on emotional response to customers of Alfamart Kotalama Malang Branch.

**Effect of Discount Pricing on impulse buying**

Based on the research that has been done, the results obtained that the discount pricing has a positive and significant effect on impulse buying Indomaret Customers in Pekanbaru. That is, the more attractive the discount given, the more customers will make purchases spontaneously (unplanned).

These results are in accordance with research conducted by Aprilliani (2017) that discount pricing has a positive and significant effect on Impulse Buying on Matahari Department Store customers. Furthermore, Sabilla's research (2018) also shows that discount pricing has a positive and significant effect on Impulse Buying on Alfamart Dharmawangsa customers.

**The Effect of Bonus Pack on Impulse Buying**

According to the findings of the investigation, bonus packs have a favorable and considerable effect on Indomaret customers' impulsive purchases in Pekanbaru. In other words, the more effectively incentives or gifts are given to clients, the more likely it is that they would make impulsive purchases (unplanned).

These findings are in agreement with Sabilla's (2018) study, which found that honus packs significantly and favorably affect Alfamart Dharmawangsa customers' propensity for impulse purchases. Additionally, Alfamart Kotalama Malang Branch costumers' impulse purchases are positively and significantly impacted by the bonus pack, according to Savira's research (2020).

**The Effect of Positive Emotion on Impulse Buying**

The results of this study indicate that Positive Emotionhas a positive and significant effect on impulse buying on Indomaret customers in Pekanbaru. That is, the better the emotions or feelings of customers when shopping will increase the urge to make impulse purchases.

The results of this study support the research of Saputro (2019), Positive Emotion has a positive and significant influence on Impulse Buying on minimarket retail customers in Yogyakarta. Similar results were also shown by Suryana and Sari (2021) in their research study that positive emotion has a positive and significant effect on impulse buying on Ace Hardware Sidoarjo customers.

**The Effect of Discount Pricing on Impulse Buying Through Positive Emotion**

The results of this study indicate that the discount pricing positive and significant effect on Impulse Buying through Positive Emotion on Indomaret customers in Pekanbaru. This shows that positive emotion mediates the effect of discount pricingon impulse buying for Indomaret customers in Pekanbaru.

This result is in line with Suryana and Sari (2021), discount pricinghas an effect on Impulse Buying through Positive Emotion on Ace Hardware Sidoarjo customers. Furthermore, the research findings of Larasati (2021) study also show that

positive emotion mediates the effect of discount pricingon impulse buying on Indomaret customers in Denpasar.

**The Effect of Bonus Packs on Impulse Buying Through Positive Emotion**

According to the study that was done, bonus packs have a good and significant effect on impulsive buying among Indomaret customers in Pekanbaru. In other words, for Indomaret customers in Pekanbaru, happy emotion modulates the effect of bonus packs on impulsive purchase.

These results support Savira's research (2020) that bonus pack has a positive and significant effect on Impulse Buying through emotional response to customers Alfamart Kotalama Malang Branch.

**Conclusions And Suggestions**

**Conclusions**

Based on the results of the discussion and analysis that have been carried out in the previous chapters, the conclusions drawnare as follows:

1. Discount pricinghas a positive and significant effect on positive emotion of Indomaret customers in Pekanbaru.
2. Bonus pack has a positive and significant effect on positive emotion of Indomaret customers in Pekanbaru.
3. Discount pricing has a positive and significant effect on impulse buying on Indomaret customers in Pekanbaru.
4. Bonus pack has a positive and significant effect on impulse buying on Indomaret customers in Pekanbaru.
5. Positive emotionhas a positive and significant effect on impulse buying on Indomaret customers in Pekanbaru.
6. Discount pricinghas a positive and significant influence on impulse buying through positive emotion on Indomaret customers in Pekanbaru.
7. Bonus packhas a positive and significant effect on impulse buying through positive emotion on Indomaret customers in Pekanbaru.

**Suggestions**

From the conclusions above, the authors can provide input and suggestions as follows:

1. In an effort to optimize the provision of discount pricings, Indomaret management is expected to provide discounts on various products. This is because customers who come from different backgrounds needs will differ from one another. In addition, discounts should also be given to products that are needed by the community in order to encourage customers to make purchases so that the company's sales targets can be achieved optimally.
2. It is hoped that the Indomaret management will ensure that the types of bonuses or gifts given have different variants and types, because if the prizes given are only certain variants or types, it will reduce the desire to make repeat purchases for customers who have made purchases.
3. In an effort to increase positive emotion, it is hoped that Indomaret employees will improve the quality of services provided. Based on the findings in the field, quite a lot of complaints from customers related to the services provided by employees. Therefore, to overcome this problem, it is hoped that the management will carry out regular monitoring and evaluation regarding the services provided by employees.
4. In an effort to optimize the impulsive buying strategy carried out by customers, it is expected that employees will increase their ability to persuade in offering products to customers. This is done so that customers feel confident with what is conveyed by employees so that they are interested in making spontaneous purchases.

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Issue Article

**Kuanishbek Jienbekovich Turekeev**
Karakalpak Research Institute of Humanitarian Sciences
of the Karakalpak Branch of the Academy of Sciences
of the Republic of Uzbekistan,
senior researcher, PhD in History,
Nukus, Republic of Karakalpakstan

# ETHNOCULTURAL TRADITIONS ASSOCIATED WITH AGRICULTURE AMONG THE KARAKALPAKS

***Abstract**: The article discusses the customs and rituals associated with agriculture. In the course of field ethnographic research, it turned out that some types of crops were reduced, new types of varieties of melon crops appeared. Despite the advanced technology, old rituals have survived to this day, for example, the Diykhan Baba ritual and beliefs associated with them.*

***Key words**: Karakalpaks, traditions, rituals, agriculture, Diykhan Baba, iyis.*

***Language**: Russian*

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## ЭТНОКУЛЬТУРНЫЕ ТРАДИЦИИ, СВЯЗАННЫЕ С ЗЕМЛЕДЕЛИЕМ У КАРАКАЛПАКОВ

***Аннотация**: В статье рассматривается обычаи и обряды, связанные с земледелием. В ходе полевых этнографических исследований выяснилось, что некоторые виды посевов сократились, появились новые виды сортов бахчевых посевов. Несмотря на развитую технологию по сей день сохранились старые обряды, например, обряд "Дийхан баба" и связанные с ними верования.*

***Ключевые слова**: каракалпаки, традиции, обряды, земледелие, Дийхан баба, ийис.*

**Введение**

Человечество на протяжении своего существования с древности усвоило различные виды профессий. Охота на зверя, сбор плодов, животноводство и земледелие являются одними первых из этих профессий. Среди источников вышеназванных профессий плодоводство является широко распространенным в нашем крае. Посадка плодовых деревьев, а в дальнейшем усвоение поливного земледелия, пути получения урожая привели к формированию богатого наследия края. Обряды, богатые на традиции земледелия, ставшие наследием, с древних времен оставались вне поля зрения учёных. В частности, этнограф Ф.Рахманов вёл специальные исследования [10]. Опубликованы специальные исследования Б.Сарымсакова относительно вопросов обрядовых песен, связанных с земледелием [11, с. 152-223]. Известный русский ученый Г.П.Снесарев в течение долгих лет вёл исследования в Хорезмском оазисе по древним религиозным верованиям и некоторым ритуалам, связанными с плодоводством и урожаем [12].

Исследовательские работы касательно этого вопроса проводились учеными этнографами и нашей республики. Одним из таких ученых является У.Кусекеев. Исследования каракалпакского ученого хотя и имеют обобщённый характер, но, тем не менее, им приводятся интересные сведения о жизни, связанной с плодородием нашего народа в первой половине прошлого века [9]. Интересные сведения по обрядам земледелия можно встретить в трудах Х.Есбергенова. Особенно бесценным является

статья ученого, занявшая место в фундаментальном сборнике «Этнография каракалпаков». Каракалпакский этнограф подробно останавливается на календаре земледелия дехкан, обрядах, касающихся первой вспашки земель и обрядах, проводимых в честь Дийхан баба [5, с. 176-200]. Ряд ученых вели исследовательские работы по вопросу дехканских хозяйств каракалпаков, проживавших в Узбекистане в середине XX века. Известная русская учёная Л.С.Толстова сопоставительно изучает профессию земледельцев представителей нашей нации, проживающих в Хорезме, Навои, Самарканде, в Ферганской долине и все это излагает в ряде своих монографий [13; 14].

В годы независимости не останавливались исследования касательно каракалпаков, проживающих в областях. Ряд ученых вели исследования по этнографической группе каракалпаков, проживающих в Ферганской долине.

Р. Атаханов наряду с другими исследованиями обратил свое внимание на современное состояние и трансформацию дехканских хозяйств каракалпаков, проживающих в Ферганской долине [2, с. 46-59]. Если обратить внимание на исследования, проводимые в последние годы, то со стороны ученых республики поставлены на должное русло ряд исследовательских работ. В диссертациях Р.Камаловой, С.Есбергеновой имеются сведения о ритуалах и верованиях, проводимых в земледелии и сельском хозяйстве [2;7]. К этому вопросу основательно подходит Р.Баллиева в своих научных трудах. Каракалпакский этнограф сопоставительно изучает хозяйственный быт и земледельческий уклад жизни этносов (каракалпаков, узбеков, казахов, туркмен), проживающих в этом крае [3].

Если обратить внимание на труды вышеназванных этнографов, то можно прийти к следующему выводу. В их научных работах в основном проводились исследования, основанные на традиционной культуре, но не прослеживаются задачи, связанные с экологическими условиями края. Поэтому нами велись полевые записи о том, как проводятся обряды, унаследованные нашими земледельцами в сложных климатических условиях современности. Полевые записи касательно данного вопроса проводились в различных районах республики в 2016-2021 гг. Теперь мы бы хотели остановиться на вопросе о том, как в нашей современной жизни трансформируются традиции земледельцев, как сохранены обряды в условиях экологии и глобализации.

Республика Каракалпакстан расположена в нижнем течении Амударьи в удобном для земледелия месте. Не секрет, что наш край наряду с большими возможностями для земледелия имеет также определенные сложности. Одно из таких сложностей – это резкое уменьшение (сокращение) вод Аральского моря в 60-е годы XX века, что привело к возникновению экологического бедствия и засолению земель. Резкое повышение температуры в начале нового века оказало существенное влияние на традиции земледельцев и изменению обрядов, связанных с ним.

Несмотря на такое сложное положение, земледельцы ранней весной начинают готовиться к севу. Фермеры и дехкане в начале апреля начинают первый сев. Некоторые дехкане на основе ранее установленных правил сеют семена. То есть традиционно начинают сев со дня *«жуз толды»* (сто дней прошло). Этот календарный сев, широко распространённый в XX веке, означает, что начиная с 25 апреля до 5 августа необходимо начать высаживать различные культуры. С середины весны начинают сев риса, ячменя и проса, что отмечено в этнографических трудах [5, с. 185]. Во время полевых записей, проведенных в Караузякском районе, нам стало известно, что есть земледельцы, соблюдающие календарный посев, широко использованный не только в прошлом веке, но актуальный и в наши дни. По представленным нам данным, с 20-25 мая сеют джугару «*бой жуўери сорт*», с 5 июня сорт «*найман*», а с 25 июня сеют *маш* (фасоль) [18]. По данным информаторов, почти все посевные культуры высаживаются до 5 августа.

Во время полевых записей, проведенных в аулах, нам стало известно, что этот путь выбирают только дехкане, которые соблюдают традиционную культуру, чтят предков. Большинство же фермеров и дехкан в основном с начала апреля вспахивают посевные земли и после полива начинают сев. Как видно из собранных данных, жители аулов предпочитают сев двумя способами. К первой группе относятся те, которые выбирают современную технику, и с подачей воды начинают работу, вторая группа это те, кто соблюдает традиционный посев (после 25 апреля). В беседе с информаторами узнали, почему они предпочитают сев после ста дней: «Если с ранней весны высаживать злаки, они созревает раньше и становятся кормом для птиц. Так что дехканину остается меньше урожая. Поэтому начинаем сев после 25 апреля, вот тогда основная часть урожая достанется нам», - говорит один из информаторов [18].

Следующим вопросом являются обряды, связанные со вспашкой земли, с первым посевом. После вспахивания земли начинается сев, тогда проводят определенные ритуалы, посвященные пиру - покровителю Дийхан баба. Эти обряды и традиции отмечаются богатством на религиозно-морфологические верования. С древности и до

наших дней у народов Средней Азии и Казахстана в обрядах в честь Дийхан баба считалось, что они существуют в жизни дехкан. Земледельцы верили, что ритуалы в его честь обеспечат богатый урожай. Известные ученые этнографы М.С.Андреев, Г.П.Снесарев, И.В.Басилев, Б.Х.Кармышева в своих научных работах отмечают это [1, с. 128; 4, с. 12; 8, с. 63; 11, с. 220].

Если обратить внимание на этнографические сведения, то в XX веке каракалпакские земледельцы перед началом сева совершали жертвоприношения, в домах на масле жарились пончики (букв. запах *ийис*) и читались молитвы в честь Дийхан баба, о чем свидетельствуют записи [5, с. 185]. Обычаи и традиции каждого периода приспосабливались к духу времени, и мы становимся свидетелями того, какие изменения претерпели верования культа нашего народа. Во время проведения полевых записей эти обряды претерпели трансформацию, то есть нами выявлено, что существующий в XX веке образ Дийхан баба, когда старший по возрасту дехканин (мужчина) с добрыми пожеланиями закидывает в землю семена. Так вот, эта традиция постепенно вытесняется. По словам информаторов, на сегодняшний день фермер или владельцы земель первый сев начинают с пожеланиями «Создатель, чтоб одно стало тысячей», «чтобы урожай был богат» [17; 18]. Для информации, среди каракалпакского народа очень редко встречается ритуал «запах жира». Но широко распространен обряд «жертвоприношения» перед началом сева. То есть дехкане и фермеры, проживающие в аулах, для того чтобы вырастить богатый урожай, приносили жертвоприношения в виде барана, козы, в отдельных случаях курицу в честь Аллаха и Дийхан баба. Обычаи, связанные с Дийхан баба, консервативно сохранились и в аулах этноса, проживающего в республике. Обряды, связанные с Дийхан баба у населения, проживающего на юге республики, от других отличаются своеобразием и богатством на ритуалы. Туркмены, проживающие в Амударьинском районе, перед пахотой полевых земель резали мелкий скот (барана, козу), читали аяты из Корана в честь Дийхан баба, ставили трактор в направлении юга со словами «Всевышний, чтобы дела клеились, чтобы земля была урожайной! Чтоб был достаток». Интерес представляет то, что кровь барана наносили на трактор, тем самым совершая магический обряд. По сведениям информаторов, до середины XX века, до появления тракторов в республике кровь барана наносили на корову и плуг [16]. С развитием и распространением сельскохозяйственной техники место коровы и плуга занял трактор. Широко распространены подобные обряды перед посевом и у народов, проживающих в других областях республики. В частности, узбеки, проживающие в Кашкадарьинской области, перед севом приносили жертвоприношение к Дийхан бабе (Бобо дехкон) (букв. «дед земледелец»), читали аяты из Корана, зажигали лампы с пожеланиями о вспашке земель [17; 18]. Если обратить внимание на обряды, связанные с Дийхан баба этносов, проживающих в Каракалпакстане, то они имеют место в верованиях относительно мест паломничества. Узбеки и туркмены, проживающие в южных районах нашего края, перед первым севом посещают места поклонения. По сведениям информаторов, они в основном посещают Султане Уайс баба и Шайх Джалил баба, в качестве *қурбанлық* (жертвоприношение) режут овцу (барана), читают молитвы из аятов Корана, затем в священном месте дают *садақа* (милостыня) и готовится плов [17; 18]. В отличие от других районов все этносы, живущие на юге края (узбеки, туркмены, казахи и каракалпаки), перед началом нового дела посещают святые места для исполнения вышеназванных обрядов. Некоторые матери преклонного возраста заветные желания высказывают при зажженной лампе.

Теперь остановимся на том, какие сельхозкультуры высевались в нашем краю. В историко-этнографических трудах, изданных до сегодняшнего дня, есть сведения о том, что каракалпаки одновременно с земледелием также занимались и другими видами хозяйства. То есть, имеются сведения, что они занимались земледелием, животноводством и рыболовством. В основном из злаков сажали пшеницу, просо, овес, рис, фасоль. Также выращивали плодовые растения, бахчевые культуры, виноград. О широком их севе у каракалпаков из Навоийской и Ферганской областей приводятся этнографические сведения [13, с. 91-92]. На сегодняшний день в соответствии с экологическими условиями нашего края наряду с посевом вышеуказанных растений добавились и новые виды. В частности, из колосовых культур риса наряду ранее с известными сортами Нукус-1, Нукус-2 широко засеваются *«лазер», «аланга»*. Стало известно о широком распространении сортов дыни *«Гулаби», «Наринабад», «Алағамба»* (дыня бык), *«Ғарбыз қаўын»* (земная дыня), а из арбузов *«Ала ғарбыз»* (полосатый арбуз), *«Қара ғарбыз»* (черный арбуз).

Несмотря на постоянный посев вышеуказанных сельхозкультур, полученный урожай, по данным информаторов, оставляет желать лучшего. На урожай свое отрицательное влияние оказали высыхание Аральского моря и чрезмерное засоление посевных площадей. В таких сложных экологических условиях наши дехкане ищут пути и методы для получения богатого урожая. Самый распространённый способ – промывка засоленных земель, то есть, если в течение трёх лет поля наполнятся водой, то

временно исчезнет засоленность земель. На эти поля, чтобы не тратить зря воду, дехкане в основном сеют рис.

Теперь мы остановимся на сборе урожая осенью и отметим обряды и традиции, проводимые осенью.

В жизни дехкан каждый сезон занимает своеобразное место. В начале года земледельцы готовятся к севу семян, а к концу года важным вопросом становится сбор урожая. Этот сезон, как и другие, был очень богат на традиции. В частности, когда собирался хирман дехканина, ему сопутствовали такие обряды, как *«Молла пайы»* (доля моллы), *«жолаўшы пайы»* (доля путника), *«қурт-қумырысқалар ҳәм қуслар пайы»* (доля насекомых и птиц). На сегодняшний день эти ритуалы практически не встречаются. Но некоторые суеверные люди и ныне во время сбора урожая оставляют на поле зерно в определенном количестве для птиц [18].

Во время полевых записей, проводимых среди народа во время сбора хирмана, во имя Аллаха приносили жертвоприношения. В основном жертвоприношение («*қурбанлық*») совершается со стороны зажиточных фермеров. Каракалпаки считали сбор хирмана осенней свадьбой и называли *«сабан той»*. Сабантуй свойственен всем тюркским народам и сопровождается игровыми и зрелищными представлениями.

У соседних народов во время сбора хирмана совершаются жертвоприношения в честь Дийхан баба и читаются аяты из Корана [10, с. 98]. У узбеков, проживающих на юге Каракалпакстана, перед началом сбора урожая считается обязательным посещение мест паломничества со множеством фруктов и овощей. Также в подобных священных местах читается Коран, совершаются *«ийис»*.

Обряд проведения *«ийис»*, чтение Корана не только относится к этносу нашей страны, но и свойствен всем мусульманам, проживающим в Узбекистане.

Обобщая вопросы касательно обрядов и традиций земледельцев, можно прийти к следующим выводам:

Из-за усыхания Аральского моря с середины XX века, уменьшения уровня воды, резкое потепление климата в последние годы оказали негативное влияние на нелегкий труд земледельцев. Но, несмотря на такие тяжелые погодные условия, дехкане вынуждены заниматься земледелием.

По причине засоления почвы дехканами используется способ промывки соленой почвы. Чтобы не растрачивать впустую эти воды, они стали засевать рис на эти поля в течение трёх лет.

С ввозом в нашу республику новых видов овощей на кухне каракалпаков стали появляться новые виды блюд. Проявляется адаптация традиций и обычаев земледелия на современный лад. Хотя некоторые обряды позабыты, но мы становимся свидетелями от дельных из них. Обряды, связанные с Дийхан баба отмечаются некоторыми людьми, об этом свидетельствуют наши полевые записи, также было выявлено, что широко распространены обряды, связанные с совершением «*қурбанлық*».

В заключение следует отметить, что несмотря на сложную экологическую ситуацию, нам стало известно, что земледельцы республики соблюдают многовековые народные традиции и обычаи.

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Issue Article



**Sharafatdin Urakbaevich Sayimbetov**
Karakalpak Scientific Research Institute of Humanities
of the Karakalpak Branch of the Academy of
Sciences of the Republic of Uzbekistan,
Senior Researcher, Nukus


# ABOUT THE FORMATION OF THE GENRE OF THE POEM IN THE KARAKALPAK LITERATURE OF THE XX CENTURY


***Abstract**: The article examines the issue of the formation of the genre of the poem in the Karakalpak literature of the XX century. The creativity and works of famous Karakalpak folk poets are studied. The arguments of the scientist S.Aqmetov concerning the formation and improvement of Karakalpak poems are given. In it, epic poetry is studied on the basis of the works of folk poets A.Musaev, S.Majitov, A.Dabilov, S.Nurimbetov. The author analyzes the shortcomings and achievements of epic poetry in the Karakalpak literature of the XX century.*



***Key words**: epic poetry, plot songs, masters of the artistic word, oral folk art, composition.*

***Language**: Russian*

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## О ФОРМИРОВАНИИ ЖАНРА ПОЭМЫ В КАРАКАЛПАКСКОЙ ЛИТЕРАТУРЕ XX ВЕКА


***Аннотация**: В статье изучается вопрос формирования жанра поэмы в Каракалпакской литературе XX века. Исследуется творчество и произведения известных каракалпакских народных поэтов. Приводятся рассуждения ученого С.Ахметова касательно формирования и совершенствования каракалпакских поэм. В ней эпическая поэзия изучается на основе произведений народных поэтов А.Мусаева, С.Мажитова, А.Дабылова, С.Нурымбетова. Автором анализируются недостатки и достижения эпической поэзии в каракалпакской литературе XX века.*



***Ключевые слова**: эпическая поэзия, сюжетные песни, мастера художественного слова, устное народное творчество, композиция.*


**Введение**

Если рассуждать об этапе формирования жанра поэмы в каракалпакской литературе XX века, то сначала приходиться останавливаться на широко развитую в творчестве народных поэтов - эпическую поэзию или сюжетные песни. Так как, в зарождении каракалпакских поэм важное место занимает эпическая поэзия, если конкретно сказать, сюжетные песни, созданные с 1920-годов и последующие периоды.

Основой отмечаемой нами эпической поэзии является историческая поэма в устной народной литературе или связанное с формами сказания (петь с речитативом). То есть, исторические события, имеющие эпический характер в произведениях народного творчества именовались терминами историческое сказание [1, 57], историческая поэма [9, 102-103] или толгау (сказание) [6, 166-168], в современной литературоведческой науке они называются эпической поэзией или сюжетными песнями. К эпической поэзии относятся лирические песни, имеющие эпический сюжет, связанный с общественно-политическими, историческими событиями определенного периода. Учёный, исследовавший историю развития эпической поэзии в узбекской литературе, Б.Валиходжаев справедливо отмечает: «эпическая поэзия

исторически претерпевала изменения по форме и тематике, обновлялась и стала одной из передовых поэтических жанров в узбекской классической поэзии» [4, 59-60], сюжетная лирика формировалась как жанр в творчестве каракалпакских поэтов классиков, в последующем, имела свой путь развития в каракалпакской поэзии XX века.

В композиции эпической поэзии события не изображаются как в эпическом произведении и не имеют экспозиции, завязки и развязки. Более того, не уделяется большое внимание широкому раскрытию через них образа и характера литературных героев, их взаимоотношений. В стихотворениях этой формы эпические события изображаются на основе душевных переживаний поэта. То есть, в эпической поэзии объективные эпические события имеют художественное освещение посредством субъективных внутренних чувств лирического героя. В основном, «...внутренние чувства и взаимоотношения человечества, общественно-политические события, философские поиски – все это вкладывается в форму эпической поэзии» [13, 3].

Зарождение эпической поэзии в каракалпакской литературе XX века тесно связано с творчеством поэтов таких как, Сыдык Токпан улы, Абдикадир Бекимбет улы, Жанабай Каратай улы, Кудайберген Жебеген улы, Казакбай Хожанияз улы. Затем произведения этого жанра широко была развита в стихотворениях народных поэтов А.Мусаева, С.Мажитова, А.Дабылова, С.Нурымбетова. В эпической поэзии поэтов Сыдыка, Абдикадира, Жанабая, Кудайбергена, Казакбая освещены важные исторические события, связанные с жизнью народа до 20-х годов XX века. Например, если в стихотворении Сыдыка «Ак капшык» (Белый мешок) исторические события, связанные с испытанным народом голода 1913-1915-годов изображаются посредством мук и страданий лирического героя, в сюжетной песне поэта Абдикадира на тему «Кызкеткен» (Утонувшая девушка) историческая действительность, связанная с рытьем канала Кызкеткен 1915-1916-годов превращены в художественную реальность.

А в сюжетных стихах родоначальников каракалпакской литературы А.Мусаева, А.Дабылова, С.Нурымбетова, созданных в виде эпической поэзии художественно изображаются перемены периода после 1920-х годов, исторические изменения и важные новшества в социальной жизни народа. Если конкретно сказать, в стихотворениях «Бола баслады» (Стало), «Яранлар» (Друзья) А.Мусаева, «Жолдаслар» (Товарищи) , «Өткен заман» (Прошлое), «Екеў болмады тыйыны» (Не удвоилась копейка) А.Дабылова, «Яранлар» С.Нурымбетова особенности периода прошлого века и художественная картина существования народа изображены публицистическим пафосом с использованием формы сравнительного отображения.

В XX веке мастера художественного слова, широко используя возможности жанра поэзии в устной народной литературе и исторические сведения, отображенные в них, добились поднятия художественного качества эпической поэзии, повышения эмоциональной выразительности.

В 1930-годы эпическая поэзия или сюжетные песни создали основу для зарождения жанра поэмы. То есть, сюжетные песни большого и малого размера, появившиеся из синтеза лирических и эпических элементов оказали свое влияние на формирование по-новому и совершенствование каракалпакских поэм XX века. Тут следует привести рассуждение ученого С.Ахметова, который уместно отметил: «один характерный признак в развитии каракалпакской советской литературы 30-х годов – зарождение в ней поэмы и быстрое её развитие» [2, 57]. Тем не менее, из этого не следует понимать, что жанр поэмы возник в каракалпакской литературе с 1930-х годов. Так как, «первыми истоками поэм были эпопея, эпос, они по значению несколько близки к каракалпакскому термину «дастан»» [11, 11]. Но, нельзя рассматривать дастан и поэму как одно понятие. Ученый А.Насруллаев, специально изучавший в каракалпакской литературе различительные стороны дастана и поэм, отмечает их несколько отличительные особенности. По его мнению «и в дастане, и в поэме основной герой - человек. Но, образ человека, являющегося основным героем в поэмах более близок к реальной жизни, чем в дастанах, в них преобладают реальные события» [11, 12].

До 1930-х годов мастера художественного слова (если не считать отдельные поэмы) создав совершенные поэмы, произведения, не могли полностью предлагать народу. То есть, большинство поэм вновь прибывших в каракалпакскую литературу поэтов, таких как И.Фазылов, Т.Сейтмамутов, Ж.Аймурзаев, К.Ерманов, А.Бегимов, М.Дарибаев, в основном, имело образцы эпической поэзии, художественность и эмоциональная выразительность была низкой. Причиной тому было, *во-первых,* считалось, что они в первое время не могли полностью усвоить возможности, требования, теоретические основы жанра поэмы, *во-вторых,* преобладающее большинство поэтов этого периода составляла молодежь. Ученый А.Насруллаев, изучавший с научно-теоретической точки зрения пути формирования и возникновения каракалпакских поэм того периода, оценивает произведения вышеназванных

молодых талантов так: их «стих по форме близок к толгау (сказанию), а по содержанию к поэме, но по художественной силе стоит несколько ниже» [11, 31]. Тем не менее, их произведения, написанные в 1930-годы в форме эпической поэзии, являются очень характерными в установлении первоначального этапа формирования поэмы в каракалпакской литературе в качестве специального жанра.

В обобщении следует отметить, что в первой четверти XX века события, имеющие эпический сюжет в каракалпакской литературе на основе размышлений и художественного изображения поэта возникает эпическая поэзия. В них социально-историческая жизнь народа или эпический сюжет, связанный с реальной жизнью не были раскрыты на основе образов объективных героев, их действиями, взаимоотношениями или противоборствующими конфликтами. А, в эпической поэзии в художественном отображении событий основное место занимают размышления, переживания лирического героя. Поэт ограничивается изложением лирическим способом отношений, связанных с событиями эпического характера. Тем самым, в них только мастер художественного слова изображен как образ героя, повествующего действительность жизни. Поэтому, этот вид поэзии не смог подняться до уровня поэмы. Тем не менее, народные поэты, творившие в прошлом веке, постепенно развивали эпическую поэзию, старались создать с глубоким поиском новые его формы и стремились раскрыть в эпической поэзии «поэтические моменты» жизни на основе действий героев и противоборствующих конфликтов, имеющих драматическое значение. Они, таким образом, совершенствовали и свой творческий опыт. Тем самым, в каракалпакской литературе XX века появились первые поэмы. Исходя из этого, мы приходим к заключению, что возникновение каракалпакских поэм определяется эпической поэзией или сюжетными стихами.

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Issue Article

**Umida Usmonovna Yuldosheva**
SRI "Family and Women"
PhD student Strategic analysis and planning department,
Research Fellow, Republic of Uzbekistan

# THE PHENOMENON OF SOCIAL ENTREPRENEURSHIP AND PROSPECTS OF ITS DEVELOPMENT IN UZBEKISTAN

***Abstract***: *The article outlines the nature of phenomenon of social entrepreneurship and identifies the main factors of developing social entrepreneurship in Uzbekistan.*

***Key words***: *social entrepreneurship, the nature of phenomenon of social entrepreneurship, the main factors of developing social entrepreneurship.*

***Language***: *English*

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## Introduction

Uzbekistan today is at a new stage of its development, where large-scale political, administrative, economic and social reforms are taking place. These circumstances force to consider a variety of tools for managing social processes and effectively solving social problems.

The problem of integrating the processes of economic sustainability and social stability becomes topical. A similar orientation of socio-economic development and the main tasks are defined in the Development Strategy of New Uzbekistan for 2022-2026, Law of the Republic of Uzbekistan "On Guarantees of Freedom of Entrepreneurial Activity", Presidential Decree No. PF-5614 dated from 08.01.2019 "On additional measures to ensure further development of the economy and improve the efficiency of economic policy", Decree of the President dated from 05.08.2021 No. PQ-5214 "On additional measures to further support entrepreneurship and develop cooperation between business entities and the population in mahallas", Decree of the President dated from 24.12.2021 No. PQ-62 "On measures to organize the activities of the Agency for the work Mahallabay and Entrepreneurship Development under the Ministry of Economic Development and Poverty Reduction", Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated from October 20, 2018 No. 841 "On measures to implement national goals and objectives in the field of sustainable development for the period up to 2030" and in a number of other regulatory legal acts.

One of the effective tools for achieving socio-economic stability is social entrepreneurship. As a relatively new and innovative phenomenon, it contributes to an increase in the level and quality of life of the population, an increase in the competitiveness and efficiency of the economy, which is very important right now in the light of the crisis in the global economy and the slowdown in economic growth due to the pandemic.

In Uzbekistan, great attention has recently been paid to the integration of the processes of economic sustainability and social stability, but still there are no systematic scientific studies aimed at formulating proposals for the effective use of social entrepreneurship as one of the most effective tools for achieving socio-economic stability. Socio-economic studies of the essence, dynamics and prospects for the development of social entrepreneurship are necessary to create an empirical basis for predicting the vectors of development of the national economy and the social sphere.

In this article, we will try to define the phenomenon of social entrepreneurship and outline the prospects for its development in Uzbekistan.

Social entrepreneurship is a type of entrepreneurial activity aimed at solving social problems. The difference between social entrepreneurship and NGOs and charity lies in the presence of a dual purpose: commercial and social. The business model of social entrepreneurship is a self-sustaining activity that brings profit and the profit itself, in turn, is a means to achieve a social goal.

Among Western scientists who have studied the problems of entrepreneurship and social entrepreneurship, one can single out: R. Cantillon, A. Smith, M. Weber, P. Drucker, E. Giddens, J. Austin, H. Stevenson, M. Yunus, J. Boschee.

In Russia, there has recently been an increase in interest in social entrepreneurship from the scientific community, in particular the history of development, practical aspects and meaningful directions for the development of social entrepreneurship. The works of M. Batalina, A. Barkov, I. Mirgaliev, E. Shmatkova, M. Volkova deserve special attention.

In Uzbekistan, social entrepreneurship has not been studied in the context of social analysis, but it should still be noted the works on the study of social and economic processes by such authors as M.Bekmurodov, R. Ubaidullaeva, Sh.Sodikova, N.Egamberdieva, O.Musurmonova.

The term “social entrepreneurship” entered the scientific community only in the 20th century, but the origins of the phenomenon are perhaps much older. The terms "social entrepreneurship" and "social entrepreneur" were first mentioned in the 1960-1970s in the English-language literature on social change issues. According to Peter Drucker, "the social entrepreneur changes the productivity of the whole society"

According to Gregory Deese, social entrepreneurs are agents of change in the social sector, thanks to:

- the adoption of a mission aimed at creating and maintaining social value (and not just value for the individual);
- identification and relentless implementation of new opportunities associated with this mission;
- participation in the process of continuous innovation, adaptation and learning;
- bold action, not limited by the resources already available;
- a heightened sense of responsibility for the fate of the social groups for which they work, and for the result of their activities.

Despite the fact that scientists are conducting research on social entrepreneurship, there remains a need for scientific research on social entrepreneurship, in particular from the perspective of sociological analysis and a systematic approach to developing recommendations on the prospects for the development of social entrepreneurship in Uzbekistan. Based on this fact, we consider it appropriate to increase the range of scientific studies of social entrepreneurship, including socio-economic studies of the essence, dynamics and development prospects of social entrepreneurship necessary to create an empirical base for predicting the vectors of development of the national economy and the social sphere. An important stage is also the approval of the legal status of social entrepreneurship and the adoption of legal acts regulating the activities of social entrepreneurship, as well as the definition of benefits and subsidies for social entrepreneurship.

Social entrepreneurship is one of the effective tools for achieving socio-economic stability. Identification of the resource potential of the regions for the development of social entrepreneurship, and the integration of this process with the solution of the existing problems of this region will ensure economic sustainability and social stability in the regions. In addition, the implementation of such socially significant initiatives opens up additional opportunities and prospects for the population, including socially vulnerable segments of the population, youth and women.

Thus, the development of social entrepreneurship is necessary to ensure the further economic sustainability and social stability of the country; Important factors in this process are:

- formation of a regulatory framework for the regulation of the main issues of social entrepreneurship;
- issues of preferences and benefits;
- expanding the range of scientific research on social entrepreneurship;
- identifying the resource potential and social problems of the regions in the implementation of social entrepreneurship practices.

Creating opportunities and conditions for the development of social entrepreneurship in Uzbekistan will serve as an effective mechanism for achieving socio-economic stability by creating hundreds of thousands of jobs and new economic infrastructure facilities. The development of this business area will help to involve vulnerable social strata in business, and the solution of a number of social problems.

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Issue Article

**Firuza Usmonova**
Chonnam national university
The department of NGO international student

# THE NEED TO SAVE THE ARAL SEA

***Abstract***: *This article discusses the changes that have taken place in the Aral Sea region since the 1960 s and tothe present, as well as the analysis of the tasks set in ourstateprograms to improvethe living standardsofthepeople livingin the Aral Sea region.*

***Key words***: *sand dunes, drought, salt, reform, green belt, variety, depth, salinity, level, pollination, ecology.*
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## Introduction

It is not a secret to all of us that today the Aral Sea is literally losing its geographical role as a sea and giving way to sand dunes. Today, only a small part of this lake, which was once considered the largest lake in Central Asia, has been preserved. Currently, improving the lifestyle of the people living in this Aral region and planting more drought-resistant plant species in the Aral region remains one of the priority tasks of our country. In this regard, the large-scale reforms carried out by the head of our country are commendable.

## MATERIALS AND METHODS

We look with confidence at the multilateral trust fund for human security in the Aral Sea region established with the United Nations in order to strengthen international cooperation in solving the island problem. President Shavkat Mirziyoyev visited the dried-up area of the Aral Sea and saw the situation. Speaking with ecologists and forestry experts, the President said, "We have gained a lot of experience in planting in these difficult conditions. The purpose of my coming here is to continue these works in a scientifically based way," said Shavkat Mirziyoyev.

## RESULTS AND DISCUSSION

He conducted scientific research, created varieties suitable for the soil of the region, and gave instructions on the development of animal husbandry at the next stage. The task of developing a 5-year national program for improving the flora and fauna of the archipelago was set. Tasks were also given to breed drought-resistant plant varieties in the region along the island.

The decision of the President of the Republic of Uzbekistan No. PQ-4850 dated 06.10.2020 "On approving the concept of development of the forestry system in the Republic of Uzbekistan until 2030" once again confirms that these goals are strategic.

Now let's talk about the history of the Aral Sea. Administratively, more than half of the southwestern part of the island is located in the territory of Uzbekistan (Karakalpakstan), and the northeastern part is located in the territory of Kazakhstan. Until the 60s of the last century, the area of the island with its islands was on average 68,000 km$^2$. In terms of size, it was the fourth largest in the world (after the Caspian Sea, Lake Superior in America and Lake Victoria in Africa), and the second largest on the Eurasian continent (after the Caspian). The sea stretches from the north-east to the south-west, its length is 428 km, and its widest point is 235 km (45°N). Basin area. 690 thousand km$^2$ of water the volume is 1000 km$^3$, the average depth varies around 16.5 m. Because of the size of its basin, it was called the sea. The island was formed in the upper Pliocene in a depression on the bent surface of the earth's crust. The topography (except for the western part) is flat. In its time, there were many peninsulas and gulfs in the island sea. There were large peninsulas of Ajiboy, Tolliq, Jiltirbas, Kulonli and Moynok at the confluence of the

Syrdarya. The water level in the Aral Sea has been rising and falling since ancient times. In the next geological period, the water of the Aral Sea periodically poured into the Caspian Sea through Sarikamish and Ozboi. The Aral Sea is not very deep. The deepest places are in the western part. Near Ustyurt, Karakalpakstan, its depth reaches 69 meters.

As a result of the drying up of the Aral Sea, the ecological environment and natural balance have been disrupted in recent years, and the climate has changed negatively is going As a result of the rising of sand, salt and dust from these areas into the air and falling into the environment, the population living in the territory of the Arolbay region, as well as the flora and fauna, are seriously harmed. Secondary salinity is increasing in the lands planted with agricultural crops, orchards and vineyards, which has a negative effect on productivity. The drying up of the Aral Sea remains the most urgent problem, especially for the peoples of the region. According to the data, due to the drying up of the sea and the acceleration of salinization, in recent years, about 50 thousand hectares of arable land has become unfit for agricultural use. In place of the dry sea, the "Orolqum" desert has appeared, occupying an area of more than 5.5 million hectares. If immediate measures are not taken to prevent this environmental damage, the result will be negative and cause incalculable environmental, social and economic damage. There are reports that island salt has also been found in the Arctic. Reducing the negative impact of sand, salt and dust particles rising from the dry bottom of the Aral Sea, effectively organizing the establishment of "green covers" from desert plants - protective forests in these areas, and global climate changes and the Aral Sea in order to mitigate the negative impact of construction on agricultural development and the life activities of the population, as well as to implement the tasks defined in the Strategy of Actions on the five priority directions of the development of the Republic of Uzbekistan in 2017-2021 a lot of work has been done.

In the years of independence, special attention was paid to the problem of the Aral Sea, and the production of chemical compounds that harden sand, improve the structure of the soil, and increase its productivity was launched. Scientific research in this direction was organized at a high level, comprehensive measures were implemented and certain results were achieved. In particular, scientific work aimed at the research of chemically stable, mechanically strong structure-forming polymer reagents, synthesized on the basis of local raw materials, containing nitrogen, phosphorus and other trace elements, is being carried out every day.

At the 75th session of the UN General Assembly, the President of the Republic of Uzbekistan Shavkat Mirziyoyev proposed to declare the Aral Bay region as a zone of ecological innovations and technologies. The initiative received global support, and in May of this year, the UN General Assembly unanimously approved the relevant resolution. At the same time, in order to fulfill the tasks, it is necessary to have a complete picture of the current state of the ecological disaster area and the changes taking place there. In this regard, the joint project "Solving the urgent problems of human security in the Aral Sea region by supporting the development of sustainable rural areas" funded by the United Nations Partnership Trust Fund for Human Security for the Aral Sea Region in Uzbekistan and UNESCO. Within the framework of the joint program, in the fall of 2019 and in the spring of 2020, the Interstate Coordinating Water Management Commission of Central Asia used two expeditions of the Science and Information Center.

In the address of the head of state to the Oliy Majlis regarding the summary of 2020, serious concern was expressed about the worsening environmental situation in our region and the whole world, and in this matter, it is necessary to continue efforts aimed at mitigating the impact of the environmental tragedy of the Aral Sea together with neighboring countries and the world community. done. "In this regard, we will further strengthen practical work within the framework of the Multilateral Trust Fund for ensuring human security in the Aral Bay region, established in cooperation with the United Nations," it was noted. In fact, the drying up of the Aral Sea has become the center of ecological disaster not only in our region, but also globally. At the 72nd session of the UN, the honorable President put this issue on the agenda. At that time, for the first time in history, the President of the United Nations showed the map of the Aral Sea to the whole world community and revealed the depth and complexity of the problem. As a result of these efforts, on May 18, 2019, at the plenary session of the 75th session of the United Nations General Assembly, a special resolution on declaring the Aral Bay region as a region of ecological innovations and technologies was adopted by the President of the Republic of Uzbekistan Shavkat Mirziyoyev was adopted unanimously.

In 2017, the United Nations Multilateral Partnership Trust Fund for Human Security was established for the Aral Bay region, which serves as the main platform for the international community to provide practical assistance to the population living in the harsh environment. The fact that countries such as Norway, Finland, Japan, South Korea, the European Union, Germany, the UAE, Turkey, and Switzerland show great interest in this fund shows that it has great prospects. However, it must be said frankly that at the moment the main work is being carried out by Uzbekistan, the costs of unprecedented work are being covered mainly from the republican and local budgets and donations. In 2017-2021, according to the state program for the development of the Aral Sea region, as well as the relevant decisions of the Cabinet of

Ministers, systematic work was carried out to create a "green belt" in the Aral Sea basin and the Aral Sea region, as well as in the neighboring Khorezm, Bukhara and Navoi regions.

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Issue Article

**Sherzodjon Zokir oglu Ablokulov**
Tashkent Institute of Chemical Technology
Doctoral student
Tashkent, Republic of Uzbekistan
abloqulov93@mail.ru

# ON MODELING OF OSCILLATIONS OF DEFORMABLE STRUCTURAL ELEMENTS UNDER VIBRATION DISTURBING LOADS

***Abstract**: In this paper, from a scientific point of view, the issues of vibrations of mechanical systems with a finite number of degrees of freedom under the influence of mechanical impulse loads are considered. The aim of the work is to study vibrations of structures with a finite number of degrees of freedom under impulsive disturbing loads, taking into account the viscoelastic properties of deformable elements. For this, various means of protection against REA impulse loads were calculated, which include dampers, springs, gaskets, shock absorbers. To achieve this goal, an analysis was made of the vibration of the REA block (with and without masses attached) from vibration effects; a mathematical model of the influence of REA parameters on the resonant state of the mechanical system, as well as on the magnitude of the oscillation amplitude, is constructed.*

***Key words**: mechanical system, vibration unit, vibrations, momentum, shock absorber, damper.*

***Language**: Russian*

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## О МОДЕЛИРОВАНИИ КОЛЕБАНИЙ ДЕФОРМИРУЕМЫХ ЭЛЕМЕНТОВ КОНСТРУКЦИЙ ПРИ ВИБРАЦИОННЫХ ВОЗМУЩАЮЩИХ НАГРУЗКАХ

***Аннотация**: В данной работе с научной точки зрения рассматриваются вопросы колебаний механических систем с конечным числом степеней свободы при воздействии механических импульсных нагрузок. Целью работы является исследования колебаний конструкций с конечным числом степеней свободы при импульсных возмущающих нагрузок с учетом вязкоупругих свойств деформируемых элементов. Для этого произведен расчет различных средств защиты от импульсных нагрузок РЭУ, к которым относятся демпферы, пружины, прокладки, амортизаторы. Для достижения поставленной цели произведен анализ вибрации блока РЭУ (с присоединенными массами и без масс) от вибрационных воздействий; построена математическая модель влияния параметров РЭУ на резонансное состояние механической системы, а также на величину амплитуды колебаний.*

***Ключевые слова**: механической системы, вибрационный блок, колебания, импульс, амортизатор, демпфер.*

**Введение**

Для снижения воздействия вибрационных нагрузок существуют различные средства защиты от вибраций РЭУ: демпферы, пружины, прокладки, амортизаторы. Наиболее эффективными среди них являются активные амортизаторы, в которых помимо элементов демпфирования, присутствуют элементы с дополнительным источником энергии, что позволяет изменять жесткость подвесов, и, тем самым, уменьшить влияние вибрационных нагрузок на РЭУ. Такие амортизаторы предназначены для снижения амплитуды вибраций не только на резонансных частотах, но и

во всем требуемом диапазоне частот, что влечет за собой усложнение конструкций за счет введения дополнительных средств измерения вибраций [1,2].Снижение уровней вибраций радиоэлектронных аппаратур (РЭА) является актуальной задачей в авиастроительной промышленности [3,4]. Для расчета механических процессов, происходящих в радиоэлектронных конструкциях, представляются некоторые модели [5,6]. При разработке расчетной модели нужно, по возможности, стремиться к тому, чтобы не вносить никаких принципиальных упрощений в рассматриваемые физические явления с тем, чтобы избегать неконтролируемых погрешностей. Вибрационные нагрузки, испытываемые приборами и аппаратами, вызывают механические напряжения в их элементах. Для защиты оборудования от динамических воздействий широко применяются различные гасители и демпфирующие элементы [7,8]. По характеру приложения внешних нагрузок виброизоляцию РЭА условно разделяют на активную и пассивную [9,10]. Если объект сам является источником колебаний, тогда необходимо изолировать объект от опорного основания [11].

Радиоэлектронная аппаратура часто моделируется в виде монолитного блока. К ним относятся блоки, в которых промежутки между радиодеталями заполнены компаундом, пенопластом, резиной и т.п. В таких блоках нет пустот. Модель – сетка для них трехмерна

В настоящей работе рассматриваются колебания вязкоупругого пространственного блока при воздействии периодических нагрузок. Снижение импульсных возмущений радиоэлектронного блока и разработка методики влияния присоединенной массы, а также изменение различных геометрических параметров на резонансную частоту и декремент затухания механической системы является актуальной задачей. При решении поставленной задачи РЭУ от внешнего импульсного воздействия на резонансных частотах использовались метод комплексных амплитуд, методы уравнений математической физики и метод ортогональной прогонки Годунова. Предложен алгоритм определения резонансной частоты и амплитуды перемещений рассматриваемой механической системы. Применение предложенной математической модели позволяет снизить суммарные импульсные нагрузки РЭУ до 25%.

2. Методы

Диссипативная механическая система (ДМС) представляется как тело объема $V=\sum_{n=1}^{N}V_n$, которая состоит из N частей, с объемами Vn (n = 1; 2; …; N) и ограничены поверхностью $S=S_p+S_l$. На части поверхности $S_p$, в общем случае, заданы внешние нагрузки, а на поверхности $S_l$-граничные условия. На контактных поверхностях выполняются условия скользящего (на контакте отсутствуют трения) или жесткого закрепленного контакта, или в контакте имеется трение.

При собственных (или установившихся вынужденных) колебаниях вариационное уравнение в символическом виде можно представить в виде:

$$\delta G(U_{nj}^0(\bar{x}),\omega^2)=0 \qquad (1)$$

Выпишем конкретное представление функционала G, например, для пакета прямоугольных пластин с точечными связями:

$$G\left[W_n^0(x,y),\omega^2\right]=-\frac{1}{2}\sum_{n=1}^{N}\bar{D}_n\int_0^{a_n}\int_0^{b_n}\left[\begin{array}{l}(\frac{\partial^2 W_n^0}{\partial x^2}+\frac{\partial^2 W_n^0}{\partial y^2})^2-\\ -2(1-\nu_n)(\frac{\partial^2 W_n^0}{\partial x^2}\frac{\partial^2 W_n^0}{\partial y^2}-(\frac{\partial^2 W_n^0}{\partial x\partial y})^2)\end{array}\right]dxdy-$$

$$-\frac{1}{2}\sum_{n=1}^{N-1}\sum_{l=1}^{L_n}\bar{D}_n\left[W_n^0(x_n^l,y_n^l)-W_{n+1}^0(x_n^l,y_n^l)\right]^2-$$

$$-\frac{1}{2}\sum_{n=1}^{N}\sum_{l'=1}^{L_n'}C_{l'n}(W_n^0)^2(x_n^{l'},y_n^{l'})+\frac{\omega^2}{2}\sum_{n=1}^{N}\rho_n h_n\int_0^{a_n}\int_0^{b_n}(W_n^0)^2dxdy+$$

$$+\frac{\omega^2}{2}\sum_{n=1}^{N}\sum_{q=1}^{Q_n}M_{qn}(W_n^0)^2(x_n^q,y_n^q)\ ,$$

где $\omega$-комплексная частота , $h_n,a_n,b_n$ – толщина и линейные размеры n-й пластины, $x_n^q,y_n^q$-координаты n-й сосредоточенной массы, $x_n^l,y_n^l$-координаты l-й пружины (амортизатора), $x_n^{l'},y_n^{l'}$-координаты $l'$-й упругой (вязкоупругой) опоры.

Если n-я пластина, l-я пружина и $l'$-я опора вязкоупругие, то $\bar{D}_n, \bar{C}_{l\,n}, \bar{C}_{l'n}$ представляются следующими формулами:

$$\bar{D}_n = D_n f_n(\omega_R), \bar{C}_{l\,n} = C_{l\,n} f_{l\,n}(\omega_R), \bar{C}_{l'n} = C_{l'n} f_{l'n}(\omega_R)$$

где $f(\omega_R) = 1 - \Gamma_c(\omega_R) - i\Gamma_s(\omega_R)$ - комплексная функция, числовые коэффициенты которой зависят от параметров ядра релаксации соответствующих вязкоупругих элементов, $D_n = E_n h_n^3 / (12(1-\nu_n^2))$ ,$D_n = \frac{Evh_n^3}{12(1-\nu_n^2)}$, $C_{ln}, C_{l'n}$- обобщенные мгновенные жесткости соответственно n-й пластины, l-го амортизатора, $l'$-й опоры. В упругом случае $\bar{D}_n = D_n, \bar{C}_{l\,n} = C_{l\,n}, \bar{C}_{l'n} = C_{l'n}$ где $D_n, C_{l\,n}, C_{l'n}$- обобщенные жесткости соответственно n-й пластины, l-й пружины, $l'$-й опоры (рис.1).

Аналогичный функционал можно записать для системы оболочек вращения. Компоненты вектора перемещений $U_{nj}^0(\bar{x})$ являются искомыми функциями вариационного уравнения (1) и должны удовлетворять граничным условиям на поверхностях $\Omega_n^{bo}$ , т.е.

$$L_n U_{nj}^0(\bar{x}) = 0,\ \bar{x} \in \Omega_n^{bo} \qquad (2)$$

Осталось наложить на систему жесткие точечные связи, которые не совершают работы при колебаниях. Условия жесткого шарнирного опирания n-го тела в Sn точечных опорах запишем в виде

$$U_{nj}^0(\bar{x}_n^s) = 0 \ \ (s = 1,....S_n;\ j = 1,....J),$$

где $\bar{x}_n^s$ – координаты s-й опоры n-го тела. Если часть опор имеет защемления, то добавятся условия

$$\frac{\partial U_{nj}^0(\bar{x}_n^s)}{\partial \alpha_n^s} = 0, \ \ (s = 1,....S_n^\alpha\ ;\ j = 1,....J) \qquad (3)$$

где $\alpha_n^s$ – направление единичного вектора, вдоль которого в точке $x_n^s$ осуществлено жесткое защемление тела.

В программе, реализующий алгоритм, условие (3) учитывается только для оболочек вращения. Наличие жестких стоек между n-м и (n+1)-м телом при $N \geq 2$ учитывается соотношениями

$$U_{nj}^0(\bar{x}_n^r) - U_{n+1,j}^0(\bar{x}_n^r) = 0 \ (r = 1,...R_n;\ j = 1,..J), \qquad (4)$$

где $\bar{x}^r$ - координата r-й стойки, $R_n$ -число стоек между n-м и (n+1)-м телами. В случае $N = 1$ условия (4) отсутствуют. Таким образом, на вектор перемещений дополнительно накладываются ограничения типа (2)-(4). Наложение на систему точечных связей учтем с помощью метода множителей Лагранжа. Тогда вариационное уравнение (1) перепишется в виде

$$\begin{aligned}\delta\{G(U_{nj}^0(\bar{x}), \omega^2) &+ \sum_{n=1}^{N}\sum_{s=1}^{S_n}\sum_{j=1}^{J} \lambda_{nj}^s U_{nj}^0(\bar{x}_n^s) + \\ &+ \sum_{n=1}^{N}\sum_{s=1}^{S_n^\alpha}\sum_{j=1}^{J} k_{nj}^s \frac{\partial U_{nj}^0(\bar{x}_n^s)}{\partial \alpha_n^s} + \\ &+ \sum_{n=1}^{N-1}\sum_{r=1}^{R_n}\sum_{j=1}^{J} \mu_{nj}^r \left[U_{nj}^0(\bar{x}_n^r) - U_{n+1,j}^0(\bar{x}_n^r)\right]\} = 0\end{aligned} \qquad (5)$$

где $\lambda_{nj}^s, k_{nj}^s, \mu_{nj}^s$ – множители Лагранжа. Необходимо найти спектр комплексных собственных частот $\omega^k = \omega_R^k + i\omega_I^k$, где $\omega_R^k$ – частоты, а $\omega_I^k$ – коэффициенты демпфирования собственных затухающих колебаний.

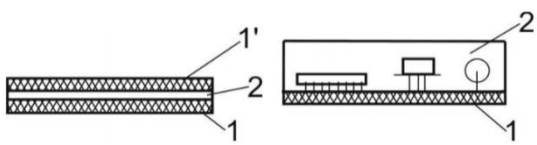


**Рис. 1. Расчетная схема. а) трёхслойный блок без присоединённых масс. б) блок с присоединёнными массами: 1- демпфирующий слой; 2- защищаемый объект.**

В качестве примера рассмотрим механической системы со счётным множеством степенями свободы, приведённого на рис.2.

Рассмотрим колебания балки с k присоединенными динамическими гасителями колебаний. Пусть $m_b$ – масса балки, $m_{vi}$ – масса i-го гасителя колебаний, $c_{vi}$ – жесткость пружины i-го гасителя колебаний, l– длина балки, b, h– размеры поперечного сечения балки, S– площадь поперечного сечения балки, ρ– плотность балки, J – момент инерции поперечного сечения балки относительно оси x

( $J = \frac{bh^3}{12}$ ), $\xi_i$ – коэффициент демпфирования i-го гасителя.

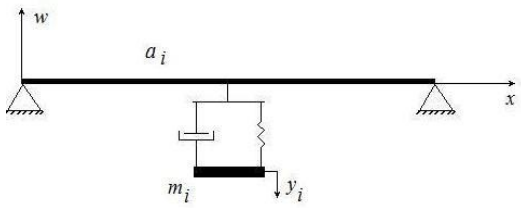


**Рис. 2. Система балка-демпфер**

Уравнения колебаний системы «балки-гасители» при периодических вибрационных воздействиях принимает вид:

$$E_0 J \frac{\partial^4 W}{\partial x^4} + \rho S \omega^2 W - A \sum_{i=1}^{k} \left[ W(x_i) \delta(x - x_i) \right] = P_o(x), \qquad (6)$$

$$A = \frac{m\omega^2}{1 - m\omega^2 / k(1 - \Gamma_k)}$$

Пусть $W = lw$, $x = ls$, $t = t_c \hat{t}$, $y_i = lz_i$, $t_c = l^2 \left( \frac{\rho S}{EJ} \right)^{1/2}$.

Тогда систему (6) можно переписать в безразмерном виде. В качестве граничных условий выбираем условия шарнирного опирания балки: $w = \frac{\partial^2 w}{\partial s^2} = 0$ при l=0, 1.

**Метод решения**

Для решения задачи (6) воспользуемся методом многих масштабов [11]. Решение системы будем искать в следующем виде:

$$\begin{aligned} w &= w_0(s, \tau_0, \tau_1, \tau_2, \mu) + \mu^{1/2} w_1(s, \tau_0, \tau_1, \tau_2, \mu) + \\ &+ \mu w_2(s, \tau_0, \tau_1, \tau_2, \mu) + \ldots \\ u_i &= u_{0i}(s, \tau_0, \tau_1, \tau_2, \mu) + \mu^{1/2} u_{1i}(s, \tau_0, \tau_1, \tau_2, \mu) + \\ &+ \mu u_{2i}(s, \tau_0, \tau_1, \tau_2, \mu) + \ldots \end{aligned} \qquad (7)$$

где $\tau_0 = \hat{t}$, $\tau_1 = \mu^{1/2} \hat{t}$, $\tau_2 = \mu \hat{t}$, $\nu_i(\hat{t}) = f_i(\tau_2)$.

Подставим (7) в (6) и приравнивая коэффициенты при одинаковых степенях $\mu^{1/2}$, получим последовательность уравнений для определения функций $w_m$ и $u_m$ (m=0,1,2…).

3. Результаты и анализ

В нулевом приближение получим систему дифференциальных уравнений:

$$\mu^0: \frac{\partial^4 w_0}{\partial s^4} + \frac{\partial^2 w_0}{\partial \tau_0^2} = 0, \quad \frac{\partial^2 u_{0i}}{\partial \tau_0^2} + \hat{c}_{si} u_{0i} = 0, \text{ i=1, 2…k,}$$

решение которой запишем в виде (7):

$$w_0 = \sin \pi n s \left[ A(\tau_1, \tau_2) \cos \omega \tau_0 + B(\tau_1, \tau_2) \sin \omega \tau_0 \right],$$

$$u_{0i} = C_i(\tau_1, \tau_2) \cos \omega \tau_0 + D_i(\tau_1, \tau_2) \sin \omega \tau_0 .$$

Здесь $\omega = \pi^2 n^2$.

В первом приближение получим следующую систему уравнений:

$$\mu^{1/2}: \frac{\partial^2 w_1}{\partial \tau_0^2} + \omega_n^2 w_1 - \Pi_1 = 0,$$

$$\frac{\partial^2 u_{1i}}{\partial \tau_0^2} + \omega_n^2 u_{1i} - \Pi_{2i} = 0, \text{ i=1, 2…k,}$$

где

$$\Pi_1 = \omega^2 \sum_{i=1}^{k} q_{0i} u_{0i} - 2 \frac{\partial^2 w_0}{\partial \tau_0 \partial \tau_1} = \left( \omega^2 \sum_{i=1}^{k} q_{0i} C_i - 2\omega \frac{\partial B}{\partial \tau_1} \right) \cos \omega \tau_0 +$$

$$+ \left( \omega^2 \sum_{i=1}^{k} q_{0i} D_i + 2\omega \frac{\partial A}{\partial \tau_1} \right) \sin \omega \tau_0;$$

$$\Pi_2 = -2 f_i \omega \frac{\partial u_{0i}}{\partial \tau_0} - \frac{1}{2} q_{0i} \frac{\partial^2 w_{0i}}{\partial \tau_0^2} - 2 \frac{\partial^2 u_{0i}}{\partial \tau_0 \partial \tau_1} - \delta_{1i} u_{0i} =$$

$$= \left( \frac{1}{2} q_{0i} \omega^2 A - 2 f_i \omega^2 D_i - 2\omega \frac{\partial D_i}{\partial \tau_1} - C_i \delta_{1i} \right) \cos \omega \tau_0 + \qquad (8)$$

$$+ \left( \frac{1}{2} q_{0i} \omega^2 B + 2 f_i \omega^2 C_i + 2\omega \frac{\partial C_i}{\partial \tau_1} - D_i \delta_{1i} \right) \sin \omega \tau_0.$$

Чтобы устранить вековые члены в решении системы (8) необходимо положить:

$$\omega \sum_{i=1}^{k} q_{0i} C_i - 2 \frac{\partial B}{\partial \tau_1} = 0, \qquad \omega \sum_{i=1}^{k} q_{0i} D_i + 2 \frac{\partial A}{\partial \tau_1} = 0, \qquad (9)$$

$$q_{0i} \omega A - 4 f_i \omega D_i - 4 \frac{\partial D_i}{\partial \tau_1} - \frac{2}{\omega} C_i \delta_{1i} = 0,$$

$$q_{0_i} \omega B + 4 f_i \omega C_i + 4 \frac{\partial C_i}{\partial \tau_1} - \frac{2}{\omega} D_i \delta_{1i} = 0, \qquad i = 1, 2 \ldots k.$$

Составим характеристическое уравнение для уравнения [14]:

$$\lambda^4 + 2 f \omega \lambda^3 + \lambda^2 \left( \frac{\omega^2 G}{4} + f^2 \omega^2 + \frac{\delta_1^2}{4\omega^2} \right) + \lambda \frac{f G \omega^3}{4} + \frac{G^2 \omega^4}{64} = 0$$

Так как выполняются условия Гурвица (отрицательности вещественных частей корней данного характеристического уравнения), их можно записать в виде

$$\lambda_{1,2} = -k_1^2 \pm i n_1^2, \qquad \lambda_{3,4} = -k_2^2 \pm i n_2^2.$$

Следовательно,

$$A(\tau_1, \tau_2) = C_1(\tau_2) e^{-k_1^2 \tau_1} \cos\left(n_1^2 \tau_1\right) +$$

$$+ C_2(\tau_2) e^{-k_1^2 \tau_1} \sin\left(n_1^2 \tau_1\right) + C_3(\tau_2) e^{-k_2^2 \tau_1} \cos\left(n_2^2 \tau_1\right) +$$

$$+ C_4(\tau_2) e^{-k_2^2 \tau_1} \sin\left(n_2^2 \tau_1\right).$$

Очевидно, что для затухания колебаний следует потребовать выполнения условия 0<R<1.

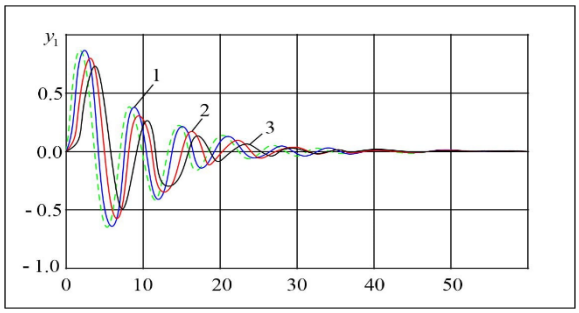


**Рис. 3. Изменение перемещений гасителя в зависимости от времени при различных вязкостях деформируемого элемента:** 1.A= 0.04; 2. A= 0.06; 3. A= 0.07;

На рис. 3 приведены изменения перемещений гасителя в зависимости от времени при различных вязкостях деформируемого элемента:1A= 0.04;2. A= 0.06;3A= 0.07

4. Выводы

С увеличением вязкости деформируемого без массового элемента перемещения гасителя в зависимости от времени снижаются экспоненциальном законом.

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Issue Article

**Vadim Andreevich Kozhevnikov**
Peter the Great St.Petersburg Polytechnic University
Senior Lecturer
vadim.kozhevnikov@gmail.com

**Sergei Sergeevich Tolpygin**
Peter the Great St.Petersburg Polytechnic University
Chief Engineer
tolpygin_ss@spbstu.ru

# VIDEO TRANSCRIPTION SYSTEM

***Abstract***: *The system for transcribing video files into text created by the authors using Yandex SpeechKit. This system will provide significant assistance to both teachers and students.*

***Key words***: *Transcribing audio and video into text, Yandex SpeechKit, text processing in Russian.*

***Language***: *English*

***Citation***: Kozhevnikov, V. A., & Tolpygin, S. S. (2022). Video transcription system. *ISJ Theoretical & Applied Science, 09 (113)*, 89-92.

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## Introduction

Creating a system for transcribing audio and video into text is currently a very urgent task for SPbPU. Since the beginning of the coronavirus pandemic (spring 2020), education has partially (and sometimes completely) switched to remote mode. For example, in the current academic semester (January-June 2022), despite some improvement in the epidemiological situation, most lectures at SPbPU are held online for the entire semester. At the same time, more than 8600 foreign students are currently studying at SPbPU [1], and the knowledge of the Russian language of some of these students is not good enough (since most of them also studied Russian remotely). Therefore, hearing information from lectures is problematic for many of them. Such a system would also be very useful for Russian-speaking students, since in this way it is possible to automate the creation of an electronic lecture notes.

## Problem statement, review of analogues

When developing a transcription system, the following tasks were set:

- The client part of the system should be as light as possible - it is needed only for downloading video / audio and outputting the final text, all the main resource-intensive operations are carried out on the server;

- The system should be centralized and accessible to all teachers and students of SPbPU;

- The system should "understand" the Russian language well, but at the same time allow the output of the final text in English and other languages.

Let's consider similar transcription systems that can work with the Russian language:

1) Azure Cognitive Services [2] is a collection of customizable pre-built AI models that can be used to add AI to applications. Speech SDK allows us to create voice applications, transcribe speech to text with high accuracy, produce natural-sounding text-to-speech voices, translate spoken audio, use speaker recognition during conversations, and explore with a no-code experience and create custom models tailored to our app. The disadvantage of this SDK is the worse work with the Russian language than the method we have chosen (see below), the high cost (and now the impossibility of a legal purchase on the territory of Russia).

2) Google Speech-to-Text [3]. One of the best solutions for English. Among other things, the API allows speech adaptation by the ability to provide hints to boost the transcription accuracy of rare and

domain-specific words or phrases. The API allows us to choose from a set of trained models for voice control, phone calls, and video transcription, optimized for the quality requirements of a particular domain. Cons - payment for portions of the translation, which measured in increments rounded up to 15 seconds, and problems currently with payment from Russia.

3) VideoScripto [4]. According to the developers, it is a tool for modern speech recognition. However, it was not possible to verify this - a subscription is needed to test the application, the site has problems with browsers other than Chrome. It is not specified which API the authors use.

4) SnatchBot [5]. According to the developers, SnatchBot incorporates its proprietary machine learning expertise and uses the most advanced deep-learning neural network algorithms to audio for speech recognition with high accuracy. Cons - the system only works with audio files or a microphone, not video. Also, you have to pay to use the system.

5) Speechpad [6]. The application allows us to translate audio texts from html5 video and audio formats, as well as from youtube videos. For html5 video and audio formats, you need to specify the URL of the media file, to play a youtube recording, you need to enter the ID of this entry in Youtube. Cons - the impossibility of directly downloading files (without specifying the URL); working only with the Chrome browser; it is not clear which API the authors use.

6) Voco [7]. Voco.Professional and Voco.Enterprise enable speech recognition from audio recordings. The conversion is carried out in a special plug-in for the MS Word editor with the display of the audio recording in the player and the connection of the sound with the recognized text. Recognition is performed locally on the user's computer, which ensures Voco's performance even in the absence of a network. Cons - works with audio files only (or a microphone), not video files. Also, you have to pay to use the system.

7) RealSpeaker [8]. It is a transcription service for audio or video files. It works with a large number of languages, including Russian. Cons - the first one and a half minutes are decrypted for free, then you need to pay 8 rubles for each minute. Also, a disadvantage for some teachers may be the fact that within 24 hours the working file is available to everyone and cannot be hidden - all user files are saved in the "My Media" folder. It is not specified which API the authors use.

8) Transcribe by Wreally [9]. The service, in which we can transcribe a file or dictate the text ourselves, supports self transcription (since 2011) and automatic transcription (since 2018). Machine learning is used, and the accuracy, according to the authors, reaches 90%. Cons - with Automatic Transcription, given the amount of computing resources needed, authors charge an hourly rate to process transcripts.

9) Speechnotes [10]. Speechnotes is based on Google's speech-recognition engines. Therefore, the accuracy, according to the authors, reaches 80-95%. Cons - per minute payment for service.

10) Zapisano.org [11]. Unlike previous systems, this is a platform where not software, but professional transcribers will prepare text or subtitles for you. The price of each transcript is individual - it all depends on the complexity of the work, but it is high for mass use by teachers and students.

11) Yandex SpeechKit [12]. SpeechKit provides two ways to recognize speech:

a) Streaming recognition is used for real-time recognition. With streaming recognition, SpeechKit receives short audio fragments and sends the results, including intermediate ones, within the same connection.

b) Recognition of audio files. SpeechKit can recognize audio recordings both synchronously and asynchronously. Synchronous recognition has strict limits on file size and duration and is suitable for single-channel audio recognition up to 30 seconds. Asynchronous recognition can handle multi-channel audio recordings. The maximum length of a file is 4 hours.

Audio recognition in any mode occurs in three stages:

- Highlighting words. For each word, several hypotheses are put forward.
- Word recognition. The language model tests hypotheses and determines how the new word is consistent with previously recognized words.
- Word processing. In the recognized text, numerals are converted to numbers and some punctuation marks (such as hyphens) are placed, after which the result is sent in the response body.

This review did not include popular transcription systems that do not work with Russian, such as Rev [13], Transcription Panda [14], GoTranscript [15], Temi [16], Express Scribe Pro [17] and others.

The authors of this article already had experience with Russian language processing applications from Yandex (see, for example, [18]), and we liked this experience. The use of Yandex SpeechKit is not free, but SPbPU has currently received a grant from Yandex. Therefore, it was decided to use Yandex SpeechKit.

**System description**

Based on the requirements received, a client-server architecture was chosen with a server located in the spbstu.ru domain. The server is located at speech.open.spbstu.ru and its appearance is shown in Fig. 1. When creating the site, Laravel framework [19] was used. Let us briefly describe the procedure for working with the service. After authorization, go to the /files section to upload a video file (or audio file).

Uploading is done using the "Add file" button (see Fig. 2). The next step after uploading the file is to receive a token from Yandex - the "Get Token" button is used for this (see Fig. 2). The next step is to extract the audio channel from the video file (the first audio channel is currently being extracted, plans for the near future include selecting an audio channel to extract from the file and mixing the audio channels), for this, the FFmpeg library is used [20]. To do this, use the "Convert" button. This button also uploads the extracted audio to Yandex Cloud. After some time, the system will give the status OK and you can perform the following steps. To send the text for analysis and recognition, you need to click the "Recognize" button - after that, the analysis will be performed using the link to the audio file in Yandex Cloud using Yandex SpeechKit. The system will record the analysis operation code and start recognition. The average recognition time is estimated as follows: recognition time = audio duration / 10. For example, for an audio duration of 60 minutes (1 hour), the recognition time will be about 6 minutes. If the procedure was successful, then you can click "Get status" and get the result of the analysis. If there is no result, then the "Get status" button will not disappear. The speech is broken down into phrases - the recognized text itself in the form of a numbered set of phrases will be available by pressing the "Get Text" button. The recognition quality depends on the original audio quality. According to our estimates, for studio recording the accuracy reaches 95%, for conference video - 85%-90%. You can also get subtitles for the original video file - for this, our system brings the object from Yandex to the .vtt format. An example of recognizing a lecture on thermodynamics is shown in Fig. 3.

**Fig. 1. System appearance**

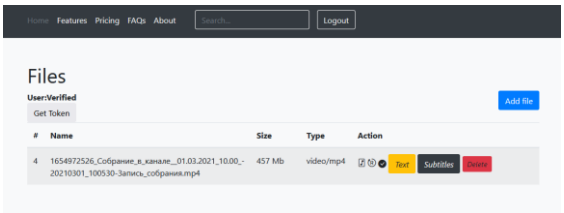
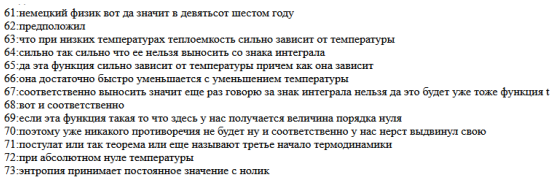



**Fig. 2. File handling process**



61:немецкий физик вот да значит в девятьсот шестом году
62:предположил
63:что при низких температурах теплоемкость сильно зависит от температуры
64:сильно так сильно что ее нельзя выносить со знака интеграла
65:да эта функция сильно зависит от температуры причем как она зависит
66:она достаточно быстро уменьшается с уменьшением температуры
67:соответственно выносить значит еще раз говорю за знак интеграла нельзя да это будет уже тоже функция t
68:вот и соответственно
69:если эта функция такая то что здесь у нас получается величина порядка нуля
70:поэтому уже никакого противоречия не будет ну и соответственно у нас нерст выдвинул свою
71:постулат или так теорема или еще называют третье начало термодинамики
72:при абсолютном нуле температуры
73:энтропия принимает постоянное значение с нолик

**Fig. 3. Recognized speech example**

**Conclusion**

Currently, the system is being actively tested by SPbPU teachers. We received a lot of positive feedback, as well as ideas for improving the system, which we are going to implement in the near future.

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Kudos Innovations, Ltd. (USA)
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http://www.kofst.or.kr

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http://sciences.academickeys.com/jour_main.php

**Sherpa Romeo (United Kingdom)**
http://www.sherpa.ac.uk/romeo/search.php?source=journal&sourceid=28772

Cl.An. // THOMSON REUTERS, ResearcherID (USA)
http://www.researcherid.com/rid/N-7988-2013

RedLink (Canada)
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http://www.tdnet.io/

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**Электронно-библиотечная система «Издательства «Лань» (Russia)**
http://e.lanbook.com/journal/

**SCIENTIFIC INDEXING SERVICE (USA)**
http://sindexs.org/JournalList.aspx?ID=202

**International Society for Research Activity (India)**
http://www.israjif.org/single.php?did=2308-4944

**International Institute of Organized Research (India)**
http://www.i2or.com/indexed-journals.html

**Journal Index**
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**Open Access Journals**
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**Indian citation index (India)**
http://www.indiancitationindex.com/

**Index Copernicus International (Warsaw, Poland)**
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**Academy announces acceptance of documents for election as a member:**

## Correspondents and Academicians

Deadline - January 25, 2023.
Documents you can send to the address T-Science@mail.ru marked "Election to the Academy members".

**The list of documents provided for the election:**

1. Curriculum vitae (photo, passport details, education, career, scientific activities, achievements)
2. List of publications
3. The list of articles published in the scientific journal ISJ Theoretical & Applied Science
   * to correspondents is not less than 7 articles
   * academics (degree required) - at least 20 articles.

**Detailed information on the website** http://www.t-science.org/Academ.html

Presidium of the Academy

**International Academy of Theoretical & Applied Sciences** - member of Publishers International Linking Association (USA) - международное объединение ведущих активных ученых с разных стран. Основной целью деятельности Академии является организация и проведение научных исследований, направленных на получение новых знаний способствующих технологическому, экономическому, социальному и культурному развитию.

**Академия объявляет прием документов на избрание в свой состав:**

## Член-корреспондентов и Академиков

Прием документов осуществляется до 25.01.2023.
Документы высылаются по адресу T-Science@mail.ru с пометкой "Избрание в состав Академии".

**Список документов предоставляемых для избрания:**

1. Автобиография (фото, паспортные данные, обучение, карьера, научная деятельность, достижения)
2. Список научных трудов
3. Список статей опубликованных в научном журнале ISJ Theoretical & Applied Science
   * для член-корреспондентов - не менее 7 статей,
   * для академиков (необходима ученая степень) - не менее 20 статей.

**Подробная информация на сайте** http://www.t-science.org/Academ.html

Presidium of the Academy

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