



No 125

The Norwegian Journal of Development of  
the International Science





№125/2024

**Norwegian Journal of development of the International Science**

ISSN 3453-9875

It was established in November 2016 with support from the Norwegian Academy of Science.

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Norwegian Journal of development of the International Science

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# CONTENT

## AGRICULTURAL SCIENCES

|                                                                                                       |   |
|-------------------------------------------------------------------------------------------------------|---|
| <i>Koghuashvili P., Chechelashvili M.</i><br>GEORGIA'S FOOD SECURITY: REALITY AND<br>CHALLENGES ..... | 4 |
|-------------------------------------------------------------------------------------------------------|---|

## ARCHITECTURE

|                                                                                                                                                                                                                                                                         |   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| <i>Abdullayeva N., Aliyeva A.,<br/>Kazimov G., Mahammadova S.,<br/>Abdullayeva A., Alicanova H.</i><br>COMPARATIVE STUDY OF PRODUCTIVITY AND<br>COMMODITY YIELD OF VARIETIES AND HYBRIDS OF<br>TOBACCO CULTIVATED UNDER CONDITIONS IN THE<br>SHAKI-ZAGATALA REGION..... | 8 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|

## ARTS

|                                                                                                                |    |
|----------------------------------------------------------------------------------------------------------------|----|
| <i>Mammadova (Sarabskaya) R.</i><br>ABOUT METHODS OF STUDYING EVOLUTIONARY<br>PROCESSES IN THE FOLK MUSIC..... | 14 |
|----------------------------------------------------------------------------------------------------------------|----|

## CHEMICAL SCIENCES

|                                                                                                                                                                                                                                                                               |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <i>Javadova A., Yusifova A., Yusifzadeh G.,<br/>Dadashova T., Maharramova Z.</i><br>DEVELOPING NEW LUBRICATING COMPOSITIONS FOR<br>POWERED MARINE DIESELS .....                                                                                                               | 19 |
| <i>Abbasov V., Hasanov E., Ağakishiyev R.,<br/>Nabiyev E., Kangarli A., Alizada R., Aliyev T.</i><br>STUDY OF PREPARATION OF PRESERVATIVE LIQUID<br>AND AS CORROSION INHIBITOR BY ADDING<br>AMIDOAMINES BASED ON OLEIC ACID TO T-30 OIL IN<br>DIFFERENT MOL PROPORTIONS ..... | 25 |

## CULTURAL SCIENCES

|                                                                                                                                                  |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <i>Kardashbeyova N., Kardashbekova N.</i><br>XX CENTURY AZERBAIJANI PROFESSIONAL MUSIC<br>FROM EUROPEAN MUSICAL TRADITIONS RULES OF<br>USE ..... | 27 |
|--------------------------------------------------------------------------------------------------------------------------------------------------|----|

## EARTH SCIENCES

|                                                                                                                                                |    |
|------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <i>Dr.Arzu Javadova</i><br>GEOLOGY AND PROSPECTS OF HYDROCARBONS IN<br>THE TRANSITION ZONE OF THE SHALLOW WATER OF<br>THE APSHERON FIELD ..... | 30 |
|------------------------------------------------------------------------------------------------------------------------------------------------|----|

## ECONOMIC SCIENCES

|                                                                                                                                                                                                                                                                         |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <i>Kurniawati Darmaningrum,<br/>Laksono Sumarto, Sri Wijastuti,<br/>Rini Handayani, Hastarini Dwi Atmanti</i><br>THE INFLUENCE OF ETHNOCENTRISM ON CONSUMER<br>LOYALTY IN LOCALLY MADE FURNITURE (CASE STUDY<br>ON SOLO FURNITURE MARKET CONSUMERS,<br>INDONESIA) ..... | 47 |
| <i>Kharabara V., Greshko R.</i><br>REMOTE BANKING SERVICE: ESSENCE AND CURRENT<br>STATE OF IMPLEMENTATION IN THE BANKING<br>MARKET OF UKRAINE .....                                                                                                                     | 53 |

## MEDICAL SCIENCES

|                                                                                                                                                                         |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <i>Aliyev A., Demirchiyeva M., Huseynova R.</i><br>THE EFFECTIVENESS OF LASER TECHNOLOGIES IN THE<br>TREATMENT OF GENERALIZED PERIODONTITIS .....                       | 58 |
| <i>Arkhammammadova G.,<br/>Hasanova V., Huseynova G.</i><br>THE EFFECTIVENESS OF THE USE OF ANTIOXIDANT<br>DRUGS IN THE TREATMENT OF GENERALIZED<br>PERIODONTITIS ..... | 61 |
| <i>Makhmudov I., Mustafaeva S.,<br/>Mejidova H., Agayeva G.</i><br>ERRORS IN EARLY DIAGNOSIS AND TREATMENT OF<br>PNEUMONIA IN AN OUTPATIENT SETTING .....               | 63 |

## **PEDAGOGICAL SCIENCES**

**Zheleva-Terzieva D.**

DYNAMICS IN MOTOR ACTIVITY LEVELS BEFORE,  
DURING AND AFTER THE COVID-19 PANDEMIC ..... 66

**Hasanova Narmin Seymour**

ZANGAZUR CORRIDOR AND ITS SIGNIFICANCE..... 72

**Sembayeva Z.**

LEVEL OF FOREIGN LANGUAGE COMMUNICATIVE  
COMPETENCE OF FUTURE TEACHERS: EVALUATION  
CRITERIA .....74

**Pasichnyk T., Solyar T.**

STUDYING OBJECT-ORIENTED PROGRAMMING IN  
SCHOOL .....80

## **PHILOLOGICAL SCIENCES**

**Gerok-Yerzhanova O.**

NARRATIVE TECHNIQUES IN THE TEXT  
INTERPRETATION .....84

**Andronnikova O.**

FAMILY EDUCATION STRATEGIES AND PERSONAL  
FEATURES OF MOTHERS IN CHILDREN WITH EARLY  
SIGNS OF BEHAVIORAL DISORDERS .....86

## **PHILOSOPHICAL SCIENCES**

**Folorunso Paul Olorunsola**

SITUATING DECONSTRUCTIONISM AND  
RECONSTRUCTIONISM IN AFRICA: TOWARDS A  
SYNERGY OF UNDERSTANDING..... 95

## **POLITICAL SCIENCES**

**Mudrinić L.**

LOBBYING AS DEMOCRACY BUILDING OR BUYING  
INFLUENCE ..... 101

## **TECHNICAL SCIENCES**

**Pham Xuan Bach,**

**Nguyen Chi Kien, Nguyen Duy Hung,**  
RESEARCH THE CHARACTERISTICS OF  
ASYNCHRONOUS ELECTRIC MOTORS USING MATLAB  
SIMULINK SOFTWARE ..... 112

**Aziev Ya., Orujev T., Veliev S.**

ADVANTAGES AND FEATURES OF TRANSPORTATION  
OF OVERSIZE CARGO BY RAILWAY TRANSPORT .....116

**Mahmudova S.**

IMPACT OF AN INFORMATION ENVIRONMENT TO  
SOCIETY .....121

# AGRICULTURAL SCIENCES

## GEORGIA'S FOOD SECURITY: REALITY AND CHALLENGES

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<https://doi.org/10.5281/zenodo.10581457>

### Abstract

The article discusses the food security of the state and its special place in the security structure. The authors note that the problem includes multi-vertical (macro economics-household-individual) and horizontal (regional-spatial) institutional-organizational and mental aspects of statehood. According to the authors, there is a high correlation between the level of stability of the state and the country's food security; We believe that they are particularly relevant for Georgia, which is in the process of institutional reconstruction and development and also has a high vulnerability in terms of food security. The authors consider two reasons for this: on the one hand, the relatively low level of agricultural development and efficiency in Georgia and, on the other hand, the high level of dependence on imports to provide the country's population with food.

According to the authors' recommendation, the government of the country should confront this situation with a more targeted, effective, and, to some extent, protectionist agrarian policy, the goal of which will be the expansion of local food products, food production, the scale of the processing industry based on the use of the appropriate grain base and the latest technologies, the social and economic prestige of labor in the agricultural sector. raise. An important reserve in this direction is the country's land fund and increasing the efficiency of its use.

**Keywords:** Food security, Agro-food products, self-sufficiency, food products, dependence on imports.

### Introduction

Food security, in its full, broad sense, is a two-component concept: firstly, it represents the possibility of access to food products necessary for the life and normal physical and social functioning of the population of a particular country (in specific cases - of this or that region), and secondly, it is the country's the potential to produce and access food products in such quantities that will not make the given state too dependent on other countries, without turning the latter into a tool for political influence on the food supply process (embargoes, cabal supply conditions, price manipulation, etc.).

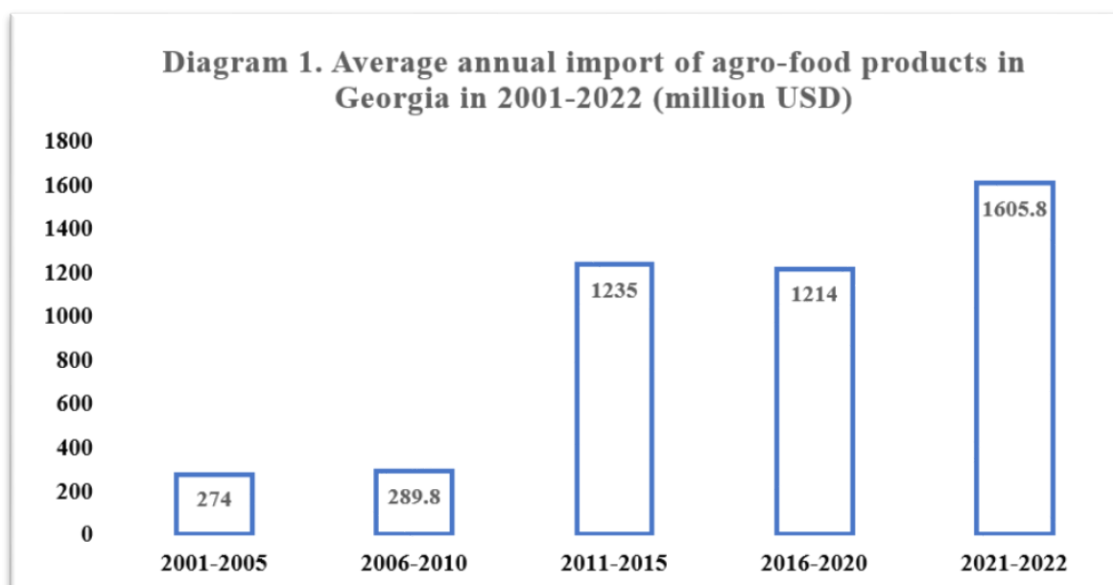
Naturally, food security at the level of each household is determined by a stable income that is sufficient for the normal physical functioning and social activity of its members.

### Discussion

Despite some recent signs of stabilization, agriculture remains the weakest link in the Georgian economy. Labor productivity in this area is 3-4 times lower than in other sectors of the economy, and although the ratio of wages to the average national

indicator is much higher than the similar indicator with labor productivity (the average wage in agriculture is at the level of 2/3 of the rest of the sectors of the economy, while Productivity is less than 2/5), the economic and social attractiveness and prestige of activity in the agricultural sector is still quite low. The mentioned circumstance leads to a systematic outflow of the labor force from this sector to other sectors of the economy and outside the country, and its shortage is increasingly observed in rural areas.

All this adequately reflects the role and weight of agriculture in the country's national economy and food supply. Compared to 1990, the share of agriculture in the economy of Georgia decreased 4 times or more (from 30.0% in 1990 to 7.4% in 2021), including wheat production - approximately 2.4 times, corn production - 1.2 times, potatoes - 3.9 times, vegetables - 3.0 times, meat - 2.3 times, eggs - 1.2 times. The yield level in Georgia is about 3-4 times lower than the European average. Productivity lags even further in other aspects, for example, the average yield of flour (1543 liters) in Georgia is almost 6 times less than the average European level (about 9000 liters).



After gaining independence, a significant trend can be observed: the import of agricultural products and food products to Georgia is growing rapidly. Its volume in Georgia in 2022 compared to the beginning of the century increased 11.0 times, while the country's economy - about 3.1 times, and agricultural products only 1.3 times. Such dependence on imports, in addition to reducing the number of jobs and leading to an increase in unemployment (in parallel - the

motivation for emigration), leads to the outflow of foreign exchange resources from the country. Only during the last ten years, has the total negative trade balance of agro-food products reached 3.5 billion, exceeded the US dollar, and since the beginning of the century - 11.0 billion. US dollars.

Table (1) shows the ratio of imported and local products in the resources of the main agricultural products.

Table 1.

**The ratio of imports to local production by types of main agricultural products in 2021 (%)**

| Product                | %     |
|------------------------|-------|
| Wheat                  | 354.4 |
| Corn                   | 35.6  |
| Potatoes               | 8.1   |
| Vegetables             | 72.5  |
| Meat                   | 116.8 |
| Milk and milk products | 26.4  |
| Egg                    | 2.6   |

As for such important consumer products as oil and sugar, the share of their local production in the country's resources is insignificant, and their import costs the country tens of millions of US dollars every year (in 2022, oil imports to Georgia amounted to 55.2 million US dollars, sugar - 94.4 million US dollars).

According to the latest statistical data, the level of self-sufficiency of the country is wheat - 22 percent, corn - 74 percent, potatoes - 115 percent, vegetables - 61 percent, meat - 51 percent, milk and dairy products - 81 percent, eggs - 98 percent, oil - 4 percent, with sugar - 0 percent.

The products named according to the level of self-sufficiency of Georgia can be divided into three groups:

The first - high - products, the share of local production in consumer resources is high (90% and more). At the modern stage of development for our country, these are potatoes and eggs;

The second is a group with significant deficits. These include meat, milk and dairy products, vegetables, corn. According to them, the level of self-sufficiency ranges from  $\frac{1}{2}$  to  $\frac{3}{4}$ ;

Third - products with acute shortage. The level of self-sufficiency in products of this group is below 25 percent (wheat, sugar, oil).

However, despite its rather high cognitive and applied value, the self-sufficiency rate does not serve as a solid, objective indicator of food security. Although it shows the share of local production in the balance of relevant products, it does not tell us anything about how the population is provided with relevant products about the rational norm of consumption. For example, the level of self-sufficiency in meat is 51 percent, which tells us that out of the average annual consumption of 38 kg per head of the population, about 19.4 kg is locally produced, but this 38 kg is only 60 percent of the rational consumption level (63 kg per year), is already completely different. Puts the problem of food security in context. - To achieve a rational level of consumption of meat and meat products, it is necessary that the total annual consumption is 25 kilograms more than the actual one! This would require an increase of about 2.3 times over current levels of local production or imports. To cover the said deficit at the expense of

imports, it would be necessary to increase annual imports from the current 93.1 mln. from USD to USD 216.0 million. Each household would need an additional 100-100 GEL every month to buy meat and meat products, taking into account their prices and the affordability of the household, which is about 8 percent

of the current household income. As we can see, with this particular consumer product and in general, the solution to the food security problem simultaneously goes through a significant increase in the production/import of the relevant resources and the income of the population.

Table 2.

**Added value produced in the agricultural sector in Georgia and import and export of agro-food products in 2010-2022 (million USD)**

|                                                                                                             | 2010   | 2015   | 2020   | 2021   | 2022   |
|-------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|
| Added value created in the agricultural sector in US dollars, at the average annual exchange rate of GEL/\$ | 1034,5 | 1168,0 | 1154,7 | 1204,6 | 1480,0 |
| Import of Agrofood products                                                                                 | 964,4  | 1111,5 | 1212,6 | 1354,0 | 1857,6 |
| Export of Agrofood products                                                                                 | 349,3  | 612,3  | 942,3  | 1142,0 | 1261,7 |
| Percentage ratio of Agrofood products to the added value created in the agricultural sector:                |        |        |        |        |        |
| - import                                                                                                    | 93,2   | 95,2   | 105,0  | 112,4  | 125,5  |
| - export                                                                                                    | 33,8   | 52,4   | 81,6   | 94,8   | 85,3   |

The volume of products produced in the agricultural sector and the import of agro-food products can be considered serious indicators of food security. Their formation is indeed based on different pricing methodologies, but they present a fairly objective picture for characterizing the general trend.

The mentioned table allows making two important conclusions:

First, the ratio of imports to local production is increasing. - Despite the growth of the agricultural sector of Georgia, which increased almost 1.5 times after 2010, during the same period, the import of agro-food products doubled, due to which the ratio of the latter to the value of agricultural sector products increased by 32.3 points;

Secondly, parallel to the increase in imports, the export of agro-food products is also growing significantly - it was 349.3 million in 2010. 1261.7 million in US dollars by 2022. increased to the US dollar (3.6 times), which reduces the share of products of local origin in the consumer market of Georgia at an even faster pace, which currently does not exceed 15-20 percent.

In such conditions, the saturation of the local market with food creates an illusory effect of a good situation. - The saturation of the market is largely related to the low solvency of a significant part of the population. Given their much higher income levels, the current supply of most types of food products (local production + imports) would not be sufficient to meet their needs, even within physiologically recommended norms. In addition, excessive dependence on imports increases the fragility of the country's food security and risks in the event of external negative factors (unfavorable supply conditions).

Excessive dependence on imports, especially if a country has a monopoly on the import of goods, makes the receiving country a potential supply hostage, with at least three threats:

First, immediate stoppage of supply, embargo, or sanctions on these products will create serious problems in meeting the needs of the country's population, as it will be necessary to rearrange the supply chains, which is a time-consuming process. In

addition, such a situation, as a rule, significantly increases the price of products in the consumer market;

Second, the export quota in the supplying country, the introduction (increase) of export duties also increases the price of products and directly affects the well-being of the population;

Thirdly, the government of the country should oppose the mentioned situation with a more targeted, effective, and to some extent, protectionist agrarian policy, the purpose of which will be to expand the scale of the processing industry based on the use of local food products, food production, the appropriate grain base, and the latest technologies, to raise the social and economic prestige of labor in the agricultural sector. An important reserve in this direction is the increase in the efficiency of the use of the country's land fund, 85 percent of which is still owned by the state.

### Conclusion

Although the importance of food security seems to be easily perceived and understood at different levels of public life, the attitude towards it is still far from ideal, which cannot respond to the challenges and risks that poses to the country's security in terms of food security: agriculture, and in general, local agro-food products. The dynamics of production growth lags behind the requirements of the time, with individual food products, where the country has the production potential, the level of self-sufficiency (meat, wheat, oil, etc.) is low or critically low. Moreover, the level of self-sufficiency is determined by the available resources, while the ratio of the volume of these resources to the level of providing food products for the entire country's population at a rational level is only about 50-80 percent. Low labor productivity and, accordingly, relatively low wages, despite individual segmental successes and breakthroughs in terms of productivity, introduction of new technologies, investment attraction, and remuneration, which have not yet acquired a systemic character, create a rather fertile ground for the migration of the most mobile, able-bodied part of the rural population to urban areas or abroad. This creates a problem for the country's security in other directions - demographic and military.

From the point of view of state security, the increase in the competitiveness of imported dumped products in the conditions of national currency strengthening, compared to local production, is not uncommon.

The strategic direction of the state's economic and agrarian policy should be to increase the effectiveness of the use of all resources available in the country, including the land, the sharp increase in the motivation of the workforce, the connection with the land resources and other components of agricultural products, using the relevant economic and financial levers, including the subsidy system. , with the formation of tax benefits and a preferential credit system.

Food security is not only an important component of national security, but by its essence and influence on the physical and mental health of society members, their economic and social activity, and motivation, it has a significant impact on other components of national security as well, and accordingly, it requires much more institutional, organizational and financial support and provision.

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# ARCHITECTURE

UOT: 633.71

## COMPARATIVE STUDY OF PRODUCTIVITY AND COMMODITY YIELD OF VARIETIES AND HYBRIDS OF TOBACCO CULTIVATED UNDER CONDITIONS IN THE SHAKI-ZAGATALA REGION

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### Abstract

Selection experience the Zagatala Regional Experimental Station of the Agricultural ET Institute conducted scientific-research work on a total of 71 samples with the results of selection consisting of 36 varieties in the collection area of tobacco and 35 variants in the hybrid area in the Parzivan area. At the end of the study, it was observed that the highest yield was 39.0 c/ha in the Burley TN-90 variety, and the lowest was 27.1 c/ha in the Samsun short-sized variety. Zagatala-Dübek variety has the highest yield of commodity type I-II 90%, III-IV-10% and it differs from others. In the hybrid field, the highest index was 39.7 c/ha in the blue form of Virginia-20×106, and the lowest was 27.9 c/ha in the variant Virginia-548×Virginia KY-160. Virginia-20×Zagatala-Dübek variant had the highest yield of commodity species I-II 92%, III-IV-8% and differed from others.

**Keywords:** selection, hybrid, experience, tobacco, productivity, variety, variant, commodity type

### Introduction

Tobacco production occupies a special place in Azerbaijan's agriculture. The development of tobacco farming in the republic on scientific basis and the creation of high industrial potential in this field coincides with the 60-70 years of the last century. In those years, fertile conditions were created for the rapid development of tobacco farming in Azerbaijan and the strengthening of the industrial potential of this field. In the 1970 s and 1980 s, the cultivated area of tobacco was 17,000 hectares, and the volume of production was more than 60,000 tons. According to the economic importance of The highly profitable tobacco farming area is cultivated in 21 regions of our Republic, mainly in the Sheki-Zagatala region.

In addition to being an economically efficient field, tobacco farming also has wide prospects as one of the important areas for creating new jobs and increasing the income of the population. The development of this field plays an important role in ensuring the employment of the rural population, increasing exports, and bringing foreign currency to the country. tobacco, it is considered the second technical plant after cotton growing in Azerbaijan.

According to the information provided by the Ministry of Agriculture, in 2023, tobacco was planted

on 2888.9 hectares of land in the republic. 6289.9 c/ha of dry tobacco products were collected from those areas. Average productivity was 21.7 c/ha [24].

The purpose of the work: taking into account the demand for fragrant tobacco varieties of the farms operating in the Republic, it consists in developing the scientific and practical bases of innovative cultivation technologies in agriculture in the regions, creating high-yielding, high-quality, disease- and pest-resistant tobacco varieties, and organizing their initial seed production.

Effectiveness of research work: comparative analysis of existing varieties of tobacco with new varieties and, as a result, the creation of quality new varieties that are resistant to diseases and pests and meet the modern market requirements, the initial seed production of those created varieties is organized and seed production is carried out in private, peasant-farmer, individual farms engaged in tobacco cultivation. development.

### Results and their discussion

C.M. Talai, A.A. Zamanov, N.Q. Hummatov [et. al.] and B.H. Abbasov, G.A. Kazimov writes that tobacco is an economically very efficient plant. In addition to large-leaved, semi-aromatic, aromatic forms of tobacco, Virginia-type aromatic varieties are also cultivated in large areas in the Republic. In the last five

years, the area of this type of tobacco cultivation in Azerbaijan has increased from 1109 hectares to 2405 hectares, and the total tobacco production has increased from 2857 tons to 3316 tons. For many years, the cultivation of small-leaved non-aromatic tobacco varieties was preferred in the republic, and Virginia and Berley varieties, which have high quality and weight characteristics, were not given attention. Moreover, since these varieties are less demanding on fertilizers, their cultivation is favorable from the point of view of environmental protection. Compared to small-leaved varieties, the tobacco raw materials produced from them differ in that the amount of sugars and essential oils is high, and nicotine and proteins, which have a bad effect on the weight quality, are low. Therefore, we recommend the wide use of these varieties in the production of cigarettes [6, p. 96; 1, p. 1-8].

Y.Q. Karimov states that the Sheki-Zagatala region is located in the northwest of the Republic of Azerbaijan. The Republic of Georgia along the Alazan River in a small part from the North-West and South, with the Republic of Dagestan from the north along the southern slope of the Greater Caucasus to the beginning of the Goychay River, as well as the Alazan-Haftaran valley and the Ajinohur frontal mountain region from the south, the Samukh region and Agdash and the south-east It is bordered by Goychay regions. [15, p. 224].

R.R. Mustafayeva the development of tobacco farming, which is a promising and profitable field, will play an important role in creating new jobs, increasing exports, and bringing foreign currency to the country in the near future. At present, local farmers cultivate various varieties of tobacco [5, p. 14-17].

A.Q. Goncharov since tobacco is a light and heat-loving plant, the life processes that take place in it, photosynthesis, the movement of photosynthesis products, and the collection of dry matter are carried out more intensively in light conditions. If the illumination is insufficient, the vegetation period of tobacco is prolonged, the collection of dry matter slows down, the ratio of carbohydrates and proteins in raw materials decreases, and its aroma decreases. [12, p. 20-24].

M. Michae, S. Paul believe that tobacco is considered a drought tolerant plant. The plant is able to produce a lot even with low soil moisture. Tobacco does not stop developing even in soil conditions with little moisture. Because tobacco also has a strongly developed root system, it uses irrigation water to bring the field's moisture capacity closer to that of the soil. Moisture obtained as a result of excessive irrigation has a negative effect on the responsibility of tobacco [20, p. 1-8].

K. Karabacak confirms with his research conducted in 2017 that although the tobacco plant's demand for sunlight during the germination period is low, the demand for light increases during the development of seedlings. Therefore, it is important to plant tobacco on south-facing slopes. In this case, tobacco leaves are of better quality [11, p. 46-48].

Shaobao Wang, YanYong, Yuzhen Xia [et.al.] write that tobacco growth is one of the technical crops that generally lasts 120 days. Tobacco growth is divided into four main stages: 1. Pre-planting stage. 2.

Root elongation stage. 3. Flowering stage. 4. Mature stage. The 1st stage refers to the period from planting to transplanting the seedling to the field. The length of this stage can vary according to different growing media and seedling cultivation and growth methods. After transplanting the tobacco seedlings to the field, they gradually adapt to the soil within 5-7 days. Then the stems, leaves and roots grow faster, increasing the demand for fertilizer and water significantly. This period is defined as the 2nd stage. After that, tobacco plants enter a period of vigorous growth called the 3rd flowering stage. This stage is the most important stage and has a great impact on the yield and quality of tobacco. The 4th stage lasts until the end of the tobacco vegetation [22, p. 1-9].

N. Jones, G. N. Sparrow show that tobacco grows better in large and good quality soils. If such lands are fully supplied with rainwater and the humidity is according to the plant's needs, favorable conditions for tobacco production will be created. However, in some regions, the amount of rain during the year may be unevenly distributed. In this case, the water holding capacity of the soil changes the yield of tobacco. Drought and poor distribution of rainfall in the region during the season make tobacco irrigation more of a concern for farmers. Because too much or too little rain causes crop loss [21, p. 16].

I.V. Pavlyuk., G.N. Zhigalkina, V.A. Solomotin believe that the productivity of tobacco depends on the general development of plants, the number of leaves and the size of leaves [16, p. 120].

N. Urmila writes that tobacco leaves contain resin, protein, essential oils, organic acids, ash, phenols and other alkaloids. According to the amount of these alkaloids, "nicotine" is one of the most widespread alkaloids and has a bad smell. Infusions made from tobacco leaves are used against parasites. The sulfate salts contained in nicotine are used as insecticides against leaf parasites. The tobacco industry uses many additives in the production of tobacco products. So, it is known that more than 600 ingredients are added to tobacco products. Modern American companies contain about 10% mixed cigarettes and add sugar, cocoa, menthol, licorice to their composition by weight [8, p. 40].

C. Er, Y. Mustafa state that nicotine ( $C_{10}H_{14}N_2$ ) containing pyridine alkaloid is a pharmacologically most powerful stimulating active ingredient of plants belonging to the Solanaceae family belonging to the organic nitrogen group. It was first discovered in 1828 by the German chemists Wilhelm Posselt and Ludwig. They named it "nicotine" in honor of the French doctor Jean Nicot de Villemayne, who was discovered by Reimann during the analysis of tobacco leaves and played a major role in the first spread of tobacco to Europe. Nicotine is a colorless and odorless substance [9, p. 251].

S.B. Ahmadova emphasizes that the tobacco leaf contains 12 substances with a similar chemical structure and therefore have similar names. The most important of them are nicotine, nornicotine, nicotine and nicotimite. Of these substances, the most important medically and socially oriented substance, as well as the most abundant in tobacco leaves, is nicotine [3, p. 77-84].

Q.A. Kazimov it was determined that the highest dry leaf yield and yield of commodity species was obtained in the 90×40 cm food plot at the rate of  $N_{45}P_{120}+20$  tons of manure compared to other options. Thus, in the 90×40 cm food area, 27.3 c/ha at 70-80-0% irrigation rate, 28.5 c/ha at 70-80-60% irrigation rate, 26.6 at 70-70-50% irrigation rate made c/ha [15, p. 93-95].

E.V. Gnuchikh and H. Pushta show that tobacco contains more than 30 chemical compounds. Among these compounds, nicotine prevails more, that is, 97%. Chemical compounds such as anabizin, nicotine and nor nicotine are produced only in the tissues of the tobacco plant. Currently, nicotine is widely used in the purchase of chemical drugs and in the field of cosmetics. [12, p. 331; 129; 18, p. 24-31].

B.H. Abbasov, G.A. Kazimov write that the appearance of ripening spots on the surface of tobacco leaves, the bending of leaf tips and the sound of "click" when broken are the expression of technical product ripening. If such a situation is observed in tobacco leaves, it is possible to start skinning. The leaves of Virginia-type tobacco varieties, unlike local tobaccos, should be picked when 2/3 of the leaf area turns yellow. Before the skin, the edges of the tip of the leaves should be completely yellow, the surface should be bent downwards, yellow bubbles should form on it, and the leaf base should become rough. After the completion of these indicated signs, skins can be started [2, p. 1-8].

F. Akhter, D. Buskles, R. Tito state that from the cultivation of seedlings in the nursery and the stage of transplanting the seedlings to the field until the skinning of the last woody leaves, the collection and processing of tobacco requires a full seven months from April to the end of October [17, p. 153-189].

I. Pesteski, K. Kocoska, M. Srbinozka state that tobacco producers prefer to use mainly Virginia and Burley types of tobacco. Currently, this type of tobacco makes up 80% of tobacco production. These varieties meet the demands of primary producers, processors and smokers for their aromatic taste. However, there is a need to create new varieties taking into account the new requirements. New varieties will be obtained by working hard in this field at Prilep Tobacco Institute [19, c. 59, p. 205-211].

A.I. Aliyeva, N.M. Abdullayeva, B.H. Abbasov [et. al.]. based on their research work, they write that the height of the plant in Virginia-type varieties is 230-240 cm on average for repetitions [4, p. 77-84].

H.Ch. Ekerbicher, U. Berberoglu, M.B. Inchi 1497, French physician Jean Nico de Villemain first brought tobacco seeds to Europe as a medicinal plant. Tobacco seeds were brought to Europe in 1518 and were first planted as a decorative ornamental plant in the Royal Garden in Lisbon. Because it has a beautiful group of flowers and the flower has its own smell. In 1560, French doctor Jean Nico de Villemain sent tobacco seeds to Queen Catherine de Medicis, who was depressed after the death of King Henry II of France. Those seeds were planted in the palace garden. The beautiful group of flowers that opened after the planted seeds bloomed, the Queen liked them very much and began to smell those flowers for a while. At that time, the Queen's headaches, which were suffering from migraine pains, began to decrease and stopped after a while. After this date, tobacco spread to Europe and began to be used as a medicine. Nicola Monorades, a professor of medicine at the University of Sevilla, said in his book that tobacco is useful against many diseases, especially tuberculosis. Finally, the botanical name of the tobacco plant was *Nicotiana* and in the vernacular it was called "Queen's grass" [10, p. 470-474].

T.H. Tamrazov, S.A. Guliyeva writes that according to the report of the experiment, the entire wet mass of the tobacco in the repetitions is collected and taken into account. 50 typical leaves are selected from each skin, their weight is calculated by weighing them on a scale, they are attached to the stems and the yield is determined by drying them to air-dry state [95, p. 177-181].

Productivity indicators. The wet leaf product obtained from common hides from the experimental area was dried at the supply point in a modern type "Dekloit" (Italy) fire-drying chamber at a temperature of 40-45°C. Then the obtained dry leaf mass was weighed on an electronic scale and the obtained results are given in table 1.

Table 1

**Productivity indicators of the tobacco plant in the field of collection**

| No | Name of the variety % | Productivityc/ha | commodity yield % |        |
|----|-----------------------|------------------|-------------------|--------|
|    |                       |                  | I-II              | III-IV |
| 1  | Bahlul-87             | 33.2             | 85                | 15     |
| 2  | Islam-35              | 32.0             | 83                | 17     |
| 3  | Virginia AZ           | 36.7             | 88                | 12     |
| 4  | Virginia              | 32.0             | 81                | 19     |
| 5  | Virginia-1            | 30.3             | 84                | 16     |
| 6  | Virginia-20           | 36.2             | 84                | 16     |
| 7  | Virginia-3970         | 31.4             | 80                | 20     |
| 8  | Virginia RGH-4        | 35.0             | 81                | 19     |
| 9  | Virginia- GL-26       | 29.6             | 77                | 23     |
| 10 | Virginia Koccer-347   | 38.2             | 86                | 14     |
| 11 | Virginia-386          | 30.6             | 79                | 21     |
| 12 | Virginia-548          | 30.5             | 77                | 23     |
| 13 | Virginia-2261         | 28.7             | 75                | 25     |
| 14 | Virginia- NC-55       | 32.7             | 82                | 18     |
| 15 | KY-160 Siqar          | 25.6             | 87                | 13     |
| 16 | Prilep                | 32.7             | 79                | 21     |
| 17 | Izmir                 | 29.0             | 87                | 13     |
| 18 | Burley                | 33.0             | 78                | 22     |
| 19 | Burley -122           | 34.0             | 86                | 14     |
| 20 | Burley -123           | 38.0             | 86                | 13     |
| 21 | Burley -78            | 35.0             | 88                | 12     |
| 22 | Burley TN-90          | 39.0             | 85                | 15     |
| 23 | 106 blue form         | 32.7             | 87                | 13     |
| 24 | İmmunni-1             | 29.1             | 80                | 20     |
| 25 | Ostrolist-46          | 35.2             | 78                | 22     |
| 26 | Krupnolist            | 35.7             | 77                | 23     |
| 27 | Zagatala largeleaf    | 37.1             | 86                | 15     |
| 28 | Zagatala -67          | 38.8             | 87                | 13     |
| 29 | Zagatala Dübeki       | 29.6             | 90                | 10     |
| 30 | Zaqatala Burley       | 35.1             | 89                | 11     |
| 31 | Yubilee-8             | 28.3             | 77                | 23     |
| 32 | Samsun-155            | 34.7             | 87                | 13     |
| 33 | Samsun short          | 27.1             | 75                | 25     |
| 34 | Trebizond-1           | 36.9             | 84                | 16     |
| 35 | Trebizond-5           | 33.3             | 80                | 20     |
| 36 | Trebizond-135         | 34.6             | 81                | 19     |

As can be seen from table No. 1, it was observed that the highest indicator was 39.0 c/ha in Berley TN-90 varieties, and the lowest was 27.1 c/ha in Samsun short stature variety. Zagatala-Dübek variety has the highest commodity yield of 90% in I-II and 10% in III-IV.

Table 2

**Productivity indicators in the hybrid field for**

| No | the name of the hybrid                            | Productivity<br>c/ha | commodity yield % |        |
|----|---------------------------------------------------|----------------------|-------------------|--------|
|    |                                                   |                      | I-II              | III-IV |
| 1  | Burley-122 x 106 blue form                        | 35.6                 | 90                | 10     |
| 2  | Burley-122 x Zagatala-67                          | 33.8                 | 83                | 17     |
| 3  | Burley-122 x KY-160 Siqar                         | 30.4                 | 89                | 11     |
| 4  | KY-160 Siqar x Burley-122                         | 31.7                 |                   | 12     |
| 5  | Burley-78 x Burley-122                            | 35.6                 | 87                | 13     |
| 6  | Burley x Zagatala largeleaf                       | 30.4                 | 84                | 16     |
| 7  | Burley x Zagatala Dübək                           | 34.5                 | 88                | 12     |
| 8  | Zagatala Dübək x Burley                           | 32.1                 | 83                | 17     |
| 9  | Zagatala Dübeki x Virginia-20                     | 29.7                 | 84                | 16     |
| 10 | Zagatala -67 x Berley-122                         | 36.7                 | 80                | 20     |
| 11 | Zagatala largeleaf x Burley                       | 37.5                 | 81                | 19     |
| 12 | Zagatala largeleaf x Virginia- GL-26              | 31.6                 | 79                | 21     |
| 13 | Zagatala largeleaf x İmmunni-1                    | 34.7                 | 79                | 21     |
| 14 | Zagatala largeleaf x Zagatala Dübək               | 29.1                 | 85                | 15     |
| 15 | Zagatala largeleaf x Samsun-155                   | 33.3                 | 83                | 17     |
| 16 | İTB-6148 x Virginia Kokker-347                    | 37.8                 | 90                | 10     |
| 17 | Virginia-1 x Virginia-548 x Trebizond-135         | 35.9                 | 87                | 13     |
| 18 | Virginia -20 x Zagatala Dübək                     | 36.1                 | 92                | 8      |
| 19 | Virginia-20 x 106 blue form                       | 39.7                 | 85                | 15     |
| 20 | Virginia-2261 x Virginia-1                        | 35.0                 | 83                | 17     |
| 21 | Virginia-2261 x Virginia-1 x KY-160 Siqar         | 36.5                 | 81                | 19     |
| 22 | Virginia -2261 x İmmunni-1                        | 32.7                 | 77                | 23     |
| 23 | Virginia NC-55 x KY-160 Siqar                     | 32.9                 | 87                | 13     |
| 24 | Virginiya NC-55 x İTB-6148 x Virginiya Koccer-347 | 37.5                 | 88                | 12     |
| 25 | Virginia -548 x KY-160 Siqar                      | 27.9                 | 86                | 14     |
| 26 | Virginia-AZ x Burley -78                          | 38.2                 | 89                | 11     |
| 27 | Virginiya NC-71 x Zagatala Dübək x Virginia-20    | 38.7                 | 82                | 18     |
| 28 | KY-160 Siqar x Burley -122                        | 36.3                 | 86                | 14     |
| 29 | KY-160 Siqar x Virginia AZ                        | 29.1                 | 85                | 15     |
| 30 | İmmunni-1 x Virginia -2261                        | 28.6                 | 78                | 22     |
| 31 | 106 blue form x Burley-122                        | 37.9                 | 89                | 11     |
| 32 | 106 blue form x Virginia-1                        | 38.5                 | 90                | 10     |
| 33 | 106 blue form x Burley-122                        | 38.7                 | 91                | 9      |
| 34 | Samsun-155 x Zagatala largeleaf                   | 35.2                 | 81                | 19     |
| 35 | Krupnolist x Burley-122                           | 38.0                 | 86                | 14     |

As can be seen from table No. 2, the highest indicator was 39.7 c/ha in Virginia-20×106 blue form, and the lowest was 27.9 c/ha in Virginia-548×KY-160 Ci-gar variant. In Virginia -20×Zagatala-Dubek variant, the highest commodity yield was 92% in I-II and 8% in III-IV.

**Conclusion**

1. Conducted scientific-research work on a total of 71 samples with selection results consisting of 36 varieties in the field of tobacco collection, and 35 variants in the hybrid field;

2. The highest indicator was 39.0 s/ha in Berley TN-90 varieties, and the lowest was 27.1 c/ha in Samsun short stature variety. Zagatala Dübək variety has the highest commodity yield of 90% in I-II and 10% in III-IV.

3. In the hybrid field, the highest indicator was 39.7 c/ha in the blue form of Virginia-20×106, and the lowest was 27.9 c/ha in the variant Virginia-548×Virginia KY-160. In Virginia-20×Zagatala Dübək variant, the highest commodity yield was 92% in I-II, and 8% in III-IV.

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# ARTS

## ABOUT METHODS OF STUDYING EVOLUTIONARY PROCESSES IN THE FOLK MUSIC

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## О МЕТОДАХ ИЗУЧЕНИЯ ЭВОЛЮЦИОННЫХ ПРОЦЕССОВ В НАРОДНОЙ МУЗЫКЕ

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### Abstract

The in folk music. This review is based on the ideas of the outstanding folklorist K.Kvitka – the theory “from simple to complex”.

The article emphasizes the importance of studying the stages of evolution of folk music.

### Аннотация

В статье рассматриваются некоторые методы изучения эволюционных процессов в народной музыке. Данный обзор опирается на идеи выдающегося фольклориста К.Квитки – теорию «от простого к сложному».

В статье подчеркивается важность изучения этапов эволюции народной музыки.

**Keywords:** formula, semantics, mode, intonation, evolution.

**Ключевые слова:** формула, семантика, лад, интонация, эволюция.

Существуют разные теории и подходы к изучению эволюционных процессов в музыке. Безусловно, что существуют разные взгляды на происхождение и развитие музыкального искусства. В этом аспекте теория «от простого к сложному», принадлежащая известным фольклористам, неоднократно подвергалась критике. В данной статье приведем некоторые аргументы в пользу данной теории.

Исследование функционирования мелодформул на разнообразном музыкальном тюркском материале подтверждает закономерность динамики эволюции музыкальных культур «от простого к сложному». Изучение тюркских культур в их эволюции возможно на основе этногенетических реалий. Если представить себе формульный тип интонирования как своего рода реликт раннефольклорного интонирования, обладающий полистадиальной семантикой, возможен сравнительный анализ в данном ракурсе.

По мнению этномузыковедов, «возраст» музыкального образца может определять степень мелодической развитости, а также функциональная четкость и определенность ладовысказывания. В этом аспекте мы солидаризуемся с методами анализа, позволяющие выявить наиболее ранние черты интонирования.

По мнению ученых, «музыка разных народов, при всех своих национальных особенностях, подчиняется некоторым общим закономерностям. Можно предполагать, что интонационное образование диатонических ладов в музыке всех народов

идет тремя основными путями: секундовое опевание опорных тонов, скачок в мелодии (терцовый и квартовый в первую очередь) и мелодическое заполнение скачка» [4, с. 282].

Приведу краткий обзор научных идей об эволюции музыкального языка.

Опираясь на идеи ученых начала XX века об эволюции музыкального языка, подчеркну их продуктивность. На мой взгляд, гениальные открытия остались не раскрытыми в азербайджанском музыкознании и практически оказались не использованными, поскольку наука начала XXI века отнеслась к ним без должного понимания. По мнению известного специалиста в области музыкального востоковедения Т.Джанизаде, существуют проблемы недостаточности «современных исследований по истории музыки советского периода» [1, с. 190]. И добавлю, по истории советского теоретического музыкознания.

Надо сказать, что азербайджанские этномузыковеды не всегда единодушны в мнении об определении «возрастных пластов» азербайджанской музыки. Вместе с тем, развитие азербайджанской музыки, стабильные и мобильные элементы структуры связаны с изменениями эволюционного порядка. В соответствии с этим выстраивается аналитическая схема:

1. Малообъемные лады;
2. Квартовые лады;
3. Квинтовый ладовый круг;
4. Лады с увеличенной секундой.

Подчеркнем, что олигатоника имеет важное значение в изучении музыкальной культуры тюркоязычных народов. Именно функционирование олигатонных структур позволяет анализировать образцы музыкальной культуры прошлого и, соответственно, рассуждать о геноформульных рядах. Так, К.Квитка считал, что «олигатонные звукоряды следует отнести к числу первобытных» [2, с. 295].

Олигатоника как древний субстрат музыкальной структуры, безусловно, может иметь надэтнический характер. Вместе с тем, существуют определенные реалии мелогенеза, свидетельствующие об известной этнодифференцированности данного явления. Олигатоника, безусловно, имеет разную природу, разную звуковысотную специфику и т.д. Мы ориентируемся на материал, который позволяет рассуждать о функционально значимой содержательности олигатоники. Опуская известную современную теорию «ладоакустических полей» (Е.М.Алкон) олигатоники, но учитывая ее основные векторы мы будем опираться на категории азербайджанской ладовой системы, обладающей ясными функциональными параметрами. Однако, подчеркнем, что и в контексте теории «ладоакустических полей» речь идет о возможных ладофункциональных основаниях олигатоники. Таким образом, следует констатировать, что в музыкальных образцах с опорой на малообъемные звукоряды фигурирует звуковысотная устойчивость как основа лада.

По мнению исследователей, ладовая семантика играет решающую роль в определении звукового центра олигатоники. И если включить в анализ этос азербайджанских ладов, то идентификации геноформульного ряда будут высвечены, безусловно, ярче. В этом смысле олигатонные структуры в силу фиксированного влияния кратких узкообъемных моделей на слушательское восприятие, имеют особенность, концентрированность которых определяет и степень их суггестии. В этом смысле олигатонные мелоинтонации имеют определенные смыслообразующие функции. Так, выдвигаемая идея Е.М.Алкон о «ладоакустических полях» олигатоники возможно идентифицировать с мелоформулами азербайджанской ладовой системы.

Однако, прежде чем использовать постулаты, безусловно, имеющие информационную ценность, следует избирательно относиться к детерминантам того или иного источника. Ю.М.Лотман писал о том, что к источникам надо подходить как к текстам, «нуждающимся в дешифровке, своеобразном раскодировании, которое должно предшествовать цитатному их использованию» [3, с. 125].

Идеи о ранних формах проявления музыки ведущих этномузыкологов Европы конца XIX – начала XX века были проанализированы К.Квиткой в его научном труде «Первобытные звукоряды» [2]. К.Квитка приводит многочисленные труды ученых, среди которых Г.Риман, А.Гельмгольц, А.Фаминцын, Э.Хорнбостель, Г.Адлер, К.Закс, Ч.Вид, Т.Уилсон, Р.Валлашек, К.Штумф, Л.Ландри, Г.Порри, Э.Эгген, Дж.Роубосм, Р.Лакс, Ф.Торрефранк, Г.Грей, М.Портман, А.Эллис и другие. Рассматриваемый нами материал относится к истории

этномузыкального знания. Данный материал является ценным опытом этномузыкального знания, необходимым для разработок современной азербайджанской этномузыкалогии. Так, «Словацкий музыковед А.Эльшек в своей статье «Древние структурные формы ладовых систем в славянской народной музыке» вполне обоснованно считает мелодии, построенные на би-, три-, и тетрахордных звукорядах, реликтами древнейшей стадии музыкальной культуры славян» [2, с. 277].

Олигатонные диатонические ряды, в частности, трихорды К.Квитка считал «самостоятельной, жизнеспособной и древней ладовой системой» [2, с. 275]. Более того, подчеркивал важность функциональных связей в организации олигатонных структур. О неприемлемом игнорировании олигатоники К.Квитка писал следующее: «Я считаю, что мы ... должны признать мелодические типы с наименьшим тональным объемом древнейшими» [2, с. 273]. В.Л.Гошовский в комментариях к трудам К.Квитки отметил, что «сегодня, при существующем состоянии изучения данной стадии музыкального мышления, предположения К.Квитки о существовании древних диатонических трихордных ладовых систем полностью подтвердилось» [2, с. 275].

В конце позапрошлого XIX века – в начале XX века ученые считали, что в контекст эволюционной, исторической схемы развития с необходимостью следует включать мелодические образцы раннефольклорного интонирования. Безусловно, в современной науке известны и противники этой теории, но, в то же время, нет и научных трудов, которые бы на обширном материале ее опровергали. Будем учитывать основной вектор концепции «от простого к сложному» - наиболее ранние образцы музыкального фольклора ограничиваются узким звуковым диапазоном. Примечательно, что рассматривая музыкальные образцы олигатоники, этномузыкологи считали их тонально состоятельными. В работах известных этномузыковедов не раз характеризовались устойчивые мелодические типы, выявляемые в процессе анализа музыкального фольклора того или иного региона. Достаточно было указать на диапазон, интервалыку диапазона и заключительный устой.

К.Квитка считал, что необходима генетическая систематизация музыкального фольклора. Позже появилось такое направление как музыкальное славяноведение с несущим термином архетипа В.Л.Гошовского, теория формульности И.Земцовского. Обзор концепции К.Квитка, обращение к мнению ведущих этномузыкологов конца XIX века – начала XX века Европы и России, опора на современные исследования древних ладовых систем позволяют говорить о том, что на протяжении веков музыкальное искусство эволюционировало по нескольким векторам. Так, с одной стороны, существовал процесс саморазвития первичных импульсов, формирования аутентичных традиций. С другой стороны, в результате взаимодействия с инонациональным музыкальным материалом, шло обогащение локальной культуры.

Изучение источников позволяет утверждать, что функционально-сравнительный аспект анализа позволяет рассматривать стадиальную эволюцию через изучение письменных источников музыкально-теоретической средневековой науки и объяснять те или иные идентификации тюркоязычных культур.

Рассматривая некоторые методы изучения древних пластов музыки в истории теоретического и исторического этномузыкознания начала XX века отметим, что по мнению К.Квитки «при попытках познать тайну ранних этапов музыкальной эволюции исследователи пользуются... следующими методами:

1. изучением письменных памятников тех народов, которые имели музыкально-теоретическую литературу в древнейшие времена;
2. сравнительным изучением музыки тех народов, которые стоят на низших ступенях развития, и музыки консервативных слоев культурно-развитых народов;
3. исследованием музыкально-филогенетических параллелей;
4. изучением тех напевов песен, тексты которых и функции указывают на их древнее происхождение» [2, с. 218].

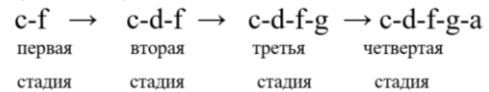
Соответственно необходимым материалом изучения эволюции азербайджанской народной музыки являются:

1. Обрядовая музыкальная культура;
2. Детский, материнский фольклор;
3. Использование данных онто- и филогенеза;
4. Опора на музыкальные образцы с преимущественным преобразованием узкого диапазона;
5. Письменные источники по музыкальной науке средневекового периода истории Азербайджана.

Обратим внимание, что жанровая система – это не эволюция азербайджанской музыки, это жанровая морфологическая система, функционирующая в азербайджанской народной музыке, которая несет в себе и определенный стадиальный аспект.

Обращение к трудам К.Квитки обусловлено не только их значением в истории этномузыкознания. В азербайджанском этномузыкознании работы К.Квитки не анализировались и не были основой методологических основ в трудах азербайджанских музыковедов. Комментируя только одну работу К.Квитки «Первобытные звукоряды» В.Л.Гошовский писал: «Работа Квитки, не имеющая себе равной в музыковедческой литературе, осталась неизвестной за пределами Советского Союза, а большинство советских музыковедов проявило к ней полное равнодушие. Тем не менее «Первобытные звукоряды» – поворотный пункт в области исследования древнейших ладовых систем, как с точки зрения методологии, так и критического охвата материала. Это – выдающиеся достижения мировой науки, предвосхитившее на тридцать с лишним лет развития научной мысли в странах Европы [2, с. 276].

По свидетельству К.Квитки, в западноевропейской музыкальной науке была выявлена следующая эволюционная цепочка:



В.Л.Гошовский приводит пример: «Олигатонные диатонические ряды, в частности, трихорды К.Квитка считал «самостоятельной, жизнеспособной и древней ладовой системой» [2, с. 275]. Более того, К.Квитка подчеркивал значимость функциональных связей в организации трихордов. В данном контексте это важно, ибо анализ геноформульных рядов опирается на функционально-сравнительный аспект.

Конечно, достаточно сложно дать разъяснения тому или иному сходству или различию. Вместе с тем, изучение стадиальной эволюции, с одной стороны, изучение письменных источников музыкально-теоретической средневековой науки позволит объяснить те или иные идентификации тюркоязычных культур.

К.Квитка, исследуя концепции эволюции народной музыки, приводит разнообразные исследовательские «версии». Так, Т.Уилсон в труде «Доисторическое искусство» на основании образцов палеолитических флейт вывел звукоряд – h'-c"-cis"-d"-dis". Однако дискуссии вокруг этого положения были достаточно интересны. По мнению Ч.К.Вида отверстия на так называемых, флейтах были обусловлены только декоративным их значением. К чему склонялся и К.Квитка, считая, что «первобытный мастер не беспокоился тем, какие именно интервалы он получит на своем инструменте; ему доставляло удовольствие наличие разных звуков, и он обращал внимания на принципы консонантности» [2, с. 221]. Аналогичного мнения придерживался и К.Штумф. В этом аспекте К.Квитка приводит и гипотезу Л.Ландри, согласно которой первоначальные звуки распределялись в контексте инструментальной музыки следующим образом:

Первый ряд a – d – A

Второй ряд a-e – c-A

Третий ряд a – f – d – H – A

«Комбинируя первую расстановку со второй, получим –

(4) a – e – d – c – A

A вторую с третьей –

(5) a – f – e – d – c – H – A» [2, с. 222].

Олигатов тетрахорд – a – f – e.

«Тип антемитонно-пентатонной гаммы, который получается методом Ландри (его можно представить: A – c – d – e – g – a, является наиболее распространенным среди других типов в украинской народной музыке и наиболее ярко выражен в народной музыке харватов» [2, с. 223].

По мнению Г.Перри, выводы которого по эволюции музыки опираются на особенности античной греческой музыки, «древнейшим и универсальным интервалом является кварта» [2, с. 223]. Следуя за П.Ландри, К.Квитка соглашается с тем, что антемитонно-пентатонная система «...бесспорно,

древнейшая система, но не наиболее примитивная» [2, с. 223].

Выглядела данная гамма следующим образом:

A – c – d – e – g – a

Авторы, на которых ссылался К.Квитка были и физиками, изучающими акустические свойства музыки. Многие из них опирались на древнегреческую музыкальную теорию. Однако и здесь преваляла эволюционная точка зрения. Например, о формировании Олимпова тетрахорда известно следующее. Во-первых, древнегреческие лады строились в нисходящем направлении. Во-вторых, соответственно вводный тон имел функцию верхнего вводного тона к тонике. В-третьих, основным и исходным интервалом считалась кварта. Таким образом, в тетрахорде a – e, вводный тон f со временем принял формульное значение и Олимов тетрахорд был образован как последовательным звуков a – f – e.

Идеи западно-европейских ученых были рассмотрены К.Квиткой последовательно. Так, Джон Рубом утверждал, что эволюция лада опиралась на олигатонику с постепенным охватом диапазона – от секунды до терции. Г.Грей, исследуя звуковой мир Полинезии, считал, что олигатоника присуща ранним стадиям эволюции музыкального начала. Оскар Флейшер констатировал олигатонику a-h-c в атхара-веду профессиональных индийских певцов. Олигатонную последовательность a-h-c фиксировали этномузыкологи у самых разных народов и континентов [2, с. 250]. Как видим, география звукоряда малой терции охватывает народы всего мира – от Британской Колумбии (Канада), Цейлона, Индии до финно-угров монгольских народов.

Ученые конца XIX-XX века времени в силу возросшего интереса к этномузыкологии, основой исследований которых была опора, помимо раннефольклорного пения и изучение инструментария древнего, средневекового периода истории, считали правомерным и целесообразным оперировать звукорядами, которые фиксируются в темперированном строе, без обращения к тонометрическим измерениям.

Идеи Ф.Торрефранка были близки идеям К.Квитки: «...первобытный человек не мог различать много музыкальных звуков... на первичной стадии своего музыкального развития люди ограничивались только двумя звуками, находящимися на небольшом расстоянии друг от друга, так как им легче было установить интервал целого тона. Больших интервалов они достигали малыми поступенными ходами или скользящим звуком» [2, с. 227]. Приводит К.Квитка рассуждения Ф.Торрефранка и о следующей ступени развития, которую он связывает с появлением интервала квинты. Известны были дискуссии, развернувшиеся по поводу пентатоники между ведущими специалистами XIX-XX вв., которые отличались яркостью позиций, точностью аргументаций, разнообразием мнений. Проблемы эволюции музыкальной системы интересовали не только акустиков, но философов. Так, Макс Вебер, известный социолог, в труде «Рациональные и социологические основы музыки» считал, что

пентатоника специфична и в том числе, по факту неприятия ее в силу суеверных или рационалистических причин. Ученый считал, в отличие от своих коллег, что пентатоника – это продукт, прежде всего, рационального мышления и не может относиться к древним ладам. А.Эллис, немецкий ученый, изучающий основы музыкального искусства, в 1922 году, предпринимая сравнительный анализ музыки разных народов, считал, что пентатоника структуры не означает, что в музыке того или иного народа нет полутонов.

Исследуя универсалии интервальных детерминантов К.Квитка отмечал: «Следует признать, что собранный экспериментальной фонетикой материал свидетельствует об универсальном преобладании интервала квинты в восходящих интонациях. Что же касается утверждения о преобладании кварты в каденциях, что в его защиту можно и теперь найти достаточно аргументов» [2, с.239].

Курт Закс расшифровал клинописную таблицу из ресурса, относящуюся к началу первого тысячелетия до н.э. «В результате проделанной работы он пришел к выводу, что в указанное время в Ассирии-Вавилонии пентатоника не только была окончательно сформированной, но уже так продвинулась вперед, что пользовалась для мутации диатоникой, а местами даже хроматикой» [2, с. 244].

В трудах Курга Закса приводились разнообразные источники, подтверждающие, на его взгляд, первичность пентатоники как ладовой системы. Однако К.Квитка считал, что «положение, что бесполутонная пентатоническая стадия везде предшествовала современной диатонике так и осталась недоказанной не только в универсальном объеме, но и у тех народов древних восточных цивилизаций, чьей историей К.Закс специально занимался» [2, с. 245]. В записках А.Идельсона современных синагогальных песносложений вавилонских и йеменских евреев К.Закс также усматривал пентатонические основания.

В краткой форме полемика К.Квитки с западноевропейскими учеными по поводу первичности, древности пентатоники характеризуется следующим образом. Напомню гипотезу Г.Римана относительно пентатонического характера древнейшей греческой музыки и аргументы К.Закса «...Этого, однако, недостаточно, чтобы признать, что пентатоника была исключительной или древнейшей системой греков». Далее К.Квитка приводит следующую информацию: «...пентатонические элементы в древней христианской мелодике были подвергнуты критике со стороны Петера Вагнера. Последний считает, что семиступенная диатоника овладела древней христианской музыкой не путем обогащения более древней пятиступенной системы, но путем сокращения более богатой хроматики» [2, с. 219].

Несомненный интерес вызывают различные аспекты эволюции музыкальной культуры. Так, психолог К.Бюлер был приверженцем теории, согласно которой с историко-эволюционной точки зрения в вопросах музыки «был бы преждевременным отказ от исследования предыстории своей

наилучшей сокровищницы – духовного развития наших детей. Мы уже теперь видим, что в языке и рисунках наших детей проявляются независимо от внешних влияний определенные законы духовного прогресса, которые, вероятно, подобным образом направляли и доисторическое развитие человечества» [2, с. 229]. Данную мысль ученый экстраполировал на развитие музыкального искусства.

Интересны географические диапазоны исследователей.

Х.Вернер в 1917 году записывал пение детей от 2-х до 4-х лет, констатировал, что это были мотивы в объеме тона или целого тона. «Э.Фельгер, усмотрев бесполутонный звукоряд е – g – а в мелодии индийского религиозно-философского произведения Бхавадгита, заявил, что этот звукоряд, свойственный речитативным напевам различных народов, встречается и в немецкой детской песенке («Васке, баске Kuchen») и в арабской» [2, с. 230]. Вместе с тем, мнение К.Квитки по поводу данного метода было достаточно категорично. Он писал: «Если в детских песенках встречаются явления, которые мы находим в давних памятниках или в современной музыке культурно отсталых народов, то их не следует обязательно считать аргументом в пользу общего закона развития, который проявляется в онто-филогенезисе. От отно-филогенетического параллелизма следует отличать явления иного порядка – консерватизм детской среды, которая в музыкальной сфере сохраняет много такого, что в среде старших уже перестали существовать. Из того, что в этой среде сохранилось что-то старое, еще не вытекает, что это «старое» есть наиболее «древнее» [2, с. 230].

Завершая наш обзор отметим, что в основе эволюционных процессов лежат механизмы адапта-

ции. Если принять за основу, что мелодическая формула является одним из таких адаптационных механизмов, можно утверждать, что эволюционное развитие в музыке тюркских народов имело некий регулятор, отсылающий на многочисленные региональные и этногенетические изменения. Генетическая память при этом сохраняет глубинные, коренные свойства, а региональные ориентиры выступают в качестве вариантов основных музыкальных типов в контексте тюркского мира. История музыки тюркоязычных народов свидетельствует не только о национальной специфике музыкальной культуры тюркского мира, но и существенных универсалиях, объединяющих его в единое целое. При этом будем учитывать, что музыкальная система – это совокупность кодифицированных элементов, маркирующих специфику той или иной музыкальной культуры.

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# CHEMICAL SCIENCES

## DEVELOPING NEW LUBRICATING COMPOSITIONS FOR POWERED MARINE DIESELES

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<https://doi.org/10.5281/zenodo.10581652>

### Abstract

The widespread use of M-20B<sub>2</sub>f motor oil used in ship makes the development of this modern analogue important and urgent. For this purpose, calcium salts of condensation products of alkylphenols with high alkaline number with formaldehyde and various amines, based on the replacement of detergent-dispersant VNII NP-360 and -354 additives used in the lubricating composition of the said oils were studied. By studying the detergent-dispersant and at the same time anti-oxidation properties of alkylphenolate additives at different temperatures and times, based on the amount of sediment formed during the oxidation process, low molecular volatile acids and acid number results, the use of AKI-114 and AKI-150 additives was preferred as high-performance detergent-dispersant additives in lubricating compositions of and M-20B<sub>2</sub>f motor oils.

**Keywords:** motor oil, additive, ship and drilling equipment, alkylphenol, detergent-dispersing property, oxidation, alkaline number.

### 1. INTRODUCTION

The history of modern lubricating oils dates back to the beginning of oil drilling in Penselvania USA in the 19th century. At that time, whale oil was used as a lubricant for spinning and weaving machines, and it was then discovered that if mixed with oil, it was possible to extend the life of the machine by more than 10 years. Since then, petroleum-based lubricants have replaced fatty oils.

In the era of mass production of the 20th century, more complex mechanisms became in demande. Specially after the I, II world wars, cars, airplanes, diesel trains began to develop at a rapid pace, rockets, large ships, which led to the progress of essential oils and lubricants. In the 1920s, a method for refining oil with selective solvents was invented, and in the 1930s, the use of additives to improve the performance of lubricants began to spread in industry.

In the 1950s, when the jet liner was introduced, it became necessary to develop lubricating oils that perform well even in temperatures below 50 degrees below zero, leading to the development of Synthetic and Multi-Purpose oils. Hydrocracking was developed in the 1970s and the more advanced Hydroisomerization in the 1990s has allowed the development and production of a wide range of high quality mineral oil lubricants that can fully compete with synthetic oil.

Currently, much attention is paid not only to the performance characteristics of lubricants, but also to the factors of their impact on the environment, therefore many chemists, scientists, engineers, oil refining workers, metallurgists and other representatives of related

industries carry out research activities to improve the characteristics of lubricants.

Lubricating oils perform the following functions:

- 1.Reducing friction of the contacting parts,
2. Cooling of surfaces of rubbing parts.
3. Load balancing - lubricants form an oil film and accelerate the load
4. Cleaning - Prolonged use of the system can lead to corrosion or wear on the machinery, resulting in the appearance of contaminants. Engine oils, due to their detergent properties, allow you to clean the system from contaminata.
5. Sealing - Especially in a hydraulic system, lubricating oils serve to prevent leakage by creating a hydraulic film.
6. Prevention of corrosion - With prolonged contact of metal with water and oxygen, corrosion is formed. However, by covering the surface with a lubricating film, it is possible to prevent corrosion and extend the life of the system. (<http://www.s-oil7.com/rus/knowledge/basic/function.jsp>)

Currently, the leading companies in the field of production and consumption of lubricants in the world market are:

- Shell (UK - Netherlands)
- Exxon Mobil (USA)
- British Petroleum (UK - USA)
- Chevron (USA)
- Total (France)
- Petro Cina (China)
- OAO Lukoil (Russia)
- Sinopec (China)

- Valvolinc (USA)

It is known that lubricants used in various fields of technology mainly consist of 2 components: base oil and additive composition. Depending on the area of application of lubricating oils, the main quality indicators required for their operation include anti-oxidation, anti-corrosion, anti-corrosion, as well as detergent-dispersant, detergent, lubricant, etc. provides additives. Additives are organic compounds containing different functional groups and active elements. The questionnaire for additives in motor and transmission oils was compiled in 1985 in the "For Service Use" catalog. The questionnaire contains all the information on the chemical composition, physicochemical parameters, production technology of various functional additives in lubricants produced on a large scale from that year to recent years. [1, 2].

The main special requirements for each specific equipment are reflected in the normative documents (GOST) for their production and consumption: kinematic viscosity, viscosity index, alkali number, resistance to oxidation, corrosion resistance, lubricating properties, etc., which characterize the operational properties.

External equivalents of M-20B2 and M-20B2f engine oils for ship diesels are Shell (Rotella-50. Rimula R2-50), Mobile (Delvac 1150), BP (Energol HD 50), Exxon (Essolube HD 50), Castrol (Deusol CRH). 50) and so on. APIs are manufactured by companies according to the SD / SB SAE 50 classification. [3].

Additive - for fuel, lubricants, etc. are organic organic compounds that are added in small amounts and improve their performance properties.

Types of additives:

- Viscosity additives;
- depressant additives;
- against eating;
- detergent;
- against oxidation;
- dispersant;
- detergent-dispersant;
- anti-corrosion;
- anti-foaming;
- restorative; and so on.

Most additives are multifunctional. The total amount of additives in commercial oils is 15-20%. Additives containing depressants and viscosity additives are used to facilitate the transport, storage and dissolution of additives in base oils [4,5].

It is important that all motor oils contain multifunctional detergent-dispersant additives used as additives [6].

The purpose of the article is to replace some important detergent-dispersant additives with new modifications, to create a basis for the production of oils used in ship diesels in recent years using local raw materials with a number of imported additive packages [7].

The AKI-114 and AKI-150 detergent-dispersant additives used in the article are formaldehyde of alkylphenols and calcium salts of ammonia and amino acetic acid condensation products. ICA) -101 are new modifications [8, 9]. Here "AKI" represents the name of the Institute of Chemistry of Additives, the only academic institute in the field of additive chemistry in the Republic of Azerbaijan. Institute of Chemistry of Additives - (Russian "IHP" Institute of Chemistry Prisdok, eng. "ICA" Institute of Chemistry of Additives).

At present, research on the creation of new analogues of lubricants used in all machines and mechanisms in the country requires the provision of indicators in accordance with the normative document of oil - GOST. In these studies, as well as new modifications of withdrawn additives research is also very relevant. Therefore, our goal is to create new lubricant compositions of imported M-20B2f motor oils for ship diesels on the basis of local raw materials.

M-20B<sub>2</sub>f (<https://cnrgoil.ru/sudovoe-maslo/m20v2f.html>) motor oil for diesel engines used in ship belong to group B<sub>2</sub> of motor oils used in different types of all-purpose diesel engines.

The main purpose of developing lubricating compositions of both oils, which belong to the high-oil groups, is the study of newly synthesized additives with highly effective functional properties and the correct selection of base oils. Ensuring the indicators characterizing the important physicochemical and operational properties of the analogues of the oils to be developed is their compliance with their external analogues (Mobilgard 412, Energol IC-MB 40, Energol DS3-104, Energol DL-MP 40).

**Materials and method.** Research on the development of M-20B<sub>2</sub>f motor oil for ship diesels (<http://www.msc-mayak.ru/shop/show-product/228/1/dizel-chn18-22-6chnsp-18-22-8chnsp-18-22/>) is related to the research of the compatibility of additives in the composition of the additive separately, with each other and with the base oil.



Figure 1 The ship diesel.

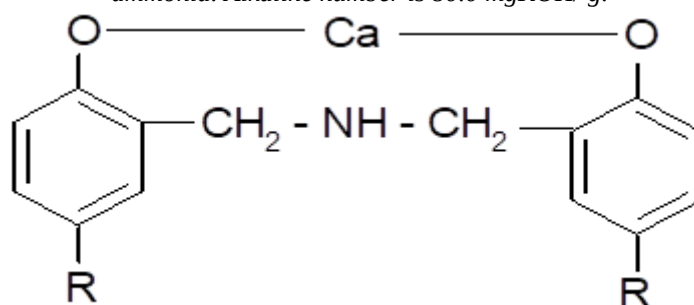
The additive composition of M-20B2f motor commodity oil (country of origin, Russian Federation) produced for ship diesels is given in 2 compositions.

First composition. Types of primary use of these oils consist of VNIINP-360 – 4%; PMS«A» – 3,3% or C-150 – 1,8% (C-300 – 1,5%); AzNII-SIATIM-1 – 1,5%; PMS-200A – 0,003% additives with a mixture of MC-20 base oil and residual components.

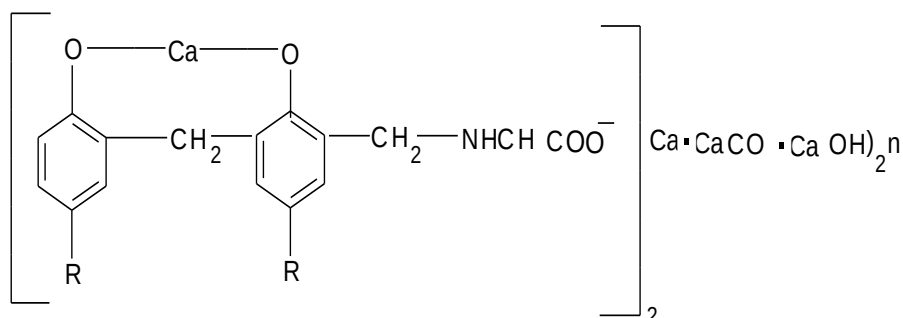
Second composition. In other compositions, VNIINP-354 or 1,2% Df-11, 1,0-1,5% AzNII-SIATIM-1 or AFK, 0,003% PMS-200A are used.

For the development of new lubricating compositions of oils M-20B2 and M-20B2f, highly alkaline additives of the alkylphenolate type AKI-114 and AKI-150, which are new modifications of the additive IHP-101, which have been used for a long time in a number of oils, were taken as detergent-dispersing additives [10].

**AKI-114 additive** — is the calcium salt of the product of the condensation of alkylphenol with formaldehyde and ammonia. Alkaline number is 80.0 mgKOH/ g.



**AKI-150 additive** – is the calcium salt of the product of condensation of alkylphenol with methylene-bis formaldehyde amino acetic acid. Alkaline number is 150 mgKOH/ g.



where  $R = C_8 - C_{12}$ .

The high alkaline number of AKI-114 and AKI-150 additives recommended for application compared to ICA-101 additive (alkaline number 50-55 mgKOH/g) in some cases leads to the provision of other functional properties of oils.

### Results and discussion.

The choice of AKI series additives in APSM-1M (Figure 2) equipment is based on the determination of their properties of resistance to oxidation at different temperatures (120°C-140°C) and duration (30-40

hours) and optimum concentrations, and the amount of sediment, determination of the acid number, the amount of volatile low-molecular acids.

In the APSM-1M apparatus, oils are oxidized in VTI devices under the influence of oxygen of technical GOST 5583 in the presence of a catalyst at elevated temperatures with a metered flow rate of 50 ml / min and 200 ml / min. The error of maintaining the stability of oxygen consumption is not more than  $\pm 10\%$ . [GOST 981].



Figure 2. APSM-1 apparatus.

Lubricating compositions of M-20B2f oil (with additives AKI-150, C-400, Mixoil-3103, Viscoplex-5-309, PMS-200A in accordance with GOST 12337) and M-20B2 oils (with additives AKI-114, C-400, Mixoil-3103, Viscoplex-5-309, PMS-200A according to GOST 23497) were prepared on the basis of MS-20 (Russia) base oil. Here, AKI-114 and AKI-150 are highly alkaline multifunctional additives (synthesized

at the Institute of Chemistry of Additives NASA), Mix-oil 3103 – antioxidant and anticorrosive additive, C-400 - detergent-dispersant additive, Viscoplex -5-309 – depressoator, PMS-200A – anti-foam additive.

Anti-oxidation tests of alkylphenolate additives of different compositions have been carried out in APSM-1M equipment for 30 hours at 120°C, 30 and 40 hours at 140°C, 30 hours at 200 °C [ 11, 12]. Table 1.

Table 1.

**Test results of resistance of AKI series additives to oxidation during different hours at 120°C**

| Composi-<br>tions with<br>additives | 120°C 30 hours                       |                               |                                                               | 120°C 40 hours                       |                               |                                                               |
|-------------------------------------|--------------------------------------|-------------------------------|---------------------------------------------------------------|--------------------------------------|-------------------------------|---------------------------------------------------------------|
|                                     | Amount of<br>the sedi-<br>ment,<br>% | Acid num-<br>ber, mg<br>KOH/g | Amount of vola-<br>tile low-molecu-<br>lar acids, mg<br>KOH/g | Amount of<br>the sedi-<br>ment,<br>% | Acid num-<br>ber, mg<br>KOH/g | Amount of vola-<br>tile low-molecu-<br>lar acids, mg<br>KOH/g |
| AKI-114                             | 0,0731                               | 0, 287                        | 0,0068                                                        | 0,0705                               | 0,354                         | 0,0070                                                        |
| AKI-150<br>(c)                      | 0,0725                               | 0, 176                        | 0,0072                                                        | 0,0700                               | 0,257                         | 0,0073                                                        |

The results obtained in tests conducted at temperatures of 120°C, 140°C show the effect on the course of the process of resistance to oxidation, which depends on the composition and structure of detergent-dispersant additives, the alkaline number of additives, the location of the nitrogen atom in amino compounds.

The determination of the acid number indicates that the units of carbonated additives obtained during the test were 0,354 mgKOH/g.

By determining the amount of low-molecular volatile acids, it was determined that in all cases, regardless of the temperature of 140-200°C and the duration of 30, 40 hours, its amount differs very little. Table 2.

The results of the tests carried out showed that AKI-114 and AKI-150 series additives can be applied

at the same level as commodity additives in high-quality compositions in the development of motor oils for various purposes.

Table 2.

**Indicators of AKI series additives for 40 hours at 140°C, for 30 hours at 200°C**

| Compositions with additives | 140°C, 40 hours           |                       |                                                 | 200°C, 30 hours           |                       | Amount of low-molecular volatile acids, mgKOH/g |
|-----------------------------|---------------------------|-----------------------|-------------------------------------------------|---------------------------|-----------------------|-------------------------------------------------|
|                             | Amount of the sediment, % | Acid number, mg KOH/q | Amount of low-molecular volatile acids, mgKOH/g | Amount of the sediment, % | Acid number, mg KOH/q |                                                 |
| AKI-114                     | 0,0740                    | 0,3870                | 0,0050                                          | 0,0745                    | 0,3540                | 0,0070                                          |
| AKI-150 (c)                 | 0,0732                    | 0,2600                | 0,0065                                          | 0,0741                    | 0,2870                | 0,0090                                          |

Long-term tests of AKI series additives at higher temperatures did not yield positive results.

Lubricating compositions of experimental oil samples of optimal composition of M- 20B<sub>2</sub>f lubricating composition with AKI-114, Mixoil-3103, C-400,

PMS-200A additives and M- 20B<sub>2</sub> lubricating composition with AKI-150, Mixoil-3103, C-400, PMS-200A additives were developed [13,14] .Table 3.

Laboratory tests of all physical and chemical properties were carried out by international ASTM methods.

Table 3.

**Comparative results of physicochemical and operational properties of lubricating compositions**

| Indicators                                                                                               | M- 20B <sub>2</sub> motor oil GOST 23497 | MC-20 base oil AKI-114 Mixoil-3103 C-400 IIMC-200A | M- 20B <sub>2</sub> f motor oil GOST 12337 | MC-20 base oil AKI-150 Mixoil-3103 C-400 IIMC-200A | Test method |
|----------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------------------------------------|--------------------------------------------|----------------------------------------------------|-------------|
| Kinematic viscosity, mm <sup>2</sup> /s 100°C                                                            | 18,0-22,0                                | 20,12                                              | 19,0-22,0                                  | 21,02                                              | ASTM D 445  |
| Viscosity index                                                                                          | 90                                       | 85                                                 | 90                                         | 95                                                 | ASTM D 2270 |
| Alkaline number, mgKOH / q, not to be less                                                               | 3,5                                      | 3,5                                                | 2,8                                        | 3,6                                                | ASTM D 4739 |
| Sulphate ash,%, not to be more                                                                           | 1,3                                      | 0,79                                               | 0,65                                       | 0,38                                               | ASTM D 874  |
| Ignition temperature, set in open crucible, °C, not to be lower                                          | 235                                      | 270                                                | 230                                        | 275                                                | ASTM D 92   |
| Freezing temperature, °C, not to be higher                                                               | Minus 15                                 | Minus 15                                           | Minus 15                                   | Minus 15                                           | ASTM D 97   |
| On C1 and C2 branded lead boards according to corrosivity GOST 377877, g/m <sup>2</sup> , not to be more | No                                       | No                                                 | 10                                         | No                                                 | GOST 20502  |
| Resistance based on non-sedimentation induction period, 50 hours                                         | Resists                                  | Resists                                            | Resists                                    | Resists                                            | GOST 11063  |
| Colour, in IJHT calorimeter, the unit of IJHT (diluted 15:85) not to be more                             | 7,5                                      | 8,0                                                | 3,5                                        | 3,0                                                | ASTM D 1500 |
| Density, 20°C, kg/m <sup>3</sup> , not to be more                                                        | 900                                      | 898                                                | 900                                        | 895                                                | ASTM D 4052 |
| Washing potential, 250°C, %                                                                              | Not normalized                           | 90                                                 | Not normalized                             | 95                                                 | QOST 10734  |

The performance of lubricant compositions with the use of high alkalinity additives AKI-114 and AKI-150, such as sulfate ash, flash point, washing potential, is considered to be superior to that of commercial oil. In particular, the content of sulfate ash for M-20B<sub>2</sub> motor oil is 0.79% against 1.3%, for M-20B<sub>2</sub>f motor oil is 0.68% against 0.38%, the ignition temperature is 270°C against 235°C. The washing potential is 90 and 95% at 250° [15,16] .

### 3. Conclusion.

The results of the tests carried out showed that AKI-114 and AKI-150 series additives can be applied at the same level as commodity additives in high-quality compositions in the development of motor oils for various purposes. [17]

The newly synthesized high-alkali AKI-114 and AKI-150 additives used in M-20B<sub>2</sub> and M-20B<sub>2</sub>f motor oils used in ship diesels have been approved for their

high antioxidant and detergent-dispersing properties, and are recommended for qualification testing in lubricant compositions.

Thus, the new lubricating compositions of the newly developed M- 20B<sub>2</sub>f motor oil fully meet the requirements set for motor oils used in modern ship diesels for their basic physicochemical and operational parameters and are recommended for application.

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# STUDY OF PREPARATION OF PRESERVATIVE LIQUID AND AS CORROSION INHIBITOR BY ADDING AMIDOAMINES BASED ON OLEIC ACID TO T-30 OIL IN DIFFERENT MOL PROPORTIONS

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<https://doi.org/10.5281/zenodo.10581670>

## Abstract

The conducted studies show that the high corrosion protection effect of the conservation liquids made on the basis of these compositions is explained by the strong chemisorption relationship with good physical adsorption of the compound to the metal surface due to the unused electron pair or partial protonation of the nitrogen atom in the nitrogen atoms in the inhibitor molecule. Basically, these conservation liquids create a protective layer on the surface of the metal, which prevents water vapor from entering the surface of the metal.

**Keywords:** corrosion, oleic acid, amidoamine

In recent years, the increase in aggressive environments and also increase in temperatures and pressures in the industry has increased the speed of the corrosion process, which has become the cause of serious danger in industrialized countries with high metal reserves. Under these conditions, due to the occurrence of dangerous corrosion processes-cracking corrosion, intergranular corrosion, pitting etc. the specific weight of damages has increased significantly. The effect of the corrosion process on selected areas of chemistry, reaction products and their purity is defined. Thus, the huge economic losses of corrosion in metals have been investigated by experts from different countries, and in industrialized countries this loss is estimated to be up to 2-4%.

Based on the current environmental conditions, the preparation of conservation compositions with high protection against corrosion is very important for the protection of metal equipment in our country. As a corrosion inhibitor, in recent years, more compositional reagents have been preferred [1-3]. It is known that various chemical reagents are widely used in oil extraction

and oil refining industries to protect equipment from corrosion, salt precipitation, and bactericides.

The presented work is devoted to the synthesis of organic matter obtained with the participation of oleic acid on the basis of monoethanolamine and to the investigation of corrosion properties.

Example-1: Amidoamine synthesized on the basis of oleic acid and monoethanolamine in a 1:1 mol ratio

Example-2: Amidoamine synthesized on the basis of oleic acid and polyethylene polyamine in a mol ratio of 2:1

Example-3: Amidoamine synthesized on the basis of oleic acid and polyethylene polyamine in a mol ratio of 4:1

Example-4: Amidoamine synthesized on the basis of oleic acid and polyethylene polyamine in a mol ratio of 6:1

Example-5: Imidazoline synthesized in 1:1 mol ratio based on oleic acid and polyethylene polyamine

Amidoamines prepared by us were added to T-30 oil in different percentages to prepare preservation liquids.

|     | Conservation liquids          | %  | Thermo humidity chamber | Sea water     | 0.001% H <sub>2</sub> SO <sub>4</sub> |
|-----|-------------------------------|----|-------------------------|---------------|---------------------------------------|
| №1  | T-30 oil 93% + Example-1 7%   | 7  | 361 days long           | 125           | 120                                   |
| №2  | T-30 oil 90% + Example -1 10% | 10 | 361 days long           | 125           | 120                                   |
| №3  | T-30 oil 93% + Example-2 7%   | 7  | 230 days long           | 218 days long | 218 days long                         |
| №4  | T-30 oil 90% + Example-2 10%  | 10 | 230 days long           | 218 days long | 218 days long                         |
| №5  | T-30 oil 93% + Example-3 7%   | 7  | 230 days long           | 155           | 161                                   |
| №6  | T-30 oil 90% + Example-3 10%  | 10 | 230 days long           | 218 days long | 218 days long                         |
| №7  | T-30 oil 93% + Example-4 7%   | 7  | 230 days long           | 162           | 160                                   |
| №8  | T-30 oil 90% + Example-4 10%  | 10 | 230 days long           | 202           | 200                                   |
| №9  | T-30 oil 95% + Example-5 5%   | 5  | 210 days long           | 83            | 80                                    |
| №10 | T-30 oil 90% + Example-5 10%  | 10 | 210 days long           | 172           | 165                                   |

The testing process was carried out in a thermo-humidity experimental chamber, in sea water and in a 0.001% H<sub>2</sub>SO<sub>4</sub> environment within the framework of existing standards. Based on the obtained results, it can be said that it is appropriate to use the synthesized amidoamine based on oleic acid to create more effective preservation liquids.

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# CULTURAL SCIENCES

## XX CENTURY AZERBAIJANI PROFESSIONAL MUSIC FROM EUROPEAN MUSICAL TRADITIONS RULES OF USE

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## XX ƏSR AZƏRBAYCAN PROFESSIONAL MUSIQISINDƏ AVROPA MUSIQİ ƏNƏNƏLƏRİNDƏN İSTİFADƏ QAYDALARI

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<https://doi.org/10.5281/zenodo.10581730>

### Abstract

Azerbaijani music, having ancient trends that have passed through the centuries, continues today in mugham, ashig art, folk songs and dances. The use of European musical traditions along with the national musical traditions of the 20th century Azerbaijani composers' music means the combination of two musical cultural traditions that are very far from each other. It can be said that the beginning of 20th century Azerbaijani professional music is precisely the opera "Leyli and Majnun". This, in turn, is a very necessary reality, and its great achievement, of course, makes the composer's activity very effective. Thus, "Leyli and Majnun" creates a different and interesting impression as a work, and it is certainly impossible not to see it. In this piece written by the composer in a completely new style, he first presented it to the audience by combining Eastern and Western musical trends. Here, Uzeyir Hajibeyli refers to the opera genre, which is the main genre of European music.

### Xülasə

Azərbaycan musiqisi əsrlərdən keçən qədim tendensiyalara malik olaraq bu gün də yaşayan və gözəlliyini itirməyən muğam, aşiq sənəti, xalq mahnı və rəqslərdə davam edir. XX əsr Azərbaycan bəstəkar musiqisində yaşayan milli musiqi ənənələri ilə birlikdə Avropa musiqi ənənələrindən də istifadə olunması, bir-birindən çox uzaq iki musiqi mədəniyyət ənənələrinin birləşməsi deməkdir. Demək olar ki, XX əsr Azərbaycan professional musiqisinin başlanğıcını məhz "Leyli və Məcnun" operası təşkil edir. Bu öz növbəsində çox zəruri bir gerçəkdir və onun böyük nailiyyəti, təbii ki, bəstəkarın fəaliyyətini də olduqca səmərəli edir. Belə ki, "Leyli və Məcnun" bir əsər kimi fərqli, maraqlı təəssürat yaradır və bunu əlbəttə görməmək mümkün deyil. Bəstəkar qələmə aldığı, tamamilə yeni tərzdə yazmış olduğu bu əsərində ilk olaraq Şərq və Qərb musiqi tendensiyalarını birləşdirərək tamaşaçıya təqdim etdi. Üzeyir Hacıbəyli burada Avropa musiqisinin əsas janrı olan opera janrına m

**Keywords:** Azerbaijani musicians, musical traditions, musical art, opera, orchestra

**Açar sözlər:** Azərbaycan musiqçiləri, musiqi ənənələri, musiqi sənəti, opera, orkestr

XX əsrin əvvəllərində yaranan və çox uğurlu bir inkişaf yolu keçən Azərbaycan bəstəkarlarının musiqiləri musiqişünaslığımızın daima nəzər nöqtəsində olmuşdur. Musiqi sənətimizin əsil təməlini təşkil edən bu irs, təbii olaraq, hərtərəfli araşdırılır.

Azərbaycan musiqisi əsrlərdən keçən qədim tendensiyalara malik olaraq bu gün də yaşayan və gözəlliyini itirməyən muğam, aşiq sənəti, xalq mahnı və rəqslərdə davam edir. XX əsr Azərbaycan bəstəkar musiqisində yaşayan milli musiqi ənənələri ilə birlikdə Avropa musiqi ənənələrindən də istifadə olunması, bir-birindən çox uzaq iki musiqi mədəniyyət ənənələrinin birləşməsi deməkdir.

Azərbaycan professional musiqi sənətində musiqi tendensiyalarının tətbiq olunması, öyrənilməsi və ən əsası mənimsənilməsi XX əsrin əvvəllərindən başlayaraq çox ciddi və nizamlı inkişaf prosesi keçmişdir. Təbii olaraq bu proses bir zaman daxilində və eyni zamanda işgüzar səylər nəticəsində yüksək nöqtəyə çatır. Bu isə ciddi üslub axtarışların və böyük əməyin bir bəhrəsi kimi dəyərləndirilə bilər. Bunun qarşısında keçən əsrin əvvəllərində bünövrəsi qoyulan yeni Azərbaycan bəstəkar musiqisi durur. Bu möhtəşəm əhəmiyyətli işin yükünü və çətinliyini tamamilə anlayan və eyni zamanda onun məsuliyyətindən qorxmayan yalnız dahi sənətkar və ölməz musiqimizin banisi Üzeyir Hacıbəyli ola bilərdi.

XX əsr Azərbaycan musiqisinin yaradıcısı özünün qeyri adi istedadı, yüksək peşəkarlığı və fitri yaradıcılığı boyu nümayiş etdirdiyi fədakarlığı sayəsində bu işin həm öhdəsindən gəldi, həm də yaratdığı yeni Azərbaycan musiqisinin inkişaf yolunu müəyyənləşdirdi. Ən ürəykaçan cəhət odur ki, Üzeyir Hacıbəyli qorxmada, əsl islahatçı kimi çıxış edərək, qədim milli musiqimizi daxilən genişləndirdi, ona yeni nəfəs, yeni yaradıcılıq potensialı daxil etdi. Elə buna görə də musiqi sənətimizin simasını köklü şəkildə dəyişmiş oldu.

Çoxşaxəli yaradıcı fəaliyyəti ilə məşhur olan sənətkar musiqi dünyamızda o qədər işlər görüb ki, bütün bunların nəticəsini bu gün də aydın hiss edirik. Şərqin ilk operasının, ilk konservatoriyasının, ölkəmizin ilk xor kollektivinin və Azərbaycan xalq çalğı alətləri orkestrinin yaranması birbaşa Üzeyir Hacıbəylinin adı ilə bağlıdır. Demək olar ki, Azərbaycan musiqi mədəniyyətində bütün yeniliklər, ilkələr Ü. Hacıbəylinin imzası ilə başlayıb. Ümumiyyətlə, onun fəaliyyətinin müxtəlif sahələrində, yəni bəstəkarlıqda, musiqi təhsilində, musiqişünaslıqda, musiqi nəzəriyyəsi və başqalarında əldə olunan uğurlar, nailiyyətlər olduqca əlamətdar və zəruridir. Musiqimizin banisinin bütün etdikləri yenilikləri dəyərləndirərək, xüsusilə qeyd etmək istərdik ki, Üzeyir Hacıbəylinin ən böyük yaradıcılıq uğuru milli musiqi ənənələrimizi Avropa musiqi ənənələri ilə birləşməsinə nail olmasıdır. Yəni başqa sözlə desək, sənətkarın yaradıcılığında Şərq və Qərb musiqi tendensiyalarının üzvi qovuşması baş verir. Bunu XX əsr Azərbaycan musiqisinin tərəqqisini müəyyənləşdirən əsas qanunauyğunluğu və Üzeyir Hacıbəylinin dahiyənə bədii kəşfi kimi qiymətləndirmək lazımdır.

Beləliklə Ü. Hacıbəylinin yaradıcılığında himi qoyulan bu məsələyə Azərbaycan bəstəkar musiqisində hər zaman böyük maraq və ciddi yanaşma özünü büruzə vermişdir. Sözsüz ki, milli və Avropa musiqi ənənələrinin qovuşması məsələsi musiqişünaslıq üçün eyni dərəcədə zəruridir və onun ətraflı və dərin öyrənilməsi hər zaman gözə çarpandır. Nə qədər ki, söhbət bəstəkar yaradıcılığından gedir, burada istifadə olunan bu və ya digər ənənə individual yanaşmanı tələb edir. Məhz elə bununla üslub spesifikasiyi məlum olur. Ona görə də Azərbaycan bəstəkar musiqisində ənənə məsələsi olduqca geniş həllini tapır. Bu baxımdan ötən əsrin bəstəkar yaradıcılığında romantik musiqi ənənələrinin rolu diqqəti cəlb edir.

Üzeyir Hacıbəylinin müdrikliyi ondan ibarətdir ki, o, öz yaradıcılığında avropa musiqi tendensiyalarını mənimsəmək prosesini klassik ənənələr vasitəsilə həyata keçirir. Bəstəkar mədəniyyətin klassik, cəlbədic, mükəmməl ənənələrinə üz tutaraq onların birləşməsinə inandırıcı şəkildə nail ola bilmişdir. Daha sonra yeni bəstəkar nəslinin nümayəndələri bu prosesə qatılaraq Şərq- Qərb ənənələrin kontekstinə öz münasibətini bildirir və bunun hesabına Azərbaycan professional musiqisinin məntiqli inkişafı təmin olunurdu.

XX əsr Azərbaycan mədəniyyətinin və xüsusilə musiqi mədəniyyətinin ən mükəmməl uğuru Azərbaycan professional bəstəkar musiqisinin yaranması ilə əlaqədardır. Bu missiyanı öz öhtəsinə

götürən və onu əhəmiyyətli dərəcədə həyata keçirən Azərbaycan musiqi tarixində adı qızıl həflərlə yazılan, musiqimizin banisi Üzeyir bəy Hacıbəyli olmuşdur.

Sözsüz ki, musiqiçi bütün bu işlərin nə dərəcədə çətin və məsuliyyətli olduğunu tam məsuliyyəti ilə anlayırdı və o, Azərbaycan musiqisində yeni yollar araşdıraraq onun müqəddəratı haqqında ciddi qərarlar verirdi. Onu da qeyd etmək lazımdır ki, bu yola çıxan musiqiçi çox gənc olmasına baxmayaraq, Üzeyir Hacıbəyli əsl cəsarət göstərərək 1907- ci ildə “Leyli və Məcnun” operasını artıq yazıb bitirmiş olur və 1908- ci ilin yanvarın 25 –də Zeynalabdin Tağıyev teatrının səhnəsində tamaşanın primyerası göstərilir.

XX əsr Azərbaycan musiqisi tarixində sensasiya xarakterli bu əsərin özünəməxsus yer tutması hamıya yaxşı məlumdur. Bu əsərin yaranmasından bir əsrdən çox zaman keçməsinə baxmayaraq, tamaşaya olan tamaşaçı münasibəti heç dəyişmədi. Ümumiyyətlə zaman bu əsərin qarşısında tam acizdir və demək olar ki Üzeyir Hacıbəylinin ilk operası bu günədək öz dəyərini qoruyub saxlamağa nail oldu.

Uzun illər səhnələrdən düşməyən, musiqişünaslıqda öz əksini tapan bu əfsanəvi əsərə olan yanaşma ümumilikdə dəyişmişdir. Dəyişən tariximizin ayrı-ayrı zamanlarında operanın ünvanına müəyyən tənqidi fikirlər səslənsə də, onlar bu əsərin yaranması və mahiyyəti qarşısında tam acizdirlər.

Üzeyir bəy Hacıbəylinin “Leyli və Məcnun” əsərinə həsr olunan çap yazılarından iki misalı nəzərinizə çatdıraraq. Müəllifin etdiyi iş müxtəlif zamanlarda yazılan yazılarda çox yüksək qiymətləndirilir. 1908 ci ildə “Seqodnya” qəzetində çapdan çıxan “Leyli və Məcnun” əsərinin üçüncü tamaşasından yazılır və diqqətimizi bu sözlər cəlb edir. “Bu operanın keyfiyyəti barəsində bəhs açmasaq da, onun maraqlı olduğunu qeyd etməmək olmaz. Çünki bu müsəlman operası olmaq etibarilə yeni bir hadisədir.”

İkinci misal “Rampa i jizn” jurnalındandır. Bu jurnal 1915- ci ildə dərc olunmuşdur. Müəllif qeyd edir ki, “bəstəkar cənab Hacıbəyov bizim milli musiqimizdə yeni dövr açan pionerdir. Yeddi il bundan qabaq o ilk “Leyli və Məcnun” operasını yazmışdır. Bu opera onun yaradıcılıq məharətini açıb göstərdi.

Demək olar ki, XX əsr Azərbaycan professional musiqisinin başlanğıcını məhz “Leyli və Məcnun” operası təşkil edir. Bu öz növbəsində çox zəruri bir gerçəklikdir və onun böyük nailiyyəti, təbii ki, bəstəkarın fəaliyyətini də olduqca səmərəli edir. Belə ki, “Leyli və Məcnun” bir əsər kimi fərqli, maraqlı təəssürat yaradır və bunu əlbəttə görməmək mümkün deyil.

Bəstəkar qələmə aldığı, tamamilə yeni tərzdə yazmış olduğu bu əsərində ilk olaraq Şərq və Qərb musiqi tendensiyalarını birləşdirərək tamaşaçıya təqdim etdi. Üzeyir Hacıbəyli burada Avropa musiqisinin əsas janrı olan opera janrına müraciət edir.

Bu operada bəstəkar Azərbaycan musiqisinə xas olan bir çox məsələləri önə gətirir ki bu da böyük marağa səbəb olur. Üzeyir Hacıbəylinin bu operada Məhəmməd Füzulinin poemasına müraciət etməsi mükəmməl, uğurla nəticələnmişdir. İki gəncin faciəli sevgisinə həsr olunan bu əsər səhnədə o dərəcədə təbii və inandırıcı şəkildə tamaşaçıya təqdim olunur ki,

tamaşaçı uzun müddət onun təəssüratı ilə yaşayır. Müəllif operada musiqi və dramın tam vəhdətinə nail olur və bu da onun əsl uğuru, əsl müvəffəqiyyətidir. Elə bu cəhətlər əsərin bi günkü günümüzədək səhnələrdən düşməməyinə səbəb olur.

Ümumiyyətlə “Leylivə Məcnun” musiqi baxımında çox maraqlı əsərdir və müəllifin buraya yerləşdirdiyi hər bir musiqi nömrəsi tam milli musiqi ənənələrinə söykənir. Janrına görə muğam operası sayılır. Muğam vokal formalarının funksiyasını yerinə yetirir.

Lakin Üzeyir Hacıbəylinin operasının musiqi nömrələrinin hamısını tək-cə muğamlar təşkil etmir. O. Azərbaycan xalq mahnı nümunələrindən də lazımınca istifadə etmişdir. Məsələn, “Bu gələn yara bənzər”, “Evləri var xana-xana” kimi xalq mahnılarının bu əsərdə istifadəsini qeyd edə bilərik. Operanı açan müqəddimə səslənərkən, Avropa musiqisindən gələn ənənə dərhal hiss olunur.

Bütün bunlarla yanaşı operanın musiqisində xor nümunələrindən də istifadə edildiyini mütləq qeyd etməliyik. Bu nömrələrin sadəcə dildə yazılmasına və sayının az olmasına baxmayaraq onlar musiqi dramaturgiyasında vacib və əhəmiyyətli royları oynayırlar. Xorlardan başqa operada orkestr nömrələri də xüsusi

dəqqət cəlb edir. Bu orkestr nümunələrini sadalamaqla bəstəkarın öz yaradıcılığına həddindən artıq ciddi münasibəti və işinə olduqca məsuliyyətlə yanaşmasının bir daha şahidi olur. Bu orkestr nümunələrini sadalamaqla bəstəkarın öz yaradıcılığına həddindən artıq ciddi münasibəti və işinə olduqca məsuliyyətlə yanaşmasının bir daha şahidi olur.

Ümumiyyətlə, Üzeyir Hacıbəylinin Avropa ənənələrinə münasibəti həddindən çox maraqlıdır və sözsüz ki çox şeydən xəbər verir. Bu ənənələrdən istifadə məsələsi vacib və mənalıdır. Bu ənənələr klassik ənənələrdir. Dahi bəstəkarın bu addımı məntiqli olaraq Şərq və Qərb mədəniyyətlərinin bir birinə yaxınlaşmasını Avropa klassik ənənələri ilə qovuşmasını nəzərdə tutur. Bunun da nə qədər düzgün və eyni zamanda təbii şəkildə baş verməsini musiqi banimizin dərin biliyə sahib olmasının, müdrikliyinin, zəngin intuisiyaya sahib olmasının təzahürü kimi qeyd etmək lazımdır.

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# EARTH SCIENCES

## GEOLOGY AND PROSPECTS OF HYDROCARBONS IN THE TRANSITION ZONE OF THE SHALLOW WATER OF THE APSHERON FIELD

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<https://doi.org/10.5281/zenodo.10592049>

### Abstract

The Apsheron field area is the most promising prospect of a Shallow water Transition zone of the Apsheron archipelago at all potential reservoir levels, for identification of the exploration potential of the area and the new business opportunities. The area covers with water depth between 10 to 20 meters. As a methodology used available seismic data, evaluation of reference well data and other geological factors in the Petrel program. Individual recoverable resource volumes per individual reservoir layers are calculated in the Monte Carlo program:

- The overall consolidated resource volumes for the Productive Series of the entire Bank-Apsheron area totalling 80.3 MMBBL.
- The overall consolidated resource volumes for the Mesozoic of the entire Bank Apsheron area totalling 21.4 MMBBL
- The consolidated resource volumes for the Gosha Dash area amount to 16.1 MMBBL This area is taken as undrilled. Gosha Dash structure is viewed as a target for potential field extension for the remaining exploration potential of Bank-Apsheron and West-Apsheron for the Mesozoic deposit which is identified on 2D seismic at approximately 2000 m depth. Therefore, this part of the structure is not identified as exploration, but as an appraisal & development target for future wells.

**Keywords:** South Caspian, offshore, oil and gas, seismic interpretation, geology, forecast

**Introduction.** In the study area underwater and above-water rocks, cones, banks and depressions characterize the relief of the Sea floor. The largest morphologic units are Gosha Dash, Apsheron bank North, East

Apsheron and West Apsheron a group of underwater mud volcanoes. Fig 1

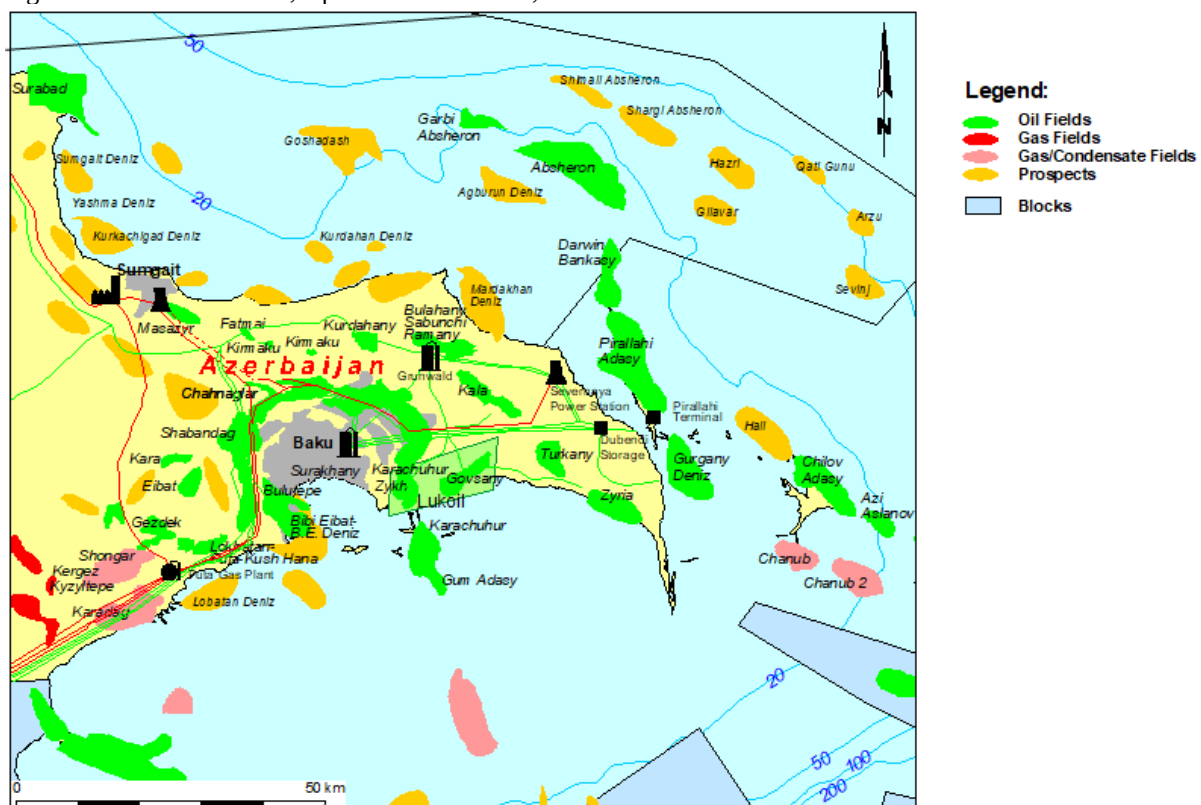


Figure 1 Apsheron Trend Shallow water & Transition zone location map

In the north, Gosha Dash is formed by two ridges protruding above the Sea level separated by a strait. Water depth varies between 5 to 20 m. East from Gosha Dash is located Shurabad onshore/offshore field

The Apsheron bank is located at the 10 m isobaths. It is a 10 km long and 2,5 km wide structure. The maximum 20 m depth of the Sea above the bank is 2-3 m. The North Apsheron is located directly to the north of the Apsheron bank., as well as West Apsheron is located to the west of the Apsheron bank field accordingly East Apsheron is located to the east of Apsheron bank field

Gilavar , Khazri Arzu, Noukhany, Gatl Qunu, and Sevinj prospects are located as a single anticline zone to the east direction from Apsheron bank field. Kurkha-chidag Sea, Sumgait Sea, Kurdakahni Sea and Mardakan Sea are located to the south and southwest of Apsheron bank field.

**West Apsheron discovery.** The West Apsheron oil discovery is located 20 km offshore in the western sector of the Apsheron - Dan Ulduzu - Karabakh Trend in the Caspian Sea. Further towards the southeast (Azi Aslanova and Neft Dashlari fields) the depth of the Sea gradually increases from 30 to 100 m. Fig.2

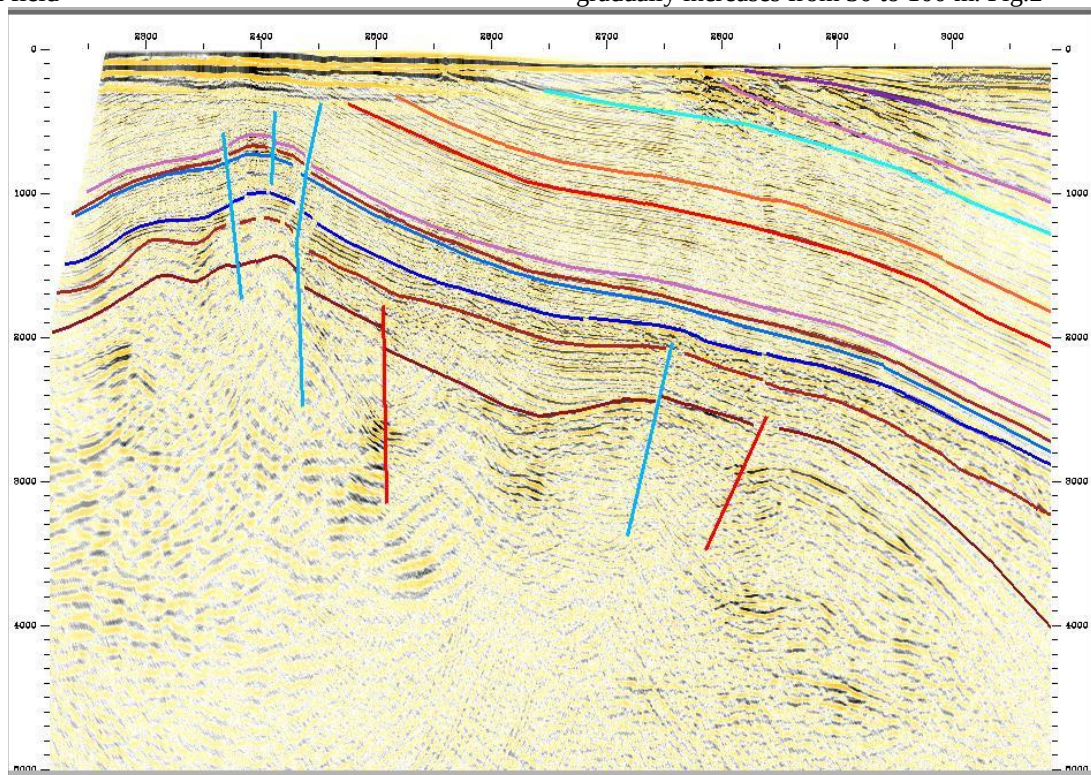


Figure 2 West Apsheron seismic section

The relief of the Sea floor is smooth; the ground is composed of grey sand and silt with shells. It is the structurally not-so-well-defined western culmination of a single large NW-SE trending anticline (30 km by 12 km) with two structural culminations, West Apsheron in the west and Apsheron in the east. The structural style of the anticline is typical of most fields in Azerbaijan: a major fault zone crosses the structure along its axis splitting it into two asymmetrical flanks. Several smaller dip faults divide it into several fault blocks. In the West Apsheron field a small oil accumulation was discovered in 1986, when an oil flow was produced in well 85 from the Kirmaki (KS) Suite (901-908 m interval). In 1990 another minor oil pool was discovered in a clastic reservoir in the Lower Kirmaki (LK) Suite of the Productive Sequence. The field measures 11 x 2.5 km. Field stratigraphy comprises sediments from the Oligocene - Lower Miocene Maykop Suite to the Productive Sequence. The upper part of the Productive Sequence has been eroded from the crest and the Sequence unconformably overlies the Di-

atom Suite and the Pontian. The Supra Kirmaku Mudstone Suite outcrops at the crest of the anticline. The Productive Sequence is composed of alternating sands and mudstones with the latter predominating in a total thickness of 1,800-2,000 m.

The productive sand has a net thickness of 11 m, 24% porosity, an average permeability of 75 mD (max. 180 mD) and a water saturation of 20%. At West Apsheron, the initial oil in place is estimated at 17 mmbbl and 1.1 bcf of solution gas. Wood Mackenzie has classified reserves, which are unlikely to be recovered under the current development scenario, as technical reserves.

There is no foreign participation in West Apsheron field; it is operated by the Apsheronneft Oil & Gas Production unit of State Oil Company of Azerbaijan Republic (SOCAR). The West Apsheron field started producing oil in 1989 at a rate of 20 b/d. Production ceased five years later due to additional requirements of the platform and production facilities. The field is not developed

Table 1.

West Apsheron: well results (source: WoodMac)

| Well Name        | Operator                 | Spudded     | TMD(m) | Re-<br>sult | Comment                                                  |
|------------------|--------------------------|-------------|--------|-------------|----------------------------------------------------------|
| Type             |                          | Completed   | WD(m)  |             |                                                          |
| West Apsheron 35 | Government of Azerbaijan | 01 Jan 1985 | 1,285  | Oil         | Tested oil at 511 b/d from Kirmaku formation (901-908 m) |
| Exploration      |                          |             |        |             |                                                          |
| West Apsheron 51 | Government of Azerbaijan | 01 Jan 1987 | 1,000  | Oil         | Tested oil at 157 b/d (617-630 m)                        |
| Exploration      |                          |             | 15     |             |                                                          |
| West Apsheron 52 | Government of Azerbaijan | 01 Jan 1987 | 1,000  | Oil         | Tested oil at 31 b/d (692-751 m)                         |
| Appraisal        |                          |             | 15     |             |                                                          |

**Volume estimation of this prospect we implemented together with Gosha Dash prospect evaluation.**

**Apsheron bank field.** Gas seeps on the Sea floor along the fault trace sparked seismic surveys in the Apsheron area in 1947-51, 1952-54, 1958-59 and 1966-67. Shallow drilling was conducted on the Apsheron anticline in 1950-52. The first exploration well was drilled in 1951 to a total depth of 1,140 m and did not encounter any hydrocarbon shows. In 1964, two exploration wells (N2 and N4) were completed. Well, 4, located on the southwestern flank of the Apsheron field - tested 3.5-5.2 mmcf/d of gas and 68-95 b/d of condensate from the Kala Suite (KaS) at a depth of 1,661-1,667 m. In 1965, well 11 was drilled on the northeastern flank of the field to a total depth of 803 m. The well tested 204-238 b/d of oil from the Kirmaku Suite (KS). The oil accumulation was later confirmed by wells 21, 24 and 25. In May 2002, a new gas exploration well, number 23, was drilled to a depth of 2,005 m using the Khazar-4 jack-up drilling rig. The well tested an initial flow rate of 5.4 mmcf/d. Between February and November 2004, SOCAR drilled two exploration wells to a depth of 800 m each using the semi-submersible rig Apsheron. In 2005, SOCAR drilled another exploration well and to build and install a stationary 12-slot drilling platform at the Apsheron Bank.

According to SOCAR source, the Apsheron field measures 15 km x 9 km at the top of the Kirmaku Suite (KS). The anticline is asymmetrical with a gently (25-30°) dipping southwestern limb and a steep (48-50°) northeastern dipping limb, trending WNW-ESE, cut by two longitudinal thrust and wrench faults as well as by normal transverse faults into several blocks. In the crestal part, the faulting was accompanied by diapiric clay intrusions related to the deep-Seated Miocene-Pliocene clayey sections. So far, oil and/or gas accumulations have only been found in the blocks situated in the NE limb. The trap mechanism is also related to lateral facies changes (shale-outs).

Field stratigraphy comprises sediments from the Oligocene-Lower Miocene Maykop Suite to the Productive Sequence. The upper part of the Productive Sequence has been eroded from the crest and the Sequence uncomfortably overlies the Diatom Suite and the Pontian. The Supra Kirmaku Mudstone Suite out-

crops at the crest of the anticline. The Productive Sequence is composed of alternating sands and mudstones with the latter predominating in a total thickness of 1,800-2,000 m. In the Apsheron field, commercial hydrocarbon accumulations have been discovered in two reservoirs - oil in the Kirmaku Suite (KS) reservoir and gas in the Kala Suite (KaS). Oil specific gravity is 0.914 gr/cm<sup>3</sup> in average.

According to Woodmackenzie's source, the initial ABC<sub>1</sub> hydrocarbons in place at the Apsheron field are estimated at 37 mmbbl of oil and 25 bcf of gas (free and solution).

Commercial oil production from the Apsheron field began in 1971. Peak oil production was achieved in 1985 when the field produced over 380 b/d. Gas production from the Apsheron field peaked at 3.7 mmcf/d in 1992. In the Apsheron field, a total of 21 development wells have been drilled, of which only five are active. The average oil well flow rate is 18 b/d of liquids, of which 14 b/d is oil (water cut is 25.9%). Two wells are understood to be producing free gas at this field.

**Volume estimation for producing part of Apsheron bank is not implemented because the field is under the development of SOCAR.**

**Gosha Dash (old name Kamni Dva Brata) prospect.** The uplift Gosha Dash is the marginal northwest structure within the studied area of the Caspian Sea. Gosha Dash has stratigraphic-lithological characteristics of the surface layers in this area related to independent uplift elongated north-west-south-eastwards and located in the continuation of the Tengin-Beshbarmak uplift. In 1950-1951 in the uplift Gosha Dash there was a weak local maximum demonstrating the approaching to the surface of the Mesozoic core.

The is in the north-western Apsheron archipelago, in 48-50 km to the north-west of Artiom island. The Sea bottom topography is dissected in the Stones area. An uplifted part is outlined in the central area where the Sea depth varies from 2 to 4 m. The stone outcrops in the Sea bottom form a range extending north-westward-south-eastward. It is 80 m long and 7-10 km wide. In some distance from the stone outcrops the Sea depth rapidly increases up to 30-35 m. At 20 m isobath, the shallow (uplifted) part is 6 km long and 2 km wide. The seismic survey in 1950-1951 identified far north-east and south-west limbs of an anticlinal high here. No reflections were obtained from the crests and an about 4

km wide blind zone remained in seismic profiles. An aerial survey in the Gosha Dash area gave no result either. In 1953 structure test drilling outlined the south-west limb of the uplift. Structure test drilling was performed in 1955 to find out the tectonic and stratigraphic relations of the Gosha Dash with the structure of the Apsheron and Tsurupa banks. The northwest pericline

of the uplift was outlined and faulting in the south-west limb was identified. Further work outlined almost the entire structure. Yet the wells drilled on the northeastern uplift failed to provide data due to the very deep Sea and submarine currents. The Gosha Dash geology is built on the Productive series

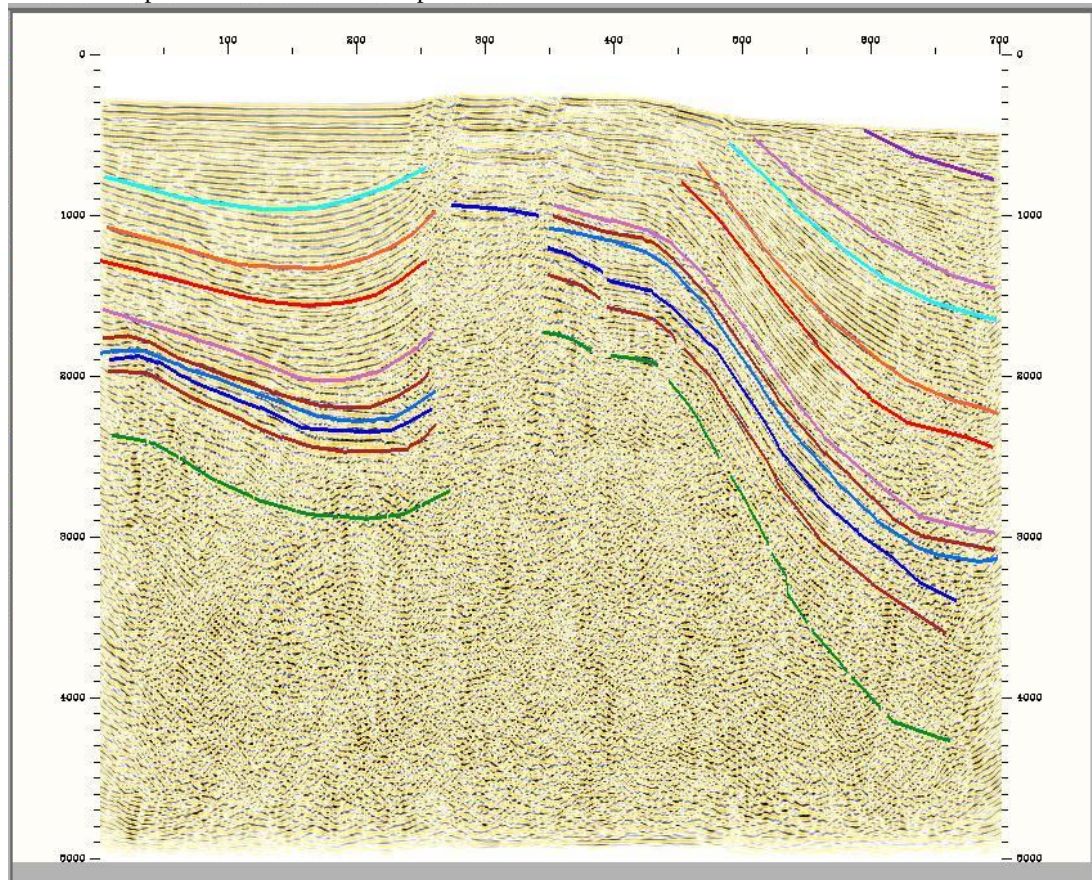


Figure 3. Gosha Dash seismic section

(PS), Akchagylian and Apsheronian deposits as well as the modern Caspian drifts. There are no modern drifts in the crest of the fold, but the further from the crest, the better they are developed and presented by fine- and mid-grained quartz sands. In the crestal position, the PS rocks are exposed to the Sea bottom. Their lithology is composed of poorly sorted and light-grey, coarse-grained sandstones, with black cherty pebble-stone nodules. The light fraction is composed of predominantly quartz, feldspar and rock fragments. Seismic data shows that the Gosha Dash is located at the fork of two axes. Fig.3

One axis plunges south-eastward and the other trends east-south-eastward but does not join the fold axis of Apsheron bank as it shifts an echelon to the south of the bank. There is a small but sharp saddle between the periclinial closures of the Gosha Dash and Apsheron bank folds. A geological map shows the Gosha Dash uplift as a west-north-west-east-south-east trending brachyanticline. The Productive series (PS) top displays a 13x7 km fold. It is composed of the PS deposits (at the crest) and Akchagylian and Apsheronian stages (at the limbs). The PS crop outs are confined to the north-west pericline of the fold. They are sandstones in the middle part. This indicates that the PS is eroded up to the lower intervals. The fold is slightly

asymmetric. The southwest limb is steeper than the northeast limb. The southwest limb dips at about 20-25°. The north-east limb dips at a maximum of 10-12°

The southwest limb is lowered and complicated by faulting near the northwest pericline of the Gosha Dash fold. The horizontal displacement of rocks near the northwest pericline is 1,5 km and 400 m in the south-west limb. High dip angles are due to this faulting: up to 65-70° in the northwest pericline and 28-30° in the southwest limb. The faulting is registered on the surface in the north-west pericline and it extends north-west-south-eastward, but it does not reach the Gosha Dash and turns south-south-eastward. Another transverse fault is registered in the southwest limb as it gets further to the east-south-eastward. This fault is also concurrent with the displacement of strata and high dip angles have been registered here (75-80°). The PS crops out to the southwest from the uplift to the shore along the coast, from Kilyazi Cape to Kechaldag. The PS deposits are fringed by the Akchagylian crop outs. On the other side, onshore structures in the coastline area are composed of older deposits – from the Pontian to Cretaceous. The Cretaceous crops out at the Sovetabad uplift crest. The periclines of the folds to the south of Tengin-Beshbarmak anticlinorium are built of the Pontian deposits. There are no these rocks in the Sea bottom

and this indicates that these folds flatten south-eastward, Seaward, to the known offshore folds - the Gosha Dash, Apsheron and Tsuryupa banks. A seismic survey is ongoing in the Gosha Dash area. As the PS is almost completely eroded in this structure, the Gosha Dash could be interesting as a Mesozoic oil and gas prospecting target. (Mammadov, 2004)

In 2012 SOCAR drilled exploration well N 1 in Gosha dash north-northeast flange of structure. In 2013 the same block of structure was drilled exploration well N 2. Both wells did not reach the planned well depth and were liquidated for technical reasons. **Volume estimation of this structure is implemented and attached.**

**Stratigraphy.** The geology of the north coast of the Apsheron peninsula is not studied very well. The main oil- and gas-bearing Suite is the Middle Pliocene Productive Series. Small oil accumulations occur as well in the Mesozoic deposits, which can be considered prospective due to oil fields onshore. The offshore area of the Apsheron peninsula is composed of deposits stratigraphically ranging from Jurassic to Quaternary (A.Alizadeh et al, 1972). The interval from Lower Cretaceous to Quaternary deposits was penetrated by wells. Fig.4

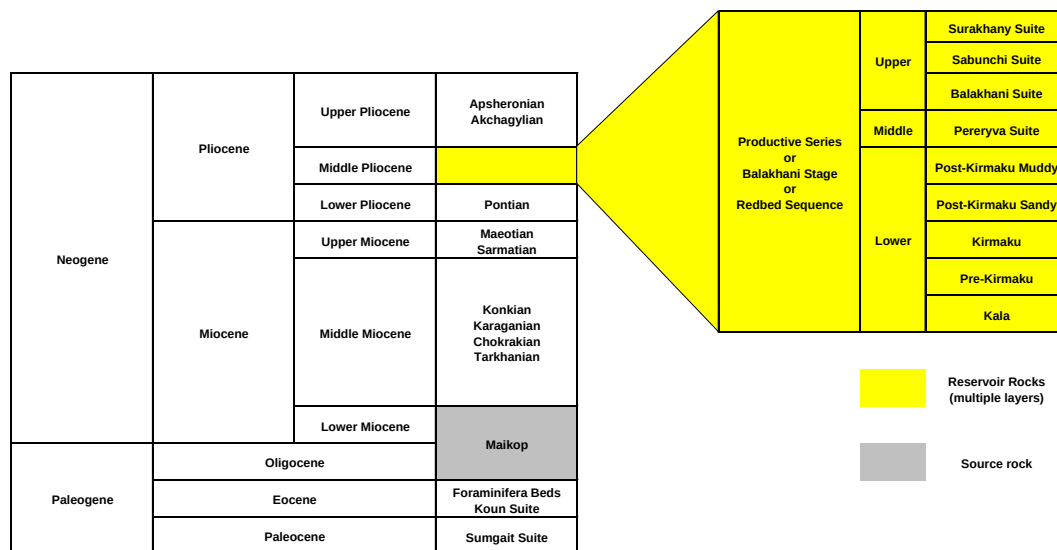


Figure 4. Generalised Stratigraphy of the Tertiary

**General Tectonic Framework** Tectonically the studied area is a part of the anticlinoria of the Apsheron archipelago. It occupies its northwest part. The Apsheron archipelago (the north-Apsheron Trend) is, on the whole, an independent complex-constructed structural element of the South-East Caucasus. It suffered the influence of two different tectonic factors in its evolution. One of them is the Mesozoic factor that resulted in the formation of large structures of a latitudinal strike and intensive down warping of the Caspian depression at the beginning of the Paleogene that determined sharp subsidence of the Cretaceous structural elements and their overlapping by the Tertiary deposits with the formation of structures of a meridional strike.

The uplifts in this zone have a very complicated structure. It is determined by the influence of deeply occurring (Mesozoic) layers on the formation of the Pliocene folding, i.e. by the combination of the fold-forming movements of a latitudinal (general Caucasian) and meridional (Caspian) trend.

The Greater Caucasus meganticlinorium stretches north-west-south-eastwards within the land and consists of the following structural units (from the south northwards): Altyagach-Kurkachidag anticlinoria, Dibraro-Yashminski synclinoria, Germiane uplift, Khizinski synclinoria, Tenginski-Beshbarmak anticlinoria, Kusar-Divichin synclinoria. Now there exists an opinion that in the general tectonic plan of the South-Eastern Caucasus the Apsheron Archipelago is a part of

the Apsheron periclinal trough. The latter is a part of the Caucasian-Balkhan interpericlinal trough that was formed during the process of the subsidence of the bends of meganticlinoria in the Greater Caucasus and the Greater Balkhan. Tectonically the north-west part of the anticlinoria of the Apsheron archipelago is associated with the Tenginski-Beshbarmak anticlinoria. The tectonic position of the uplifts in the north-west part of the anticlinoria in the Apsheron archipelago, on the one hand, is determined by the folding of the axial zone in the southeastern Caucasus and, on the other hand, by the folding in the Apsheron region. Owing to this there arises a problem with the continuation of the folding southeastwards (Alixanov, 1978)

The studied area is located within the North-Apsheron Trend. It is worth attention from the point of view of the existence of favourable tectonic conditions which are necessary for the accumulation of commercial oil and gas deposits. Brachy-folds were determined in the Pliocene deposits (Gosha Dash, Apsheron bank, Agburun Deniz, Gilavar, Mardakyany - deinz, etc.), sometimes with structural complications of a terrace type. In the Apsheron bank together with oil and gas seepages associated with faults and supposed mud volcanoes, there were determined oil and gas deposits in the Kirmaki and the Kalin Suites of the Middle Pliocene.

Taking into account the tectonic position and the raised position of the Mesozoic surface (according to

the drilling data) and also the existence of structures in these deposits (geophysical data) the inflows of light oil and gas fountains out of the Mesozoic (Shurabad, Keshchai) as well as structural forms in the north-west of the Apsheron archipelago should be treated as target for the Search of oil and gas in the Mesozoic deposits.

All the known and supposed new structural forms, probably, should contain oil and gas reserves. This supposition is based on the fact that they are located in the vicinity of the developed fields (Darvin, Pirallahi-north fold, Pirallahi-south fold etc.) and in the continuation of tectonic elements in the south-east of the greater Caucasus that are prospective from the point of view of the Search for oil and gas deposits in the Mesozoic deposits (Keshchai; Shurabad, etc.).

Deposits of the Productive series (PS) of the western side of the South Caspian Basin were formed after the processes of folding and before the formation of tectonic faults. The HC deposits were located in structural arches. At the late Pliocene-Quaternary period, as a result of tectonic fault formation, single arch (roof) deposits appeared to be separated into individual tectonic blocks.

Tectonic disturbances on the structures of the "Apsheron trend" play both a negative and a positive role. In the first case, they contribute to the destruction of deposits (for example, on the Khala structure), and in the second, to their prevention (Chilov Island) under favourable geological conditions. The sediments underlying the PS are uncovered by wells to shallow depths. Given the deep erosion of PS deposits on the crests of uplifts, it is advisable to place wells here to study Mesozoic deposits. *Geologic Evolution*. (Babayev et al, 2006)

The geologic evolution of the north-western part of the Apsheron archipelago is governed by two factors: a) the constant uplift of the mountain chain of the Greater Caucasus and b) the intensive downwarping of the Caspian depression. This resulted in a shallow occurrence of the Mesozoic rocks along the crests of the uplifts together with the accumulation of a thick series of Middle Pliocene rocks in the areas of strong subsidence.

The thickness decreases of the Upper Cretaceous deposits or their complete pinch-out towards the arch (Agburun Deniz, Apsheron bank) demonstrates that in the frontier of the Lower and the Upper Cretaceous on the arches of the uplifts (Apsheron bank, Agburun Deniz) were underwater cordillera elevated above the Sea floor and it was the result of erosion.

Intensive down warping of the basin floor during the Eocene resulted in the accumulation of mainly clayey deposits of the Konian Suite that unconformable overlie the Cretaceous deposits (Apsheron bank, Agburun Deniz). The uplift process continued in the Oligocene and Maycopian period. This regime resulted in the appearance of certain uplifts within the Apsheron region. Intensive growth of the folding results in a considerable decrease of the Maycopian Suite thickness on the crests of the anticlines.

The Chockrak age is characterized by a regression of the Sea. This is indicated by the lack of the Chockrak horizon deposits in the arches and their existence on the

slopes of most of the structures in the Apsheron archipelago.

Sedimentation mainly of the clayey formations of the Diatomic Suite started at the beginning of the Karagan stage period. It went on till the Meotian period inclusive. At the end of the Diatomic Suite, the dominating role was played by the tectonic movements of a meridional orientation determined by the down warping of the Caspian depression (the Meotian period).

By the beginning of the formation of the Productive Series deposits there occurred a regression of the Lower Pliocene Sea, as a result, the Kalin Suite (KaS) occurred in the Pontian deposits with angular unconformity. Moreover, the basin of the Kalin Sea was not large and covered the southeast pericline of the uplift Apsheron bank (wells N 3; 4; 5; 8; 10 and 14). Most of the northeast slope was land and it was composed of the Diatomic rocks. This is indicated by the lack of the KaS there and by the unconformable occurrence of the KS rocks in the Diatomic layers (wells N 11; 13; 16; 19 etc.) The decrease of the sedimentation basin of the KaS is also indicated by the lack of the appropriate formations in the section of well N1 in the uplift Gilavar where the Kirmaki Suite (KS) deposits directly occur in the underlying rocks (Maycopian). The KaS deposits up to 56 m thick were stripped in well 19 located in the far subsidence of the southeast pericline of the uplift Mardakyany - Deniz.

The beginning of the period of sedimentation of the Lower Kirmaki (LK) Suite is characterized by a widening of the basin margins that covered the near-arch part of the Agburun Deniz and also the southwest slopes and the east periclinal of the Apsheron bank and the Agburun Deniz. The decrease of the LK Suite thickness and its pinching-out occurs northwards of the studied wells. Thus, the thickness of the LK Suite in well 15 is 24 m and in wells N23; 13; 2 and 17 there was a recorded absence of these deposits. By the beginning of the Kirmaki period, the sedimentation basin considerably widened and occupied the whole northwestern part of the Apsheron archipelago. When studying the map of equal thickness one can see that in the arches of the uplifts, there was recorded the minimum thickness of the KS and the maximum thickness was recorded in the subsidence of the structures.

The overlying deposits in the upper division of the PS in the arches of the uplifts are considerably washed out. They are only preserved in the far subsidence of the uplifts and in the adjacent synclines. The clayey nature of the Balakhany Suite deposits and the thickness of its deposits within the Apsheron archipelago show relatively calm geotectonic surroundings during the whole period of the Balakhany Suite. The increase of the clayiness of the deposits in the upper division of the PS in the ascending stratigraphic succession makes it possible to suppose that the fold-formation processes were decaying then.

The thickness and facies of the upper Pliocene deposits which are mainly composed of clayey rocks demonstrate their accumulation in the synclines and in the subsidence of the anticlines and that they are in complete conformity with the tectonic plan of the studied region. Thus, the sedimentation of the PS within the

archipelago just like in the whole Apsheron oil and gas region occurred in close relation with the processes of the fold evolution. A peculiar feature of the evolution of the Apsheron archipelago structures is a separate evolution of two groups of anticline structures that now contain oil deposits (Apsheron bank, etc.) and buried uplifts containing gas condensate accumulations (Janub, etc.). This peculiarity is determined by the formation of the flange framing of the Caspian depression and the regional dip of the layers from the flanges towards its central part.

Analysis of the history of the geological evolution of the northwest of the Apsheron archipelago allows making the following conclusions:

1. The geotectonic evolution of the area is determined by the rising of the Greater Caucasus and the down-warping of the mountain structures in different geological periods caused the absence of the appropriate deposits in the arches of the uplifts whereas the down-warping of the Caspian depression resulted in the accumulation of these deposits in the subsidence of the structures and in the synclines that separated them.

2. The formation and evolution of the structures coincided with the active manifestation of the Alpine folded system. The growth of positive structures occurred in the background of a general subsidence of the basin together with the sedimentation, i.e. it was of a condemnation character.

3. The history of geological evolution in the upper Cretaceous epoch allows us to suppose the existence of a complete section of the Cretaceous deposits in the subsided areas of the structures Apsheron bank, Agburun Deniz, Gosha Dash, etc.

4. Anticline folds (structural complication) are located to the north and to the northwest of the uplift Apsheron bank. Before the sedimentation of the Middle Pliocene deposits, they developed independently. During the sedimentation of the PS, their growth sharply logged from that in the b. Apsheron bank. As a result of the folds "opened" and in the recent middle Pliocene structural plan they are a structural terrace and a low amplitude (up to 50 m) anticline structure.

5. Regional dislocations that complicate the arches of the structures of Gosha Dash, Agburun Deniz and Apsheron bank have been developed for a long time. They formed before the sedimentation of the Middle Pliocene and significantly influenced the sedimentation.

6. From the Upper Cretaceous till the Middle Pliocene the arch of the uplift b occupied the highest hypsometrical position. Agburun Deniz. Since the late

Middle Pliocene, it has been occupied by the uplifted Apsheron Bank.

7. The washout of the upper Pliocene and the Anthropogenic deposits in the elevated areas of the structures Mardakyany - Deniz, Gosha Dash, Apsheron bank and Agburun Deniz does not allow reconstructing the character of their evolution during the post-Pliocene epoch. At the same time, the sections of the Akchagyl and the Apsheron stages in the subsided areas of these uplifts is mainly represented in the deep-water facies where one can observe the lack of the rudaceous differences. A constant lithofacial composition like that allows to make a supposition that in the basin of the upper Pliocene there was recorded a lack of big islands. Hence, the washout of the Upper Pliocene deposits in the near-arch areas of the above-mentioned structures occurred after the Baku tectogenesis which determined a sharp rise of the uplifts and a complete formation of the recent structural plan.

8. As it is known, hydrodynamic conditions in the Sea existing within the studied area result in the wash-out in the Gosha dash, Apsheron bank and Agburun Deniz. Despite this, isobaths of the smallest depths contour the near-arch areas of the brachyanticlines. We think that this demonstrates the continuation of weak ascending movements nowadays as well.

**Reservoirs and Source Rocks.** Mature source rocks are proven by the many discoveries of oil and gas in the South Caspian Basin. The balance of expert opinion favours the Maykop Suite of the Oligocene-Lower Miocene as the primary source rock for the oil and gas discovered in the Productive Sequence. The intraformational shales of the Productive Sequence are also considered to have significant source potential. In global terms, the South Caspian is a very young basin and is relatively cool. As a consequence, the Oligo-Miocene source rocks continue to generate oil at burial depths over 6 km. Only in the deeper parts of the basin are the source rocks sufficiently deeply buried to generate significant volumes of gas. The relative proportions of oil and gas generated in the deeper parts of the South Caspian Basin remain highly uncertain but the discovery of gas in Shah Deniz has led many industry experts to predict the same for many of the prospects in the deeper water basin.

In the Apsheron shallow & transition Block uplifts are highly raised and deeply washed out, therefore oil contained here are only suites of the lower section (KaS, LK, KS, LKS, and LKC) of PS (L.Neogene). Fig.5

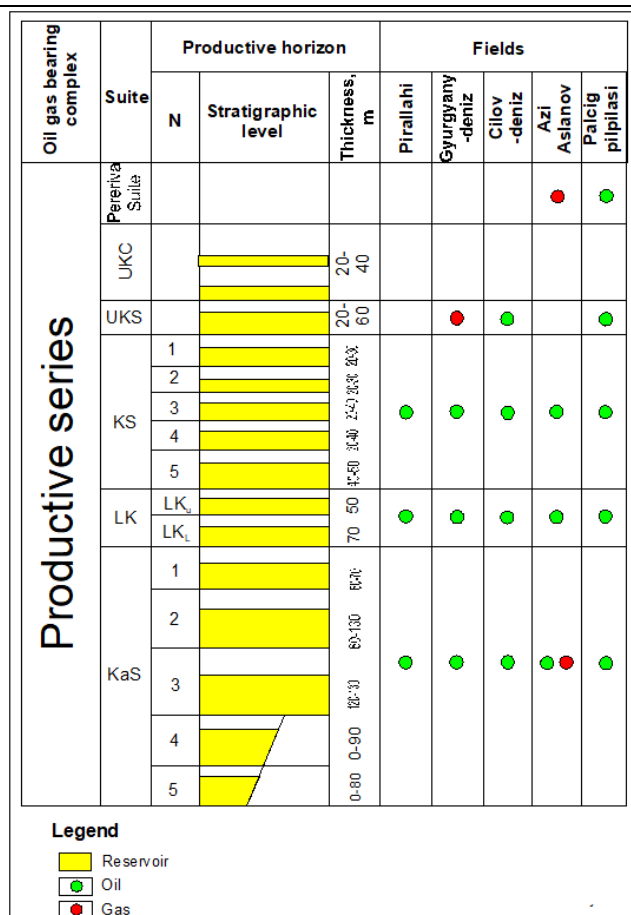


Figure 5. Shallow water transition zone of Apsheron Trend. Main oil and gas contained fields

KaS is lithologically variable by area and section. LK Suite contains oil in sandstone benches in the lower and upper parts of the section. KS is one of the main oil and gas-containing objects in Chilov-Deniz, A. Aslanov fields. Gyurgyany-Deniz field has deposits only in the lower KS. On Pirallakhi only four objects are oil and gas bearing- KS<sub>2</sub>-KS<sub>5</sub>. The commercial oil and gas content of the UKC Suite is determined only on separate blocks of A. Aslanov and Palchyg Pilpilasi fields. The rhythmic sequence of reservoirs and intra-formational clayey Seals created favourable HC conditions for saturation of most of the section as well as pre-determined a possibility for preservation of gas-condensate and oil deposits even in tectonically dislocated and deeply washed-out structures.

There are two Santonian-Campanian gas-bearing sandstone reservoirs tested so far (August 2000), in the Shurabad structure: the upper interval is between 132 m and 135 m (tested in the Shuraabad 54 well in 1937) and the lower interval is between 180 m and 183 m (tested in the Shuraabad 8 well in 1936). The Oligocene-Lower Miocene bituminous shale and marls of the Maykop Group type as well as some clays and carbonates of the Middle Miocene Chokrak and Karagan formations are considered to be one of the main source rocks in this area. In general, these bituminous shale

and clays, which are deposited in a strongly reducing environment, have a high organic carbon content (0.5 to 5%) and are of sapropelic type. The average organic carbon content of these Miocene source rocks is 1.55%. Granular reservoirs of the M.Jurassic and fractured-granular ones of Valanginian and Hauterivian stages of the L.Cretaceous, and granular reservoirs of Maykop (U.Miocene). Seal- carbonate and non-carbonate clays (Cenozoic-Mesozoic deposits). Traps are fault-blocked and stratigraphic traps.

#### Well and Seismic database. For estimation of reserves, well-log analysis of the following wells:

West Apsheron – 3 wells (18; 46; 47); Apsheron Bank – 11 wells (7; 8; 9; 10; 14; 15; 16; 18; 19; 41; 50); West Apsheron correlation1- 3 wells (6; 15; 17); Apsheron Bank – correlation – 3 wells (18; 11; 7); Kalin Zaliv – 2 wells (13; 14); North Apsheron – 4 wells (1; 2; 3; 5); Mardakyan – 2 wells (13; 16); Noukhany 1 well (1); Gilavar – 2 wells (1; 2); Khazri - 2 wells (3; 4); Arzu – 1 well (1); Kurkachidag- 1 well (1); Yashma Sea-1 well (1); TOTAL: 36 well logs.

Interpretation of Regional Seismic Grid width 10 km, locally increased to 5 km line spacing, oriented in NW-SE and SW-NE direction. Area depth closure of the Gosh Dash –West Apsheron prospect (For volume estimation selected two target horizons PK of Lower Productive series and Mezozoic deposits).Fig.6

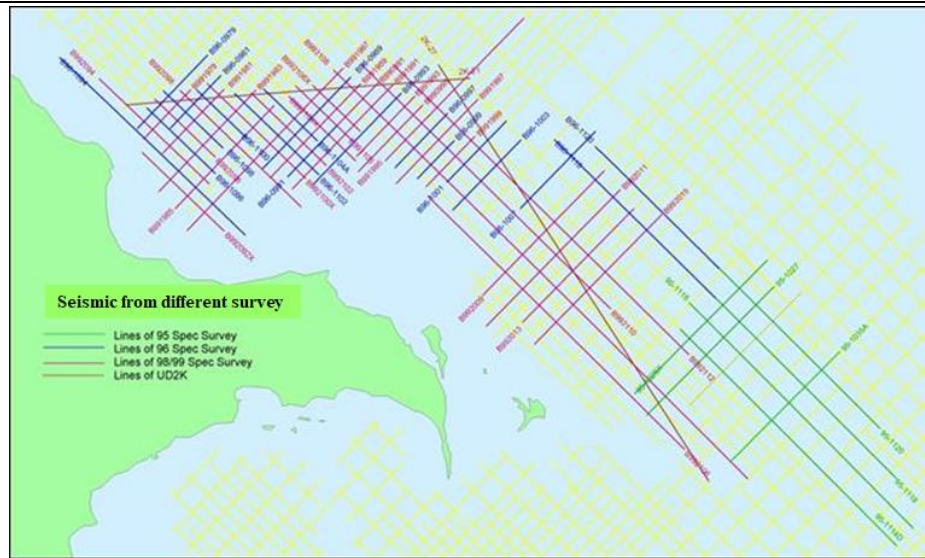


Figure 6. Location of used Seismic lines

A structure at the Mesozoic interval is identified on 2D seismic data. This structure is of a potential exploration nature, but very risky due to expected severe internal compartmentalization, and very limited knowledge of the charge mechanism for the Mesozoic, reservoir properties. The entire Mesozoic below the

Bank-Apsheeron area is undrilled to date. Only one well-penetrated Mesozoic at the edge of this structure in a very down-dip position. For the estimation of reserves, we used the famous Monte Carlo method.

#### Resource volume estimation.

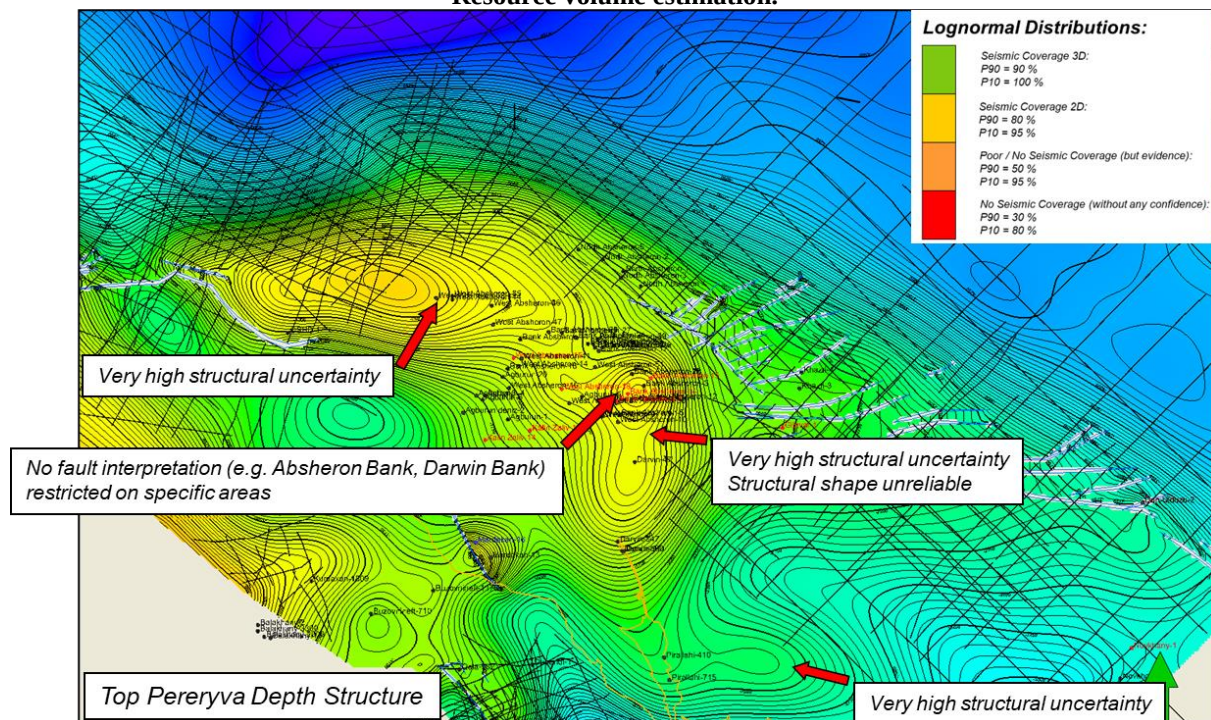


Figure 7. Volumetric parameters. Area uncertainty

The calculation of the resource volumes is based on the Depth maps. The depth maps, the formation tops of the reference wells, the petrophysical evaluation and the fault Seal and top Seal risks were incorporated with

estimation of resources and reserves and supplied with reservoir property data for the potential Mesozoic play. Applied column height estimates: Lognormal, P99 = Crest, P1 = 300 m

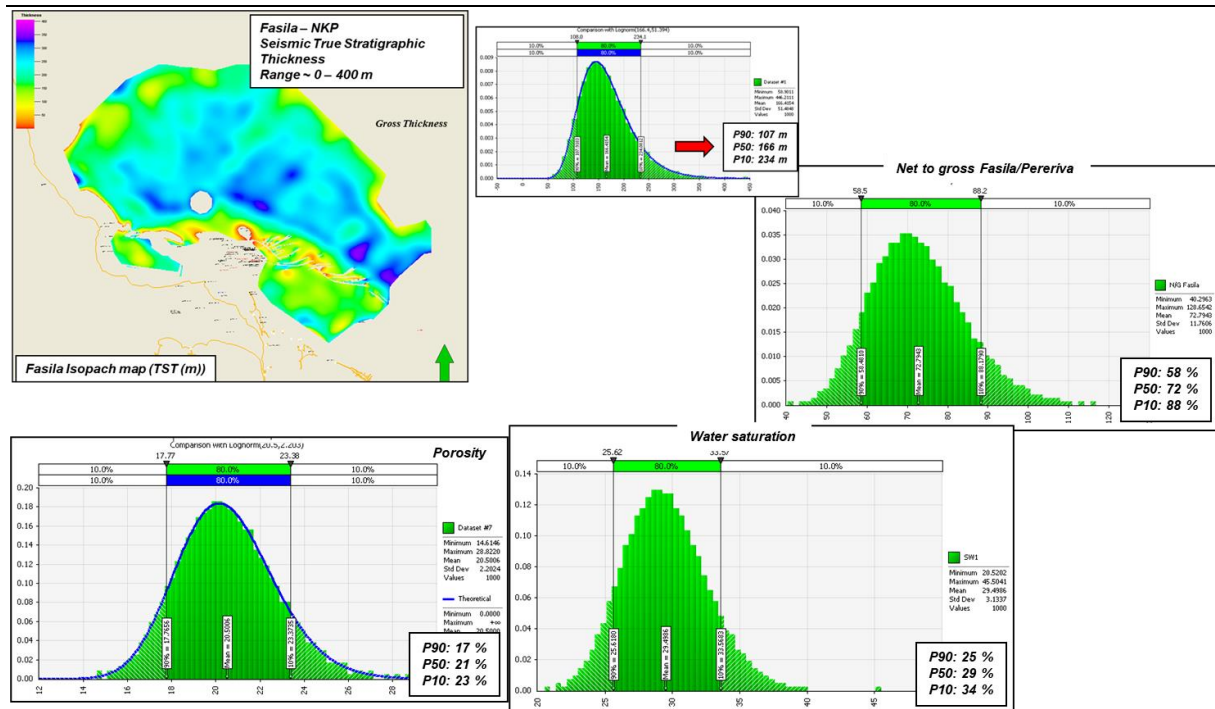


Figure 8 Fasila/Pereriva. Volumetric parameters

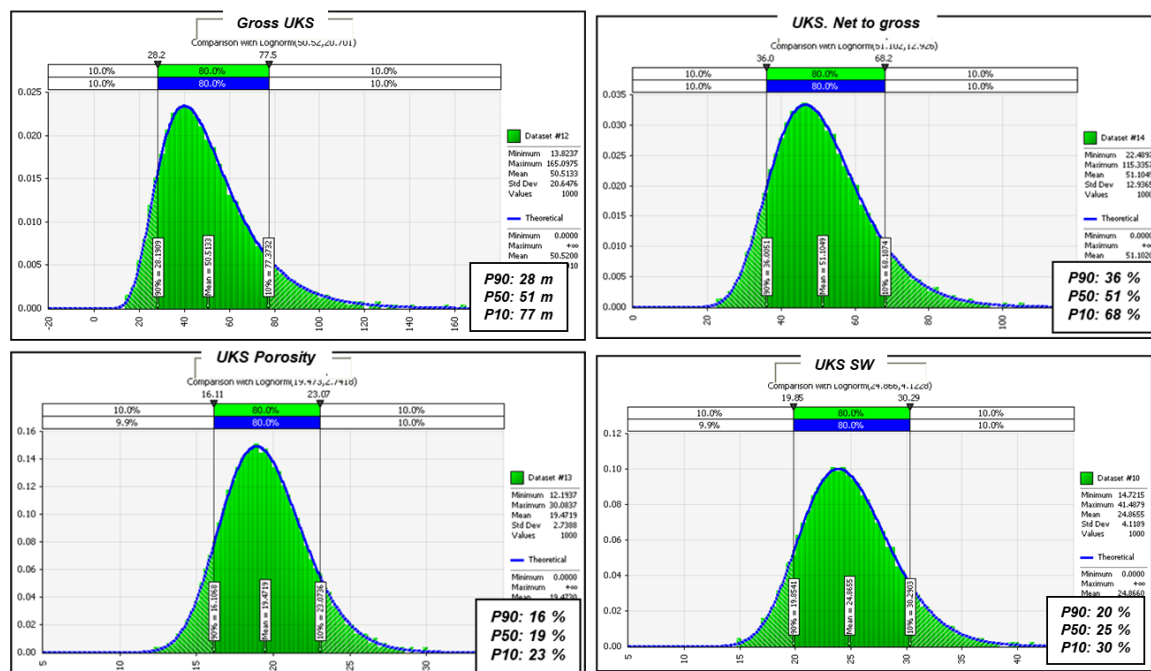


Figure 9. Upper Kirmaki sandy (UKS) Volumetric parameters

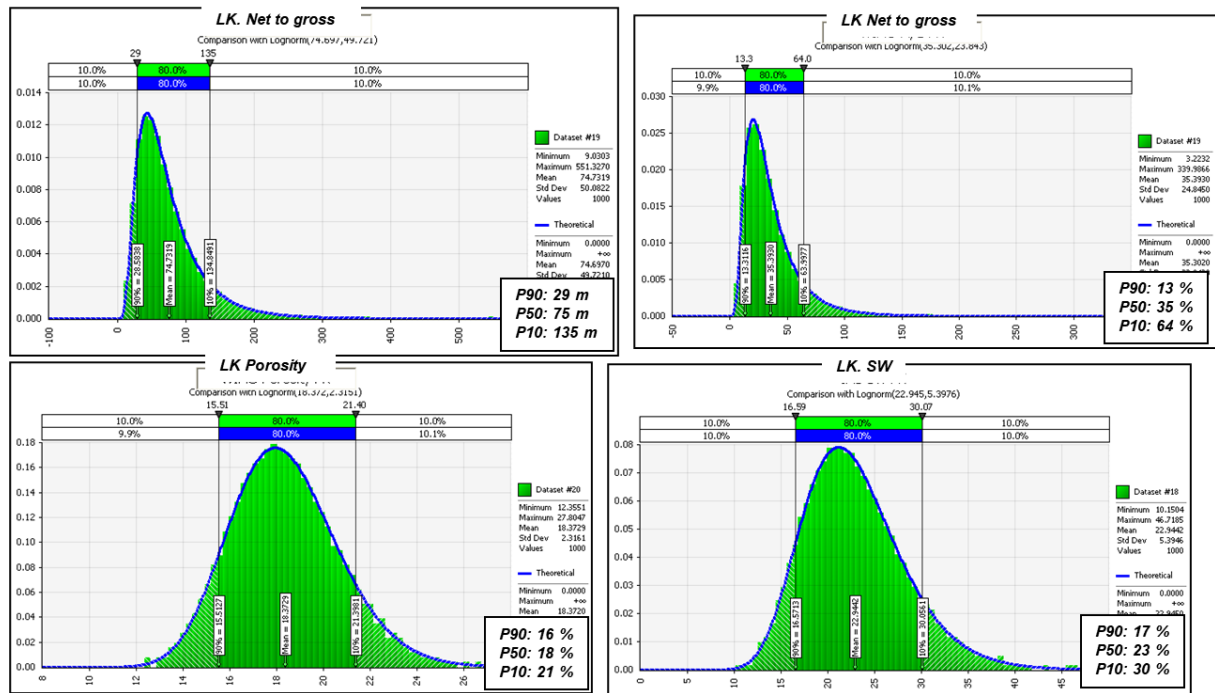


Figure 10. Lower Kirmaki (LK) Volumetric parameters

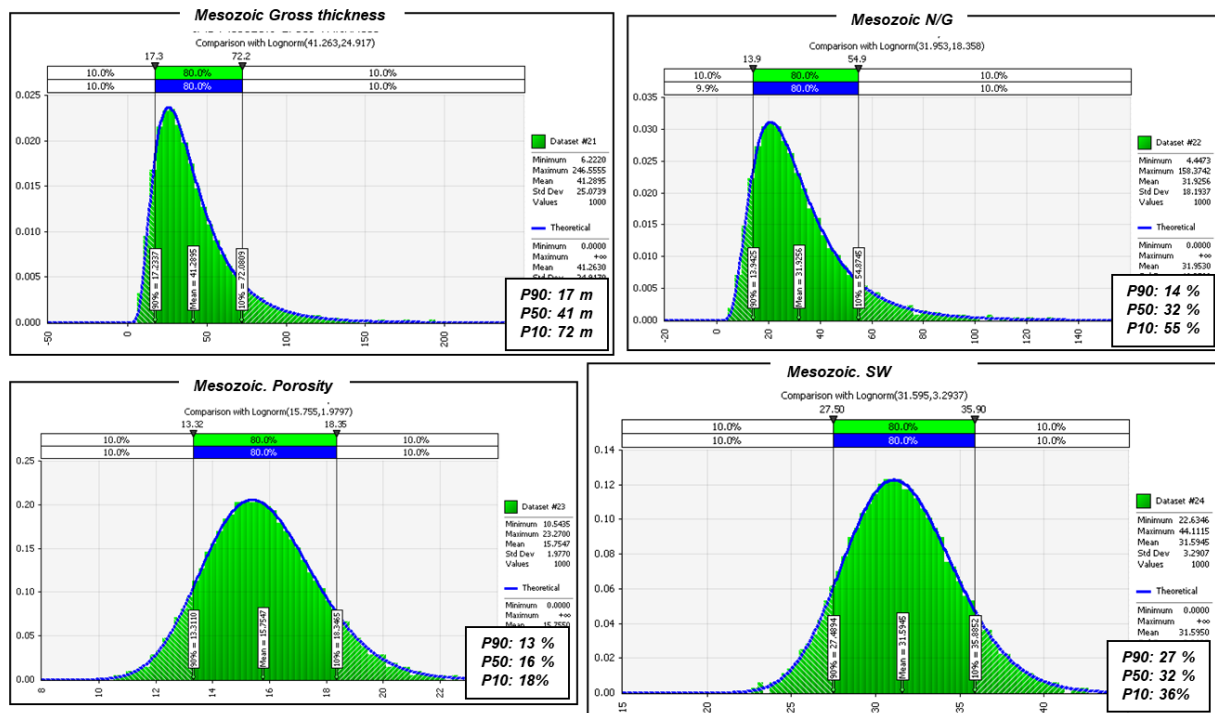


Figure 11. Mesozoic Volumetric parameters

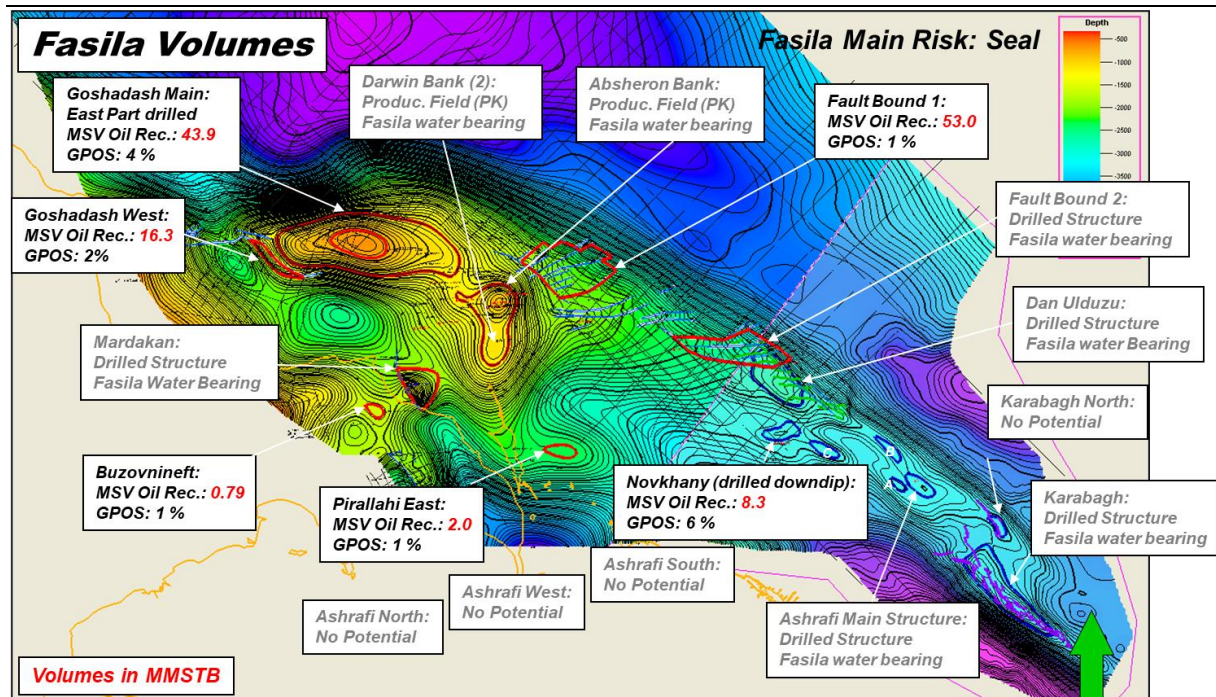


Figure 12. Fasila/Pereriva Volumetrics &amp; Risking

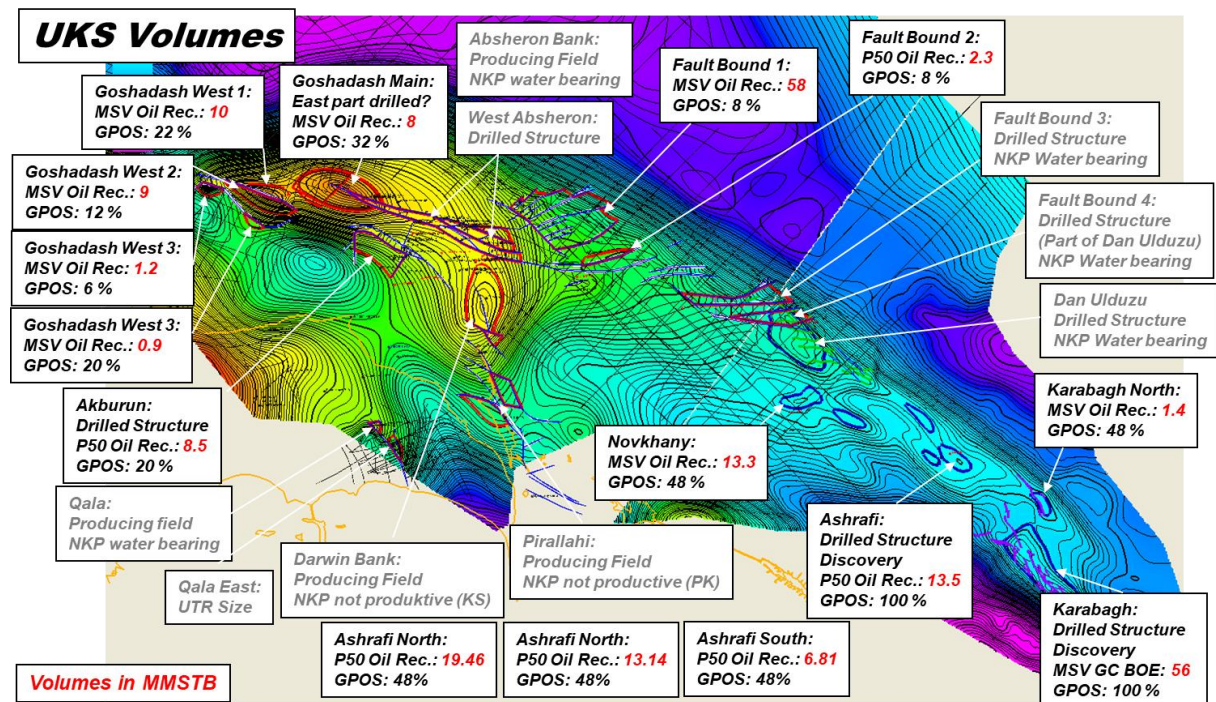


Figure 13. Upper Kirmaki sandy suite Volumetrics &amp; Risking

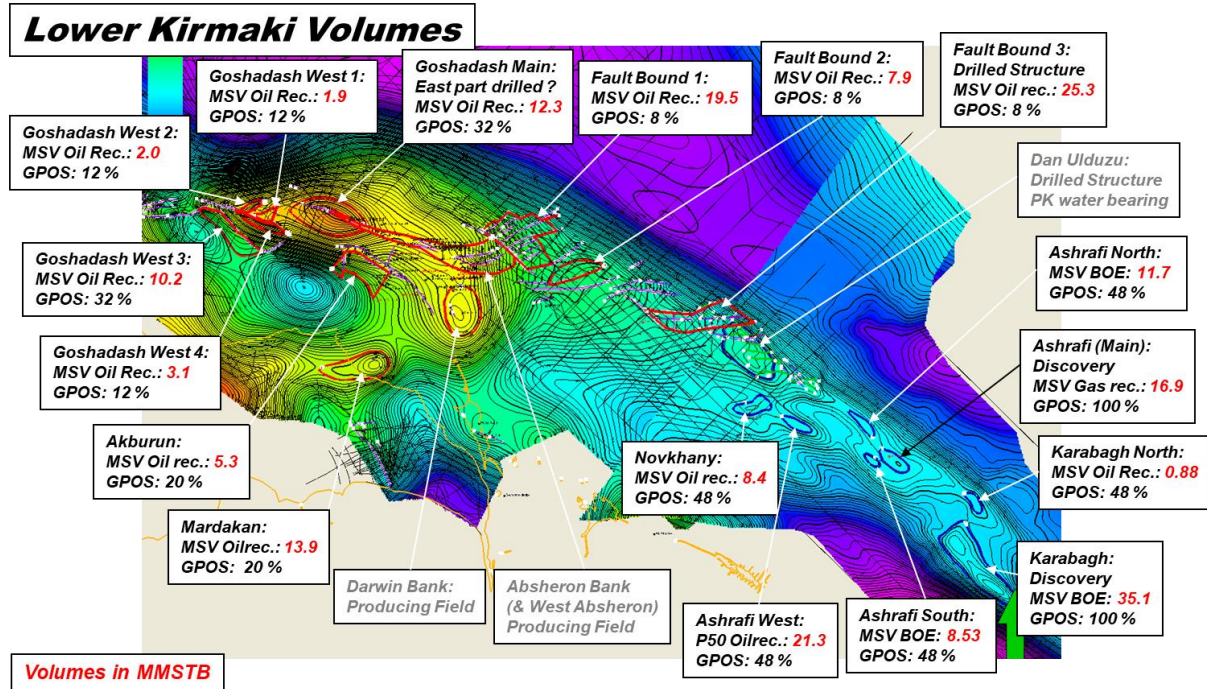


Figure 14. Lower Kirmaki suite Volumetrics &amp; Risking

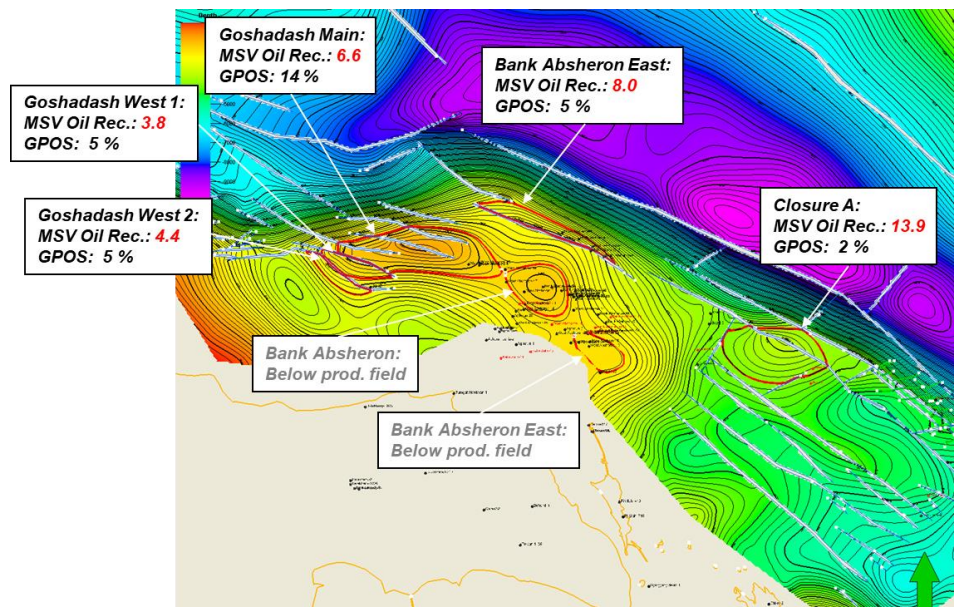


Figure 15. Mesozoic Volumetrics &amp; Risking

Methodology. Area Depth graphs were derived from the Top Fasila/Pereriva, Top NKP, and Top Mesozoic reservoir. Intercalated reservoir layers were attached to the area depth graph in the Montecarlo program.

For the definition of compartments all interpreted faults on reservoir levels were combined to a general fault trend map. A structural model was superimposed to separate the structure with N-S trending faults. The last closing contour and well data were used to define polygons/compartments to further subdivide the structure into meaningful structural compartments. Fig.16; 17; 18 and 19

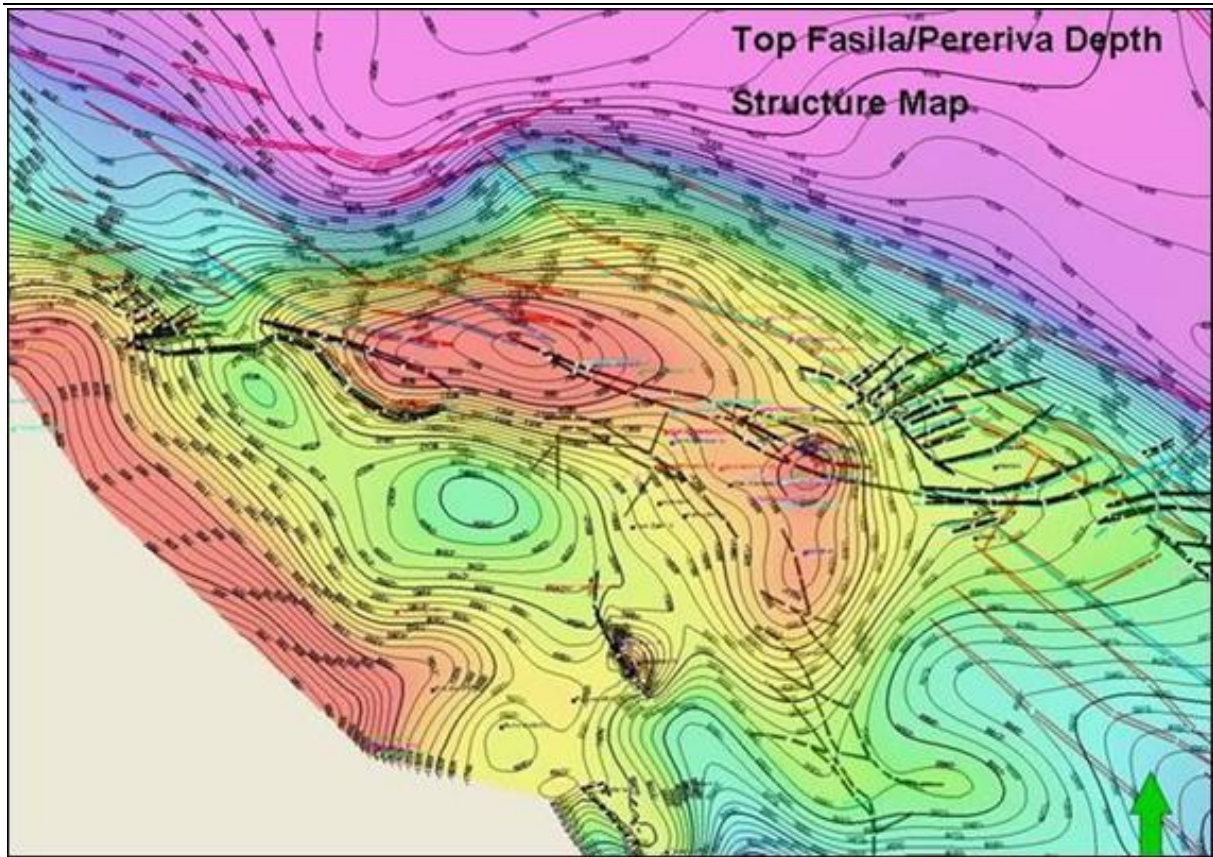


Figure 16. Top Fasila/Pereriva depth map

Reservoir input parameters are sums & averages from petrophysical interpretation for the Productive Series and the Mesozoic deposits. Since the Productive Series consists of five stacked reservoir layers, these layers were individually evaluated and consolidated. The consolidation was carried out for individual reservoir layers, and polygons and also consolidated in total.

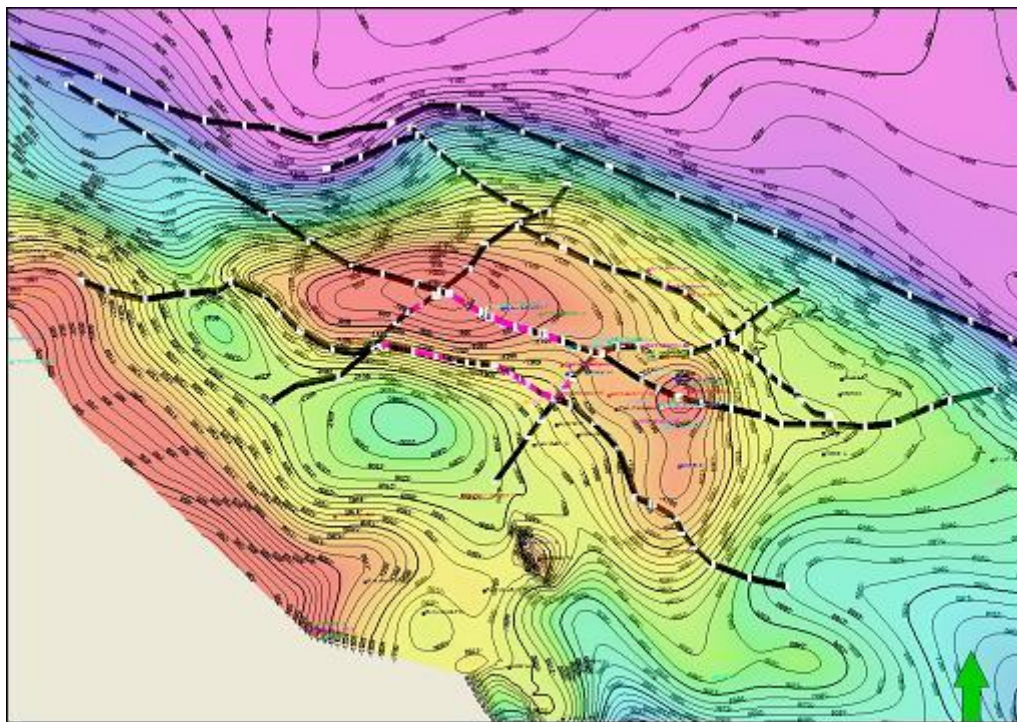


Figure 17. Top Fasila depth map with lowest closing contour

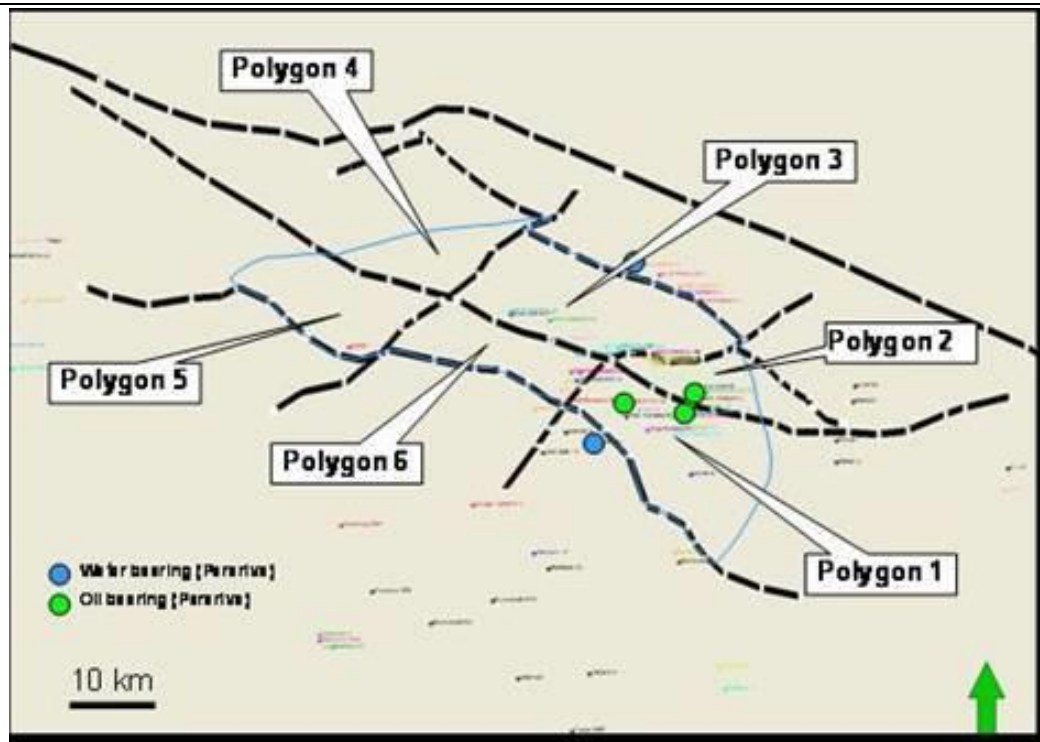


Figure 18 Definition of reservoir polygons

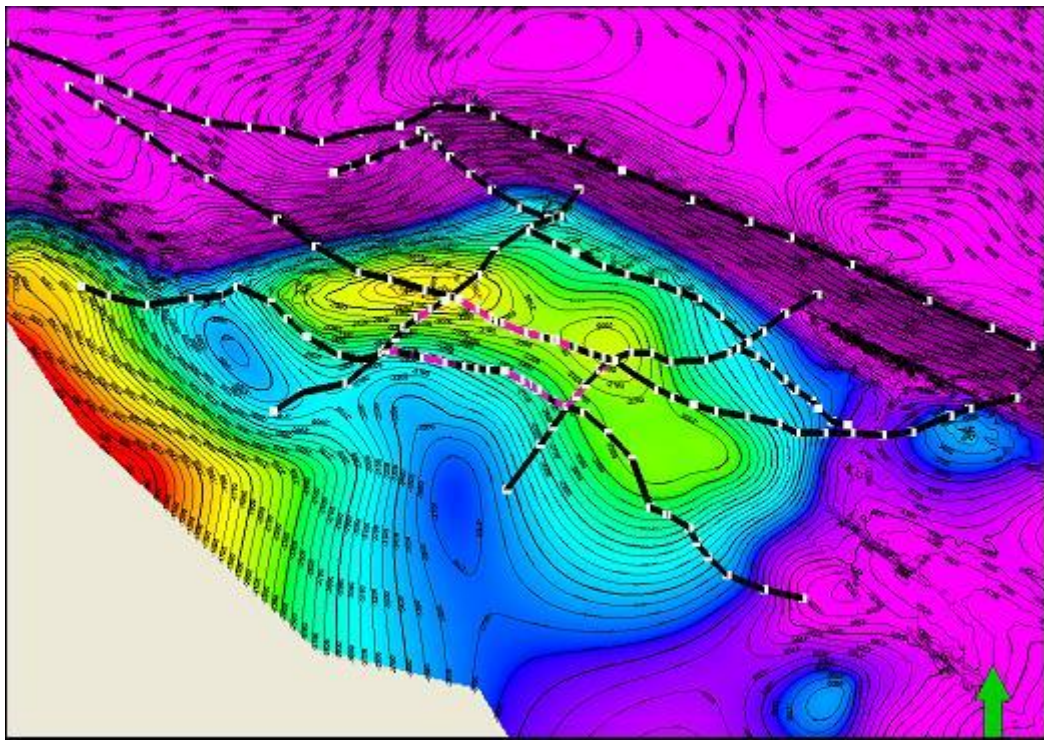


Figure 19 Top Mesozoic depth map

**Technical Results.**

Productive series Interval.

- Individual resource volumes per individual reservoir layer and polygon are described in Tab. 1

- **The overall consolidated resource volumes for the Productive Series of the entire Bank-Apsheron area totalling 80.3 MMBBL.**

- **The overall consolidated resource volumes for the Mesozoic of the entire Bank Apsheron area is totalling 21.4 MMBBL**

- **The consolidated resource volumes for the Gosha Dash area amount to 16.1 MMBBL.** This area is undrilled and, based on the structure map available, has to be defined as being an integral part of the Bank Apsheron structure. Therefore, this part of the structure

is not identified as exploration, but as an appraisal & development target for future wells.

Mesozoic Interval:

- A structure at the Mesozoic interval is identified on 2D seismic data. This structure is of a potential exploration nature, but very risky due to expected severe internal compartmentalization, and very limited knowledge of the charge mechanism for the Mesozoic, reservoir properties.

- GPOS is currently estimated to range between 5-10% max. The entire Mesozoic below the Bank-Apsheron area is undrilled to date. Only one well penetrated Mesozoic at the edge of this structure in a very down-dip position.

Table 1.

**Resource volumes of all reservoir layers in Banka Apsheron/Gosha Dash area**

|           |                      |                            | MMBBL,<br>Recoverable<br>reserves ,<br>MSV<br>unrisked | GPOS% | Comment                      |
|-----------|----------------------|----------------------------|--------------------------------------------------------|-------|------------------------------|
| polygon 1 | Productive<br>series | Pereriva/Fasila            | 1.9                                                    | 100   |                              |
|           |                      | upper Kirmaki sandy (UKS)  | 0                                                      | 100   | proved water bearing by well |
|           |                      | Kirmaki                    | 0                                                      | 100   | proved water bearing by well |
|           |                      | lower Kirmaki (LK)         | 21.3                                                   | 100   |                              |
|           |                      | Kalinskaya (KaS)           | 3.04                                                   | 100   |                              |
|           |                      | <b>Mesozoic (oil case)</b> | 13.7                                                   | 5-10% |                              |
| polygon 2 | Productive<br>series | Pereriva/Fasila            | 1.91                                                   | 100   |                              |
|           |                      | upper Kirmaki sandy (UKS)  | 0                                                      | 100   | proved water bearing by well |
|           |                      | Kirmaki                    | 0                                                      | 100   | proved water bearing by well |
|           |                      | lower Kirmaki (LK)         | 14.9                                                   | 100   |                              |
|           |                      | Kalinskaya (KaS)           | 1.75                                                   | 100   |                              |
|           |                      | <b>Mesozoic (oil case)</b> | 11.4                                                   | 5-10% |                              |
| polygon 3 | Productive<br>series | Pereriva/Fasila            | 21.5                                                   | 24    |                              |
|           |                      | upper Kirmaki sandy (UKS)  | 5.9                                                    | 12    |                              |
|           |                      | Kirmaki                    | 4.5                                                    | 12    |                              |
|           |                      | lower Kirmaki (LK)         | 9.06                                                   | 30    |                              |
|           |                      | Kalinskaya (KaS)           | 3.45                                                   | 30    |                              |
|           |                      | <b>Mesozoic (oil case)</b> | 22.4                                                   | 5-10% |                              |
| polygon 4 | Productive<br>series | Pereriva/Fasila            | 23.6                                                   | 23    |                              |
|           |                      | upper Kirmaki sandy (UKS)  | 1.95                                                   | 11    |                              |
|           |                      | Kirmaki                    | 1.21                                                   | 11    |                              |
|           |                      | lower Kirmaki (LK)         | 2.71                                                   | 28    |                              |
|           |                      | Kalinskaya (KaS)           | 1.01                                                   | 28    |                              |
|           |                      | <b>Mesozoic (oil case)</b> | 34.06                                                  | 5-10% |                              |
| polygon 5 | Productive<br>series | Pereriva/Fasila            | 24.6                                                   | 23    |                              |
|           |                      | upper Kirmaki sandy (UKS)  | 3.05                                                   | 11    |                              |
|           |                      | Kirmaki                    | 1.95                                                   | 11    |                              |
|           |                      | lower Kirmaki (LK)         | 4.29                                                   | 28    |                              |
|           |                      | Kalinskaya (KaS)           | 1.6                                                    | 28    |                              |
|           |                      | <b>Mesozoic (oil case)</b> | 17.3                                                   | 5-10% |                              |
| polygon 6 | Productive<br>series | Pereriva/Fasila            | 39.3                                                   | 23    |                              |
|           |                      | upper Kirmaki sandy (UKS)  | 2.57                                                   | 11    |                              |
|           |                      | Kirmaki                    | 1.67                                                   | 11    |                              |
|           |                      | lower Kirmaki (LK)         | 3.65                                                   | 28    |                              |
|           |                      | Kalinskaya (KaS)           | 1.34                                                   | 28    |                              |
|           |                      | <b>Mesozoic (oil case)</b> | 11.3                                                   | 5-10% |                              |

**Conclusion:**

- The Bank-Apsheron, West-Apsheron and the Gosha Dash area have been identified to have the highest potential in the Lower Productive Series (LK, LKS) of the transition zone offshore Azerbaijan. **Total resource volumes are 80,3 MMBBL.**

- SOCAR has been producing recently from the Bank-Apsheron field from the Productive Series. West-Apsheron was drilled by SOCAR but was not developed. **The only undrilled area left in the entire Bank-Apsheron area is Gosha Dash with 16,1 MMBB.** Gosha Dash is viewed as a target for potential field extension (appraisal and development) for SOCAR.

The remaining exploration potential below Bank-Apsheron and West-Apsheron is the Mesozoic identified on 2D seismic at approximately 2000m depth.

- **The Mesozoic is currently evaluated to have 21,4 MMBBL for the entire area** with a very low GPOS of 5-10%. The GPOS of 32% is a result of the consolidation and is viewed as high. To reach a sound geological understanding of the Bank-Apsheron structure a dedicated 3D seismic survey, covering the entire structure, would be needed targeting the Productive Series and the Mesozoic. There is upside exploration potential, in the shallow water Transition zone of the Apsheron area, which is the undrilled area next to Apsheron bank: Sumgatit Sea, Kurdakhani Sea with undeveloped Kalin Zaliv field, where a couple of wells discovered oil and gas but due to lack of infrastructure, the discoveries are not on production yet. Production is ongoing in the onshore part of the Shurabad field, but the offshore part is not developed yet. North Apsheron Four, Yashma Sea One, Kurkachidag Sea One, Mardakan Sea Five wells and Agburun Sea Four wells failed due to technical and geological reasons. Only one well in the North Apsheron prospect during the testing process gave weak oil flow within the Apsheron bank area. Agburun (four wells) Sea, Mardakan Sea (five wells) Arzu (one well) & Gilavar (one well) prospects are drilled but due to technical and geological reasons there are commercial discoveries are not found. Khazri & Noukhnay had a discovery of gas condensate but due to the absence of infrastructure, the discovery is not in production yet. East Apsheron, Gosha Dash, Sevinj,

Gatl Gunu,, Sumgatit Sea, & Kurdakhani Sea are not drilled yet.

In general, the entire transition zone (land-sea) of the Apsheron shallow waters presents a good exploration potential for oil and gas and modern 3D seismic should be recommended, if drilling in the Mesozoic, then use horizontal drilling from the shore as similar work is being done in the North Sea. The recent unsuccessful results of drilling for technical reasons on the Gosha dash structure once again confirm that drilling on the Mesozoic deposits deserves a special approach and preparation. The drilling of exploratory wells in the Mesozoic in Azerbaijan was carried out by unsatisfactory core sampling and non-compliance with the complex field geophysical works.

**Special Gratitude**

*I would like to express my gratitude to my ex-colleague Dr. Thomas Kraft from the Wintershall company, with whom we worked together on a regional study of the North Absheron Trend. Despite different views on calculating the reserves of individual areas of the Absheron Trend, he played an important role and provided valuable advice on constructing structural maps.*

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# ECONOMIC SCIENCES

## THE INFLUENCE OF ETHNOCENTRISM ON CONSUMER LOYALTY IN LOCALLY MADE FURNITURE (CASE STUDY ON SOLO FURNITURE MARKET CONSUMERS, INDONESIA)

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<https://doi.org/10.5281/zenodo.10581755>

### Abstract

A number of studies have identified that ethnocentric consumers prefer to buy domestically produced products compared to foreign products. However, this research focuses on countries with large economies, therefore its application in developing countries is still rare. On the other hand, this research is focused on products, and that is the reason why research on hedonic services is also scarce. The aim of this research is to identify ethnocentrism attitudes in consumer loyalty to buy local furniture products at the Solo Furniture Market by applying the variables ethnocentrism, patriotism, collectivism and individualism. The aim of this research is to provide a solution to develop and increase consumer loyalty to buy locally made furniture compared to buying from other countries.

**Keywords:** ethnocentrism, patriotism, collectivism and individualism

### Introduction

The furniture industry as a subsector of the agro-industry contributes 1.30% to non-oil and gas GDP in 2022. Apart from that, in the same year, the furniture industry had an export performance worth 2.47 billion USD. "In the midst of the threat of a global recession which previously caused the growth of the furniture industry to experience contraction, in the first quarter of 2023 the growth of the furniture industry has shown an increase compared to the second quarter of 2022 (Ministry of Industry, 2022). Previous studies have explained that consumers often choose to buy products made in their home country rather than products made abroad. This may be due to the influence that the place of origin of the product plays on consumers' desire to purchase (Papadopoulos & Heslop, 1993). Ethnocentrism is one of the variables studied to better understand these behavioural patterns. In the field of consumption, ethnocentrism allows us to identify the degree of influence of the origin group on local consumers in relation to their purchasing habits as well as their perception of the quality of foreign products (S. Sharma et al., 1994; Shimp & Sharma, 1987).

Due to the availability of natural resources in the country, the national furniture industry is able to compete on the global stage because of its innovative products. This shows that this industry is a sector that has the potential to develop. The Ministry of Industry noted that the export value of furniture products (HS 9401-

9403) in 2020 reached USD 1.91 billion, an increase of 7.6% from 2019 which reached USD 1.77 billion. The largest export destination countries for Indonesian furniture in 2020 include the United States, Japan, the Netherlands, Belgium and Germany (Ministry of Industry, 2022).

Previous research considers that consumer loyalty allows for preferences towards one particular service provider; This gives rise to commitment to buy again from them, social and emotional bonding, and reduced sensitivity to service prices (Hwang & Wen, 2009). Ethnocentric consumers tend to develop loyalty towards national brands (Ogba & Tan, 2009; Rowley, 2005).

Ethnocentrism is a traditional concept that influences purchasing decisions regarding foreign goods and services. In addition, according to (Fernández-Ferrín et al., 2015) the concept of customer ethnocentrism implies an increase in local purchases and a decrease in interest in foreign products. Ethnocentrism is represented by an overall attitude that focuses on morality in purchasing foreign-made and domestic-made products and services (Ma et al., 2020). For example, research conducted by (Han & Guo, 2018) argues that customers' ethnocentric values has a positive effect on the intention to buy domestic products. Since (Shimp & Sharma, 1987) initiated research on customer ethnocentrism, various studies have separately explored behavioural preferences, cognitive biases, and affective

reactions, ethnocentrism factors, and brand factors such as brand loyalty. In other words, previous research focuses on the one-dimensional structure of customer ethnocentrism (Balabanis & Siamagka, 2017; Fernández-Ferrín et al., 2015; Narang, 2016). However, researchers say that various studies are needed regarding the multidimensional structure of customer ethnocentrism (Bizumic, 2019; Boukamba et al., 2021). Therefore, the current study attempts to fill this gap. Furthermore, this research aims to expand research on the application of customer ethnocentrism attitudes based on individualism, patriotism and collectivism by using a multidimensional structure of customer ethnocentrism to measure customer loyalty in the furniture industry in the Solo Furniture Market.

## **Literature Review**

### **1. Ethnocentrism**

Working from a sociological perspective, Camacho et al., (2020; Thomas, (1907) define the concept of ethnocentrism as the perception that individuals have of the group they belong to as well as their assessment of that group compared to other groups. The reason is that the perception held by their own group becomes a reference. According to Lee et al., (2020) ethnocentrism can be interpreted as a lack of acceptance of cultural diversity and intolerance towards outside groups which tends to give rise to negative prejudice towards other cultural groups therefore ethnocentrism is included in xenophobia. This ethnocentrism produces a phenomenon called consumer ethnocentrism in American consumers. The North is characterized by the level of appreciation shown for products from their own country of origin. This appreciation for the place of origin is based on concerns about the possible loss of economic interests in the country itself due to high imports. This leads to the intention not to buy foreign products (Shimp & Sharma, 1987).

In relation to this topic Luque-Martínez et al., (2000) consider that ethnocentric consumers have a high tendency to express biased judgments and over-value local products. This tendency allows them to emphasize the positive aspects of these products and downplay or downplay the benefits of imported products. Therefore, ethnocentric consumers will consider the values of their ethnic group or country as a symbol of pride and a representation of national unity. Keeping these concepts in mind, Sharma [38] concluded that consumer ethnocentrism represents a favorable inclination towards anything related to the group to which one belongs (in-group) and a bias towards anything related to groups to which one does not belong. within it (the in-group). outside group). This results in attitudes with three distinct dimensions: affective reactions, cognitive reactions, and behavior. This behavior is reflected in the beliefs held by consumers regarding purchasing services offered by foreign companies.

### **2. Patriotism**

P. Sharma (2015) defines patriotism as a person's dedication, through feelings of love and devotion, to their home country. For Louis J. Mihalyi (1984) this also functions as a defense mechanism when dealing with third parties. Balabanis & Siamagka (2017) define patriotism as a feeling of strong attachment and loyalty

towards one's own country but not creating hostility towards other countries. (Durvasula & Lysonska (2009) consider that patriotism is closely related to the sense of pride a person feels towards their own country and this is reflected in their favoritism towards people, their way of acting, and their own country's values. Therefore, patriotism is related to perceptions held by individuals regarding their country of origin and everything related to it. For (Blank & Schmidt, 2003) there is a difference between patriotism and nationalism. The former tends to associate positive values such as the level of people's commitment to their country of origin, while nationalism has negative implications because it increases the glorification of the country of origin above all else. Therefore, the handling must be different.

Consumer patriotism has a significant influence on the intention to purchase domestic products compared to purchasing foreign products. Thereafter, when high levels of patriotism are encountered, people, cultures, and products whose origins differ from those of the consumer may be rejected. Highly patriotic consumers support national producers because it assumes an obligation and expression of loyalty towards the country of origin. (Puncheva-Michelotti & Michelotti, 2014) patriotism ultimately provides a competitive advantage to local products and strengthens the sensation of national identity that individuals feel through purchasing these products. Other research confirms the positive relationship that exists between patriotism and consumer ethnocentrism, (P. Sharma, 2015) even in the service sector, (de Ruyter et al., 1998). Because of the relationship explained above, hypothesis 1 is as follows:

**Hypothesis 1 (H1): Patriotism has a positive influence on ethnocentrism attitudes**

### **3. Individualism and Collectivism**

Values related to individualism and collectivism exist in everyone. For most people, the tendency toward collectivism first develops in primary groups such as the family. Later, other, more individualistic tendencies developed. People who develop more individualistic values show strong characteristics of independence and separateness towards their own group, whereas people with collectivist tendencies show strong characteristics of family integration and interdependence towards their own group. Given these facts, in collectivist cultures, both the behaviour of its members as individuals and the behaviour of groups are guided by the group; in contrast, in individualistic cultures, the behaviour of individuals in groups is driven by the individuals themselves. It is for this reason that when conflict arises in individualistic cultures between group goals and individual goals, differences are resolved in the interests of the individual, whereas in collectivist cultures, differences are resolved in the interests of the group (Hui & Triandis, 1986; Kapoor et al., 1995; Triandis et al. al., 1990). In collectivist cultures, it is possible to identify how group members tend to subordinate their personal goals to those of a particular group; instead, it is possible to observe how members of individualistic cultures use groups only as a means to achieve their personal goals (Hui & Triandis, 1986).

Hofstede et al., (2010) define culture as a collective phenomenon where people live in the same social environment and where culture is learned and not inherited; The authors adopted five dimensions as their descriptors: power distance, individualism versus collectivism, masculinity versus femininity, uncertainty avoidance, and long-term orientation. Referring to the dimension of individualism versus collectivism, Colombia is one of the countries with the lowest level of individualism in Latin America. Thus, it can be concluded that this is a collectivist society where strong relationships are maintained between group members and dependence on the group is considered important to achieve its goals. Despite this, Colombian society is very focused on achieving success through competition. Even though it is a collective society, the implication of this focus is that competition arises with members of other groups or even with other social classes and also the granting of status (Hofstede et al., 2010)]. With previous research conducted by de Ruyter et al. (1998); P. Sharma (2015); van Birgelen et al. (2004) in our mind, we consider it possible that people from collectivist societies show strong ethnocentric tendencies whereas people from individualist societies do not show strong tendencies. Because of the relationship explained above, hypothesis 2 and hypothesis 2 are as follows:

**Hypothesis 2 (H2): Collectivism has a positive influence on ethnocentrism attitudes**

**Hypothesis 3 (H3): Individualism has a positive influence on ethnocentrism attitudes**

#### 4. Loyalty

Customer loyalty can be defined as the perceived superiority of the product purchased by consumers, giving rise to social bonds and emotional attachment (Ogba & Tan, 2009), for this reason loyalty is demonstrated both through repeat purchases and in consumers'

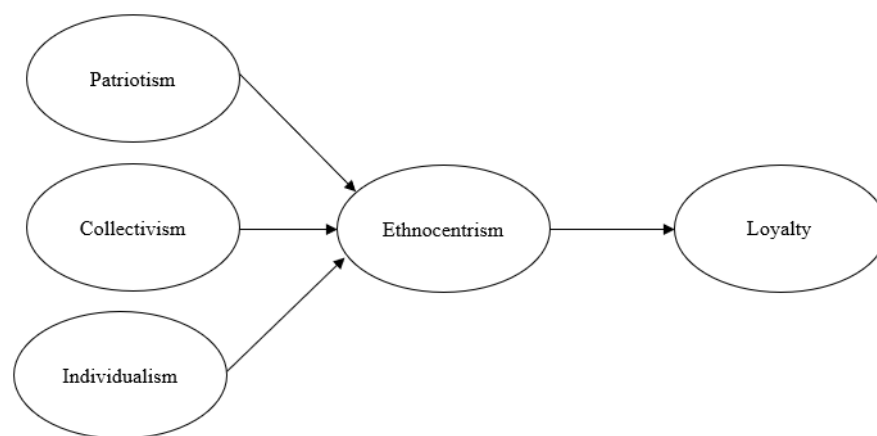
attitudes towards the product, thus determining the level of commitment to the brand, (Beerli & Martin, 2004). For Rowley (2005) this is the way in which loyalty results in lower sensitivity to price fluctuations and represents less cost to acquire new clients and as a result, greater profitability. For (Bowen & Chen, 2001) However, the benefits of loyalty are demonstrated by better attitudes towards the company, commitment to purchasing the product, and making recommendations to others. (East et al., 2005) consider that in the service sector, loyalty is a deep-rooted commitment from consumers, which results in consistent future repeat purchases of a service, despite various influences designed to change behavior.

Hwang & Wen (2009) client loyalty results in positive direct marketing through word of mouth, where consumers easily identify their preferences for certain service providers. Meanwhile, Schlesinger et al. (2017) identified the benefits of loyalty as a tendency that persists after consumers stop using a service. Therefore, loyalty refers to the period during which consumers actively use a service and the period after service use, thereby contributing to the enhancement and promotion of the image and reputation of the service they receive.

As noted by Zeithaml et al. (1996) ethnocentric consumers generally value their loyalty to national brands, thereby reflecting their intention to remain within their own group, negatively impacting loyalty to foreign products Abosag & Farah (2014)]. Makanyeza (2015) emphasized that loyalty results in repeat purchases, the result of consumer commitment to preferred brands. Because of the relationship explained above, hypothesis 4 is as follows:

**Hypothesis 4 (H4): Ethnocentrism has a positive influence on loyalty attitudes**

#### Research Framework



Picture 1. Research Framework

#### Research Method

A quantitative study based on a structured questionnaire was used to verify the hypotheses proposed by the model, the survey method is adopted in this study to collect data. Our target respondents were consumers from Solo Furniture Market, which is the largest furniture market. The data was collected through a field survey in Solo city, Indonesia in October-November 2023.

A total of 300 interviewees responded to the questionnaires. All returned responses were carefully examined. After checking all the questionnaires, we excluded 22 responses, either due to the missing data or because the answers to all questions were the same. Convenience sampling was used, and 280 valid questionnaires were obtained. The principal characteristics of the study with regards to the demographic profile of the survey participants and the distribution of the sample according to

the classification variables: 66,8% were men and 33,2% were women. The age range of survey participants was 1.6% between 18 and 25 years of age, 4.6% between 26 and 36 years of age, 12.8% between 36 and 45 years of age, 56.4% between 46 and 55 years of age with 12.8% of survey participants older than 55 years of age. In relation to education, 41% were secondary school educated, 44.9% had university studies, and 12.1% postgraduate studies.

### Analysis and Results

The collected data was analyzed in two steps. The measuring instrument was validated in the first step, followed by a structural model assessment using Smart PLS. This technique was chosen since the usage of PLS is gaining popularity in a variety of marketing studies and on a global scale. It provides for both formative and reflecting structures. Palacios-Florencio (2018) identified formative indicators in image construction, which we evaluated in our study. When analyzing these constructions, the weights factor must be considered rather than the factor loadings. The authors acknowledged the possibility of multicollinearity among formative indicators. PLS modeling aims to predict dependent variables with the highest R2 ratio for explained variance.

This allowed parameter estimates to be based on the ability to minimize residual endogenous variance. In this scenario, PLS allows for better adaptation to predictive research when compared to other techniques. The decision to utilize PLS is also justified by the study's predictive nature, as well as the fact that the image construct is treated as a construct with formative signs.

An examination was conducted using Fornell's (1981) to confirm discriminant validity, criteria and the Heterotrait-Monotrait ratio (HTMT). According to Fornell's (1981) criteria, the square root of each variable's AVE should be bigger than its correlations with the other variables in the model. As can be observed in Table 1 all the square roots of the AVE of each construct are greater than the correlation with any other construct in the mode. As seen in Table 2, all of the square roots of each construct's AVE are bigger than the correlation with any other construct in the model (Fornell, 1981). The (HTMT) ratio considers 0.90 to be a suitable maximum cutoff value. As seen in Table 1, all values of the (HTMT) ratio are less than 0.9.

Table 1.

| Discriminant validity criteria according to Fornell |              |               |              |               |              |
|-----------------------------------------------------|--------------|---------------|--------------|---------------|--------------|
|                                                     | Patriotism   | Individualism | Collectivism | Ethnocentrism | Loyalty      |
| <b>Patriotism</b>                                   | <b>0.709</b> |               |              |               |              |
| <b>Individualism</b>                                | 0.347        | <b>0.823</b>  |              |               |              |
| <b>Collectivism</b>                                 | 0.244        | 0.406         | <b>0.851</b> |               |              |
| <b>Ethnocentrism</b>                                | 0.412        | 0.314         | 0.373        | <b>0.876</b>  |              |
| <b>Loyalty</b>                                      | 0.408        | 0.122         | 0.029        | 0.159         | <b>0.925</b> |

Table 2.

| Discriminant Validity, HTMT Ratio |            |               |              |               |
|-----------------------------------|------------|---------------|--------------|---------------|
|                                   | Patriotism | Individualism | Collectivism | Ethnocentrism |
| <b>Patriotism</b>                 |            |               |              |               |
| <b>Individualism</b>              | 0.492      |               |              |               |
| <b>Collectivism</b>               | 0.342      | 0.728         |              |               |
| <b>Ethnocentrism</b>              | 0.453      | 0.457         | 0.513        |               |
| <b>Loyalty</b>                    | 0.480      | 0.198         | 0.158        | 0.278         |

After assessing the measurement instrument's psychometric properties, the structural model was analyzed using PLS using the same criteria used to calculate the significance of the parameters. The R2 acquired via bootstrapping was the initial step in determining the structural model's predictive capacity. This indicated how much variance in a construct could be explained by the construct's predictor variables in the model.

Table 3.

| Results of the Structural Equations Model (SEM) |                               |         |        |         |                 |
|-------------------------------------------------|-------------------------------|---------|--------|---------|-----------------|
| Hypothesis                                      | Relationship                  | $\beta$ | t      | p-Value | Result          |
| <b>H1</b>                                       | Patriotism → Ethnocentrism    | 0.315   | 6.387  | 0.000   | <b>Accepted</b> |
| <b>H2</b>                                       | Individualism → Ethnocentrism | 0.100   | 1.799  | 0.038   | <b>Accepted</b> |
| <b>H3</b>                                       | Collectivism → Ethnocentrism  | 0.254   | 4.799  | 0.000   | <b>Accepted</b> |
| <b>H4</b>                                       | Ethnocentrism → Loyalty       | 0.612   | 16.265 | 0.000   | <b>Accepted</b> |

The positive link that exists between patriotism and ethnocentrism is evidenced by the results obtained. As such, the Hypothesis H1 is confirmed. Due to this and according to the significance of the relationship previously stated, it can be confirmed that this construct wields a positive and significant on ethnocentrism ( $\beta=0.315$ ;  $p < 0.000$ ). In the same way, collectivism also

has a positive and significant influence on ethnocentrism. This leads to the confirmation of Hypothesis H2 ( $\beta=0.100$ ;  $p < 0.036$ ). A relationship is observed between individualism and ethnocentrism, allowing us to confirm Hypothesis H3. Considering the significance of this result, we can conclude that individualism has a positive and statistically significant effect on SET ( $\beta=$

0.254;  $p < 0.000$ ). According to the results obtained, a positive and statistically significant relationship exists between ethnocentrism and loyalty towards local furniture ( $\beta = 0.612$ ;  $p < 0.000$ ), thus accepting Hypothesis 4.

### Discussion

This study intends to contribute to the research into the concept of ethnocentrism related to local furniture. Similar studies have, to date, focused on developed countries. According to Sheth (2015), the rise of emerging markets has a significant impact on marketing practice and theory, requiring a shift from a local to a global mindset. Therefore, studying emerging markets is becoming increasingly important. It suggests inviting future academics to conduct additional research in these markets every day. Under this perspective, this job has contributed to the limited literature on ethnocentrism in hedonic services, as well as local furniture management developed in the context of an emerging market such as Indonesia, resulting in contributions that allow local furniture to perform strategies for excellent development in these emerging markets. The findings corroborate, first, a positive and significant association between patriotic sentiment and collectivism and ethnocentrism, as proven in prior research. This study also supports the concept that these components increase degrees of ethnocentrism. According to the findings of this study, ethnocentrism influences local furniture loyalty in hedonic services, and so improving all experiential and hedonic components of service consumption is a meaningful way to increase the effects of a country's ethnocentrism. In any event, we advocate a prior analysis of the ethnocentric character of a country's inhabitants as a vital variable for designing local furniture strategy.

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**REMOTE BANKING SERVICE: ESSENCE AND CURRENT STATE OF IMPLEMENTATION IN THE BANKING MARKET OF UKRAINE****Kharabara V.,**

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**Abstract**

The article examines the issue of providing various services to customers remotely by banks. Today, in the modern world, banking is one of the most favorable areas for the introduction and development of information technology. Therefore, the theoretical aspects of remote banking and Ukraine's place among European countries in the ranking of Internet banking usage were studied. The constant increase in competition in this sector pushes for the inevitable improvement of banking services, i.e. the search for the latest and highest quality communication with customers. That is why the most popular services among Internet banking users were reviewed and highlighted. The state of remote banking in Ukraine is analyzed, namely, the share of transactions using electronic means of payment issued by Ukrainian banks, the distribution of non-cash transactions using payment cards by their number and amount. The advantages and reasons for slowing down the development of remote banking services were also presented.

**Keywords:** remote banking service, internet banking, mobile banking, banking services, cashless payments.

**1. Introduction.** The development of computer technology has also led to the widespread use of remote banking services by banks. Such remote services may be provided through client-bank, client-internet banking, telephone banking, etc. systems. Today, the banking sector is in the process of transitioning to a new stage of development, with remote banking as a key element. An increasing number of banking service users are switching to remote channels of access to banking products and services. The introduction of the remote banking system has a significant impact on the banking process. The population is increasingly attracted by the opportunities provided by this type of service. With their help, bank customers can receive high-quality banking services anywhere and anytime, and banks can optimize costs and generate additional income.

Ensuring a high level of remote banking operations is impossible without effective innovation by banking institutions, as it is the numerous innovations that are the end result of this activity that improve the remote banking system. Implementation of mobile applications for Internet banking, expansion of their functionality, installation of infrastructure for self-service banking - all this is ensured by banking innovations.

Banks that are actively working in the field of innovation and effectively implement their innovation policy are able to maintain a high level of competitiveness in the market, and remote banking banking is now a key area of this policy. That is why the study of the issue of innovative development of remote banking in today's realities is extremely relevant.

**2. Objective.** The purpose is the substantiation and improvement of scientific and practical approaches to the study of innovative development of remote banking services in the current conditions of development of the banking market of Ukraine.

**3. Analysis of recent.** The following leading scholars have made a significant contribution to the development of theoretical foundations and methodological approaches to the essence of remote banking services, their features and purpose, as well as the mechanism of operation: V. Bauer, B. King, K. Skinner, D. Spat. D., O. Dziublyuk, I. Gaidai, R. Gaidai, T. Shalyga, A. Strakharchuk, O. Kulinich, O. Avramenko, etc.

**4. Research methods.** The methodological basis of the study was based on the following scientific methods: analysis and synthesis, mathematical and statistical analysis, abstract and logical (theoretical generalizations and formulation of conclusions).

**5. Research results.** Home banking, or remote banking, a remote banking technology that allows customers to receive banking services without visiting a bank office, has been around for more than thirty years. As the name implies, "remote banking" is a form of providing banking services not in a bank office with direct contact between the client and a bank employee, but in the client's office, at home and wherever it is allowed by the system and convenient for the client. The "home banking" technology was developed in the early 80s of the twentieth century, when banks in Western

Europe began to actively compete to attract new customers. The date of birth of "home banking" is considered to be 1983, when Nottingham Building Society, together with the Bank of Scotland and British Telekom, introduced the Homelink system [8]. Today, the home banking system is a convenient, efficient, mobile and technologically reliable form of remote banking service that provides the client with almost the entire range of banking services at home. Such systems are successfully operating in both foreign and Ukrainian banks. To maintain their positions, banks must not only adopt traditional business methods but also actively implement technological innovations. One of the most

promising areas of development in the banking sector is the remote banking system, which allows banks to create new types of products and services.

Remote banking is the process by which banks use electronic communications and information technology to provide financial services without the need for customers to visit a banking institution in person. Its essence is to provide customers with the opportunity to receive a wide range of banking services, such as money transfer, bill payment, opening deposits, repaying loans, replenishing mobile phones, etc.

Table 1

### Approaches to the definition of "remote banking"

| <i>Author</i>                                                                  | <i>Interpretation of the concept</i>                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| O. Dziublyuk                                                                   | Remote banking is a certain technology that eliminates the need for the client's physical presence when performing certain banking operations and provides for the client to give remote orders for transactions with his or her funds through various channels of access to the bank's server using certain technical means (portable devices, telephone, Internet). |
| I. Gaidai, R. Gaidai                                                           | Remote banking is a system that allows customers to quickly obtain the necessary information via the Internet and perform a number of banking transactions without visiting a bank branch.                                                                                                                                                                            |
| T. Shalyga                                                                     | Remote banking is a remote communication channel implemented through the introduction of remote service delivery technologies, in which the sale and maintenance of a banking product or service is carried out remotely from the object of its creation                                                                                                              |
| A. Strakharchuk                                                                | Remote banking is a system that provides access to personal accounts and general information about banking products and services to the bank's customers services using a personal computer or other device with a processor via the Internet                                                                                                                         |
| O. Kulinich,<br>O. Avramenko                                                   | Remote banking is the bank's activity to provide customers with a range of services, including the ability to perform standard banking transactions via the Internet                                                                                                                                                                                                  |
| Instructions on non-cash payments payments in Ukraine in the national currency | Remote banking - a set of information services on the client's account and execution of transactions on the account on the basis of remote orders of the client                                                                                                                                                                                                       |

Source: systematized by the author based on [6].

The bank's remote banking system is a multifunctional software package that allows bank customers to manage their accounts online, perform various transactions and access a wide range of financial information without visiting the bank directly. Remote services are provided through a variety of communication channels, such as websites, mobile applications, SMS messages, e-mail, and others. Banks are actively developing their online platforms and remote service systems to meet customer needs and increase their competitiveness in the market.

During the COVID-19 pandemic and quarantine restrictions, remote banking has become especially important for ensuring the safety of customers and employees of banking institutions. It reduces the number of personal contacts and improves the quality of customer service [10].

At that time, Internet banking became a convenient form of providing banking services to customers through electronic means of communication without the need to visit a banking institution physically, as a remote communication channel or a type of banking activity.

However, in general, e-banking is an innovative system that allows customers to manage their accounts and track transactions using remote access channels, such as a smartphone, personal computer, or self-service terminals.

Modern remote service systems open up entirely new mobility options for users, allowing them to choose the most convenient and efficient ways to manage their finances.

At the current stage of development of the banking industry, the latest technologies have become interconnected. This raises the question of the relationship between innovative development and the e-banking system.

The operations of banking institutions and the lives of the population have been affected by the COVID-19 pandemic and quarantine restrictions, which has led to changes in the payment habits of citizens. There is an active transition of Ukrainians to cashless payments and a growing demand for e-commerce services. This transformation of payment habits is a result of rapidly changing financial market conditions and the use of modern information technologies in the

banking sector. It promotes the development of new safe and convenient payment methods that provide maximum comfort and security for users.

In recent years, there has been a steady development of remote customer service in the banking system of Ukraine, which is especially important in times of war when citizens do not always have the opportunity to move freely. Therefore, the issue of creating an opportunity to receive banking services remotely is extremely important.

The data reflects a steady upward trend in the use of remote banking services by both businesses and individuals in Ukraine from 2018 to 2022. As a result, there is an increasing reliance on digital banking solutions, driven by technological advances, higher internet penetration, and changing consumer preferences. The

more pronounced growth among individuals compared to businesses indicates a wider acceptance and use of remote banking services in the personal finance sector.

This can be explained by a number of factors, including the convenience of managing personal finances online, the widespread use of consumer-focused digital banking platforms, and the general shift to digital transactions in the economy as a whole (Figure 1).

In addition, the steady growth of the corporate segment, albeit at a slower pace, indicates a gradual adoption of digital banking solutions in the business sector. The process is hampered by the complexity of business banking needs and the traditionally more conservative approach to the introduction of new technologies in the corporate banking sector.

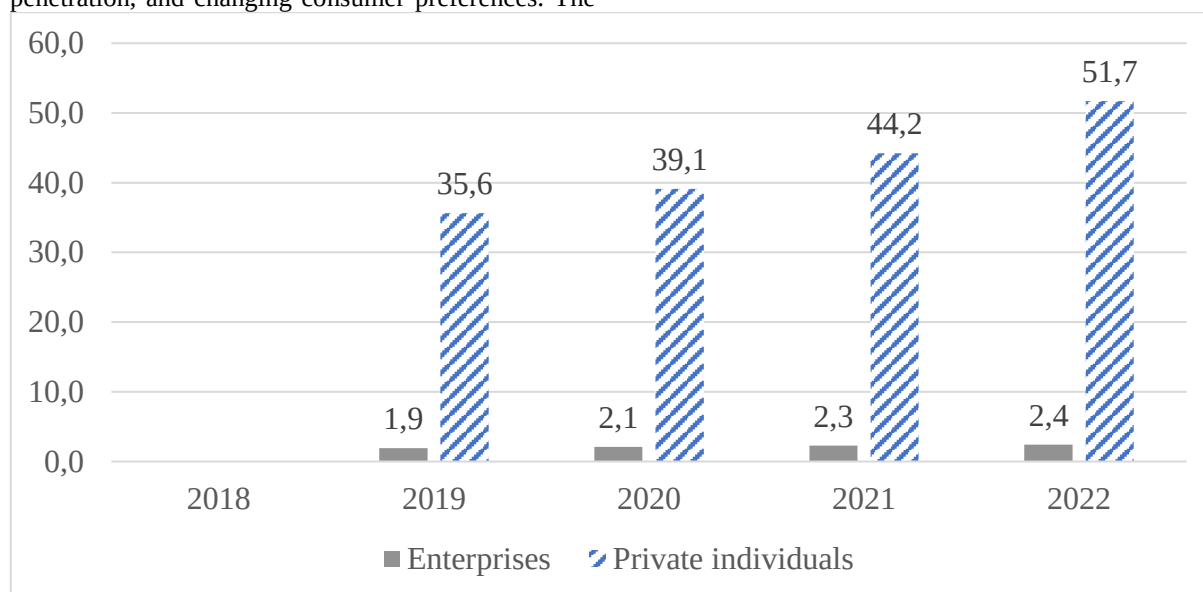


Figure 1. Dynamics of remotely serviced clients of Ukrainian banks in 2018-2022, million clients

Source: compiled by the author [10].

A marked increase in card-to-card transfers, including via the Internet, indicates a shift to mobile banking practices and the active use of self-service opportunities. The comfort and trust in digital banking platforms among users is growing, and security protocols are being improved.

The fluctuations observed in the purchase of goods and services online reflect the dynamic e-commerce environment, which is influenced by external factors such as consumer behavior, economic conditions, the global pandemic, and war, which have largely accelerated online transactions. The decline in 2022 indicates market saturation and a decline in the purchasing power of citizens.

Transactions through payment terminals and self-service devices, while showing growth, are relatively smaller than online transactions. This can be explained by the growing preference for more direct and immediate forms of digital transactions, such as mobile payments.

In general, these trends reflect a broader movement towards digitalization in the Ukrainian banking sector, supported by technological advances and changes in consumer behavior, which is leading to an increase in the role of remote use of bank services.

Accordingly, the number of remote transactions involving payment cards by individuals is also increasing.

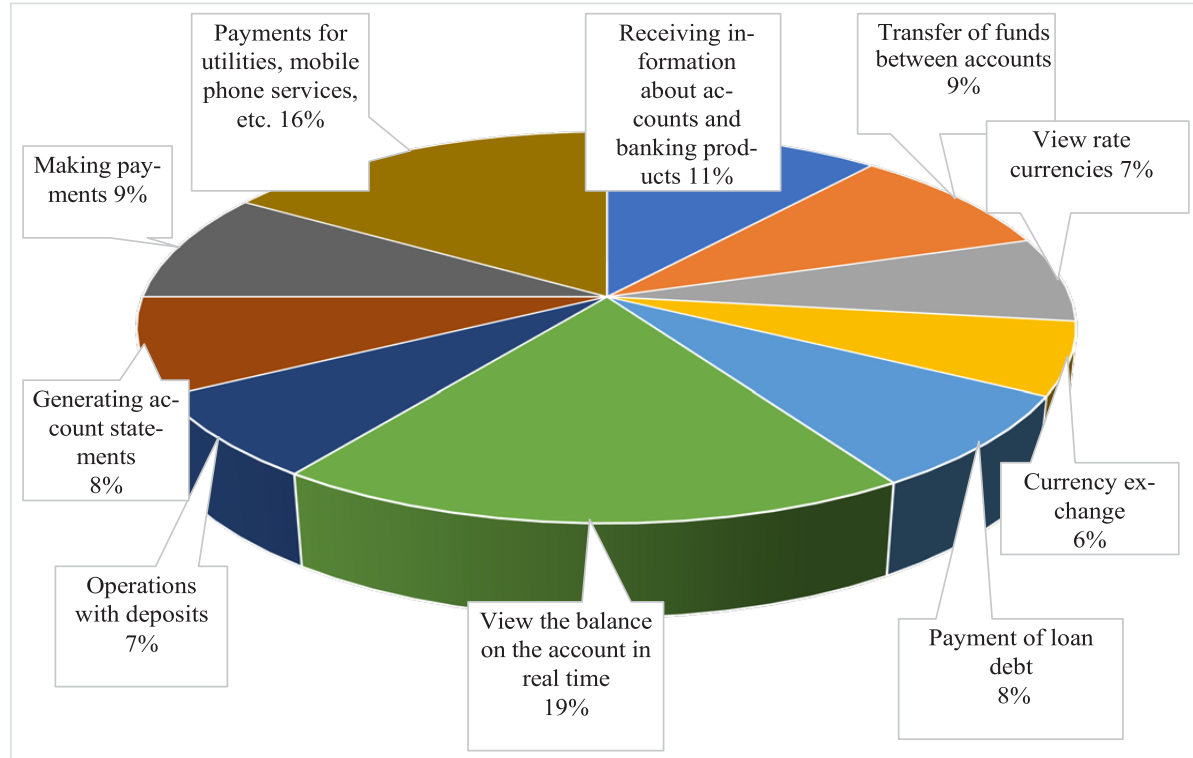


Fig. 1. The most popular Internet banking services in Ukraine

Source: [2]

Card-to-card transfers, including online transactions, are showing a changing trend with a significant peak in 2021. The most dramatic changes are observed in the purchase of goods and services online. The sharp growth in 2020 and 2021 is in line with global trends, when the COVID-19 pandemic became a catalyst for a surge in online transactions. This was followed by a decline in 2022 due to the impact of the war.

Transactions through payment terminals show a general upward trend, peaking in 2021, but followed by a decline in 2022. The relatively stable and low rates of transactions through self-service devices indicate their limited but constant use.

As for the general infrastructure for performing some online banking operations, there is a development in 2018-2021 and a sharp drop in 2022 due to the direct seizure of part of the banking infrastructure, including that related to remote banking operations, by Russian soldiers.

The number of retail payment terminals initially shows an upward trend from 2018 to 2021, and then decreases in 2022. Thus, businesses are using these devices more and more actively. Some remote transactions are performed using bank cards. There is a significant increase in their number throughout the period.

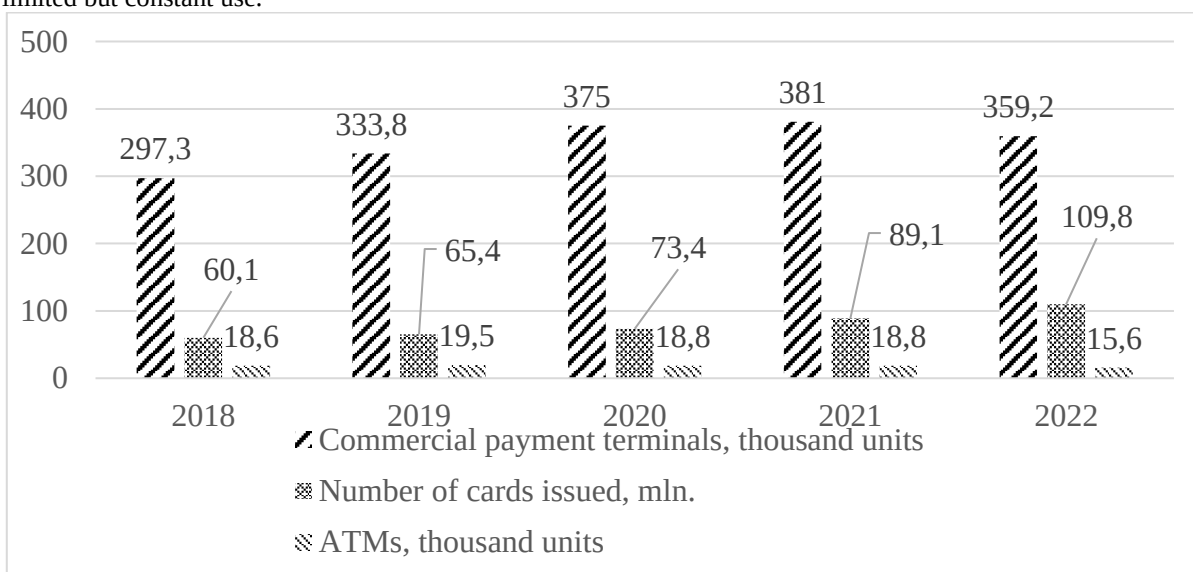


Fig. 2. Dynamics of payment infrastructure development in 2018-2022.

Source: compiled by the author [9].

It should be noted that the Ukrainian banking system is experiencing a significant increase in the introduction of remote banking services, as evidenced by the growing number of online banking users. This trend is accompanied by an increase in the volume of non-cash transactions and a significant expansion of payment card issuance, which indicates a shift to digital banking solutions. At the same time, there has been a marked decline in the number of traditional banking infrastructure, such as ATMs, which underscores the shift to more digital and less cash-dependent solutions.

#### 6. Prospects for further research development.

Despite the fact that the development of electronic banking services and the feasibility of its implementation attract considerable research attention. In the next study, more attention will be paid not only to the efficiency and feasibility of implementing certain forms of remote banking services (Internet banking, mobile banking), but will also consider the impact of electronic banking systems on the activities of banking institutions in terms of increasing the risk of banking activities.

**7. Results of the study.** Having analyzed the e-banking system, we can conclude that this system is quite convenient for customers when working with the bank (for companies with a large number of branches and outlets in different regions, the system allows them to control the movement of funds throughout the network) and serves as an excellent platform for making operational decisions. The system is also vital for businesses that make a large number of payments during the business day. Although e-banking systems have certain drawbacks, they are still extremely convenient services for customers who are actively engaged in business and do not require additional services from the bank. The development and further implementation of remote banking systems, in particular client-bank, client-internet banking, and telephone banking systems, will allow banks to process client payments more efficiently, reduce the cost of these services by reducing labor intensity, and increase their reliability, as filling out a payment order in electronic form significantly reduces the number of errors.

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# MEDICAL SCIENCES

## THE EFFECTIVENESS OF LASER TECHNOLOGIES IN THE TREATMENT OF GENERALIZED PERIODONTITIS

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### Abstract

The effectiveness of the use of antimicrobial drugs for the treatment of generalized periodontal diseases has recently decreased due to the development of resistance of microorganisms. Photoactivated disinfection can be an effective addition to treatment and an alternative to antibacterial drugs. A system has been developed to optimize the procedure for photoactivated disinfection at the stage of professional hygiene. The technology of laser photometry for identifying microorganisms is being developed.

**Keywords:** generalized periodontitis, laser technologies, periodontopathogenic microflora.

Generalized periodontal diseases, despite significant scientific and technological progress and high achievements in medicine, currently still remain one of the most pressing problems in practical dentistry. A high incidence of periodontal pathology in the population is observed both in highly developed countries and in developing countries, which indicates a global level of the problem. In addition to the local process in the periodontium, the infectious component has a general effect on the body, which can lead to systemic diseases such as cardiovascular diseases, diabetes and adverse effects of pregnancy. One of the main causes of periodontal disease is dental plaque and the bacteria that colonize it. Combining into a system, bacterial cells form a microbial biofilm, which is a conglomerate of microorganisms attached to each other or to a specific surface, immersed in a matrix of extracellular polymeric substances and demonstrating a change in phenotype. Due to the complex structure of the biofilm, methods of influencing it are limited, and its successful elimination is of great importance in the management of generalized periodontal diseases [6]. SRP)) can be peeled off from the tooth surface, and microbial insemination can be reduced with antibacterial drugs [5]. However, mechanical cleaning cannot completely evacuate periodontopathogenic microflora; in addition, this treatment opens the dentinal tubules, which facilitates the penetration of microflora there and deeper infection. Recently, data have emerged on the acquisition of resistance of certain types of microorganisms to antiseptic preparations based on chlorhexidine bigluconate, which is widely used in periodontology. They show that long-term use of chlorhexidine can cause microflora resistance to certain antibacterial agents [11]. In 2014, an experiment was conducted in the USA, which consisted of taking samples of microbial biocenosis from periodontal pockets from 400 patients with gener-

alized periodontitis with the onset of isolation and cultivation of periodontal pathogens, after which their resistance to such antibiotics was studied in vitro. and metronidazole. The following results were obtained: • In 74.2% of patients, periodontopathogens isolated were resistant to at least one of the antibiotics studied. , amoxicillin, metronidazole chicleindamycin in 55%, 43.3%, 30.3% and 26.5% of patients with generalized periodontitis, respectively. Thus, there is a tendency towards a condition in which the use of traditional therapy for periodontal diseases will eventually become ineffective, and it is worth considering new methods of influencing periodontal pathogenic microflora. We see such a new way of influencing pathogenic microflora in the use of photodynamic therapy (PDT). Since its inception, PDT has penetrated into many medical fields, including dentistry, where the term “PDT” is commonly understood as photoactivated disinfection (FAD) [2, 3]. cells in targets. These cells can be eukaryotic, non-plastic, or non-economic (prokaryotic) - such as bacteria. A photosensitive chemical, a photosensitizer, ideally should absorb light with wavelengths falling within the visible red and near-infrared nm), known as the “therapeutic window”, where the deepest penetration of light into tissue is observed. A photosensitizer is a chemical compound that is easily photo-excited and then transfers its energy to other molecules. Typically, the photosensitizer transitions from the ground state (a quantum state with zero angular momentum spin) to an excited singlet state. It then undergoes an intersystem transition to a longer lasting triplet state. When a photosensitizer and an oxygen molecule are in close proximity to each other, a transfer of energy can occur that allows the photosensitizer to return to its original state, while the oxygen molecule in turn acquires an excited singlet state. This form of oxygen is a fairly aggressive chemical and reacts very quickly with any nearby biomolecules. As a consequence, cells that

have reacted with active oxygen will die as a result of apoptosis or necrosis. These states can also be called reactive oxygen species. The most important element in selective photodynamic cytotoxicity is the first triplet (singlet) oxygen. When present in close proximity to the target cellular structure, it causes what is called oxidative stress—an imbalance between the production of reactive oxygen and the ability of the biological system to neutralize such reactive intermediates. This interaction is extremely fast, for example the reaction rate in water is 4  $\mu$ s and 20  $\mu$ s in cell membranes. The consequences of induced oxidative stress in target cells can be of the following types: - Cross-linking of cell membrane lipids. - Destruction of protein ion channels. - Destruction of critical metabolic enzymes. - Cell agglutination.

It has been demonstrated that the relative light required to inhibit bacteria using FAD is much less than the doses that are toxic to keratinocytes and fibroblasts. Also, some positive effects from the use of FAD were manifested in periodontal tissue cells, namely inhibition of inflammatory mediators, which promotes cellular chemotaxis and angiogenesis. The influence of FAD on neutrophils was revealed - promotion of their migration and integration was noted. FAD inhibits cytokines such as tumor necrosis factor and interleukin in certain ways. FAD attacks antigen-presenting cells such as macrophages and Langerhans cells, reducing their ability to activate T lymphocytes and attenuating the inflammatory response. Recent studies on the effectiveness of FAD showed that oral pathogenic species in planktonic solution were nearly as much as FAD and chlorhexidine, but in an ex vivo biofilm, FAD was more effective in inhibiting periodontal pathogens than chlorhexidine. Also in 2016–2017, a large-scale study of the effectiveness of photoactivated disinfection in the treatment of patients with cancer was conducted in the United States. The study took place in a group of patients that consisted of 141 people, divided into two cohorts. One cohort of patients underwent classical periodontal treatment (Scaling and RootPlaning), and the other added the use of FAD. A 0.01% solution of methylene blue was chosen as a photosensitizer, which was activated by a laser with a wavelength of 670 nm. According to this study, the effectiveness of photoactivated disinfection using methylene blue for the treatment of generalized periodontal diseases was revealed, namely the treatment of periodontal pockets with laser radiation with a wavelength of 670 nm and a power of 225 mW [7], while previously conducted studies (2007.) the effectiveness of using FAD in the treatment of aggressive forms of generalized periodontitis has not revealed a reliable method [19]. However, at present, FAD is still often used in clinical practice as an accompanying therapy for the treatment of severe forms of generalized periodontal diseases and reimplantitis. But we see that the use of photoactivated disinfection is not used to the full extent of its capabilities. Since at the stage of professional oral hygiene, mechanical destruction of the microbial biofilm occurs and its evacuation from the ash furrow or periodontal pocket outward from the accumulation sites, it becomes possible for microorganisms to migrate with oral fluid throughout

the entire oral cavity. Eliminating this phenomenon with the help of antiseptics is difficult due to the fact that, as mentioned above, microorganisms in the biofilm are quite resistant to this factor and at the same time sensitive to the use of FAD.

Also, due to their physical properties, antiseptics cannot deeply penetrate the vernal sulcus or periodontal pocket, unlike laser radiation, especially with a wavelength of 660 nm. Therefore, we have developed a model for the use of photoactivated disinfection at the stage of professional oral hygiene, regardless of the presence of clinical manifestations of pathology. This, in turn, will help both in treating the disease in patients and in preventing it in clinically healthy people. A procedure protocol has been developed and a therapeutic complex has been manufactured, consisting of a laser emitter of a specially designed attachment, which will speed up the FAD process due to sector-by-sector irradiation of periodontal tissues and increase the ergonomics of the process. At the moment, the technology is at the stage of clinical trials [2, 3]. A fairly common problem nowadays is the identification of periodontopathogenic microflora, which is associated with the severity of cultivating anaerobic microorganisms, which are periodontopathogenic bacteria, and, for example, expensive research. as polymerase chain reaction (PCR). At the same time, data appeared in the literature [1] on the successful use of laser radiation to identify microorganisms of various species groups, as well as to assess the condition of body tissues. In particular, the laser conversion diagnostic method is used to identify microorganisms. It is based on the principle that when a sample is irradiated with light of a certain wavelength, the process of inelastic scattering of optical radiation on molecules of a substance (of any state of aggregation) occurs, accompanied by a noticeable change in the frequency of the radiation. This phenomenon is called the Raman effect or the Raman effect, which is recorded as a set of spectral lines that are absent in the spectrum of the primary (exciting) light.

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**THE EFFECTIVENESS OF THE USE OF ANTIOXIDANT DRUGS IN THE TREATMENT OF GENERALIZED PERIODONTITIS****Arkhmammadova G.,***Department of Orthopedic Dentistry assistant***Hasanova V.,***Department of Orthopedic Dentistry. Assistant***Huseynova G.***Department of Therapeutic Dentistry Assistant**Azerbaijan Medical University**Baku, Azerbaijan*<https://doi.org/10.5281/zenodo.10581813>**Abstract**

In the pathogenesis of dystrophic inflammatory processes of periodontal disease, a significant place is assigned to disorders of lipid metabolism, lipid peroxidation and antioxidant protection. Therefore, it is important to find out the effectiveness of using antioxidant drugs. To determine the effectiveness of the use of coenzyme Q10 in the complex treatment of patients with generalized periodontitis.

**Keywords:** generalized periodontitis, treatment, coenzyme Q10

An important role in the pathogenesis of dystrophic inflammatory processes in periodontal tissues belongs to disorders of lipid metabolism, lipid peroxidation and antioxidant protection [3, 5, 6, 7]. The use of various therapeutic agents does not always have an effective effect on these mechanisms of periodontal diseases, so the problem of treating dystrophic inflammatory periodontal diseases remains relevant today [5-7]. Taking this into account, the use of antioxidant drugs in the complex treatment of periodontal diseases is justified. Coenzyme Q10 acts by converting fatty acids in the mitochondria to produce creatine phosphate and ATP. This increases the energy potential of the cell, reduces cholesterol in the blood, and restores the processes of oxidative phosphorylation [1, 2, 9]. Studies conducted over the last decade indicate the high effectiveness of the use of the drug coenzyme Q10 in the treatment of various diseases [1,2, 9]. An analysis of literary sources on the use of this drug showed that coenzyme Q10 was practically not used to treat patients with periodontal tissue diseases. The purpose of this study was to determine the effectiveness of the use of coenzyme Q10 in the complex treatment of patients with generalized periodontitis. 22–65 years old for generalized periodontitis of the I–II degree of chronic course. The main group consisted of 40 patients in whom coenzyme Q10 was used in the complex treatment of generalized periodontitis. The control group consisted of 15 patients who received standard treatment. A thorough examination of the condition of periodontal tissues was carried out in all patients before and after treatment. A clinical examination of the condition of periodontal tissues began with an examination and assessment of the condition of the teeth, periodontium and the oral cavity as a whole. The intensity and prevalence of the dystrophic inflammatory process in the periodontium was assessed using the Shiler-Pisarev test [10]. To quantify the inflammatory process, the PMA index according to CO was used. Parma [12], for clinical assessment of periodontal condition, the perio-

dontal index was determined according to A.L. Russell[13]. Quantitative and qualitative assessment of the state of oral hygiene was carried out using the Fedorov-Volodkina index [11]. When examining periodontal pockets, their depth was measured using a graduated probe or a smoothing tool with millimeter divisions. To assess the nature of discharge (serous or purulent) from periodontal pockets, a benzidine test according to S. Sorrin was used [14]. Differential diagnosis of periodontal and gum pockets was carried out using a formalin test according to C. Parma [12]. Pathological tooth mobility was determined according to D.A. Entin [5]. The resistance of periodontal tissue vessels was determined according to V.I. Kulazhenko [5, 8]. The diagnosis of periodontal disease was carried out according to the classification of M.F. Danilevsky [4]. All patients with generalized periodontitis underwent thorough removal of all periodontal tissue irritants (dental plaques, tartar, poor-quality fillings, dentures, etc.). For more effective drug treatment of patients with generalized periodontitis, an individual mouth guard was used to contain the drug. For this purpose, an imprint of the dentition was taken. This individual mouthguard was processed: excess material and sharp edges were cut off and adjusted within the selected limits of the dentition so that it did not injure the oral mucosa and periodontal tissue. After removing dental plaque, periodontal pockets were treated with an antiseptic solution (for example, hydrogen peroxide, chlorhexidine, etc.). Subsequently, a solution of coenzyme Co Q10 was injected into the periodontal pockets and mouth guard and the mouth guard was put on for 15–20 minutes (the patient bit the mouth guard and held it in the mouth. Patients in the control group were injected with Metrogyl Denta ointment into the periodontal pockets. blood in the area of the affected periodontal tissue patients were prescribed finger massage of the gums for 1–2 minutes 5–6 times a day. As a general treatment, patients of the main group were prescribed the drug coenzyme Q10 “Coenzyme Q10” in capsules, one capsule twice a day. The duration of the course of treatment was 5– 6 days.

Patients in the control group, after careful removal of all periodontal tissue irritants, were injected with Metrogyl Denta ointment into the periodontal pockets and prescribed rinsing the mouth with Givalex solution daily for 5-6 days.

The results of the study are discussed. When treating patients with generalized periodontitis according to the proposed treatment method using the drug coenzyme Q10, in patients with chronic generalized periodontitis, bleeding, a feeling of heaviness, pain and itching in the gums of 3 patients decreased after just 1-2 visits. And the degree of chronicity of generalized periodontitis, inflammation in the gums almost completely disappeared in all those examined. The mucous membrane acquired a pale pink color, was dense, swelling and hyperemia were not observed. The Schiller-Pisarev test was negative. The depth of periodontal pockets was significantly reduced. The pathological mobility of teeth decreased noticeably. On a radiograph (1-1.5 months after the start of treatment), a decrease in the number of osteoporosis of the alveolar bone was observed. Unpleasant subjective sensations in the gums disappeared. Discharge from periodontal pockets significantly decreased and disappeared. On radiographs (1-1.5 months after the start of treatment), a decrease in the number of osteoporosis phenomena in the alveolar bone of the jaws was also observed. Favorable treatment results are evidenced by data from an index assessment of the periodontal condition and functional tests. After treatment, the state of oral hygiene improved: the hygiene index decreased from  $2.5 \pm 0.25$  to an average of  $0.7 \pm 0.27$ . The level of gum inflammation decreased, as evidenced by a change in the PMA index from  $57.24 \pm 2.45$  to  $23.45 \pm 1.85\%$  after treatment. The resistance of periodontal vessels increased: before treatment, a vacuum hematoma formed in 11.8 seconds; after treatment, the time for hematoma formation increased to  $28 \pm 2.0$  seconds. The periodontal index remained practically at the same level. The depth of periodontal pockets decreased from  $2.6 \pm 3.7$  to  $1.4 \pm 0.25$  mm. In patients with generalized periodontitis in the control group, treatment periods were longer, and the number of patient visits required to achieve the effect increased. Thus, with grade I of the chronic course of generalized periodontitis, a decrease in pain and bleeding of the gums, the depth of periodontal pockets and discharge from them was achieved on average after 6-7 visits, and with grades I, I-II, almost after ten. generalized periodontitis with the use of the drug coenzyme Q10, a significant improvement in the condition of the periodontium was observed. The proposed treatment method made it possible to eliminate the manifestations of inflammation and achieve stabilization of the dystrophic inflammatory process in the periodontium in a short period of treatment. In the immediate term of treatment, there is a more pronounced normalization of clinical indicators that characterize dystro-inflammatory processes in the periodontium. This makes it possible to achieve significant suppression of the dystrophic inflammatory process in the periodontium, as evidenced by the positive dynamics of changes in periodontal indices.

## Conclusions

The proposed treatment method, taking into account the dynamics of positive changes in periodontal tissues, allows us to achieve a reduction in treatment time and increase the clinical effectiveness of treatment of patients with generalized periodontitis.

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**ERRORS IN EARLY DIAGNOSIS AND TREATMENT OF PNEUMONIA IN AN OUTPATIENT SETTING**

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**Abstract**

Pneumonia is one of the most common and life-threatening diseases in children. Pneumonia that develops at home or in the first 72 hours after hospitalization is assessed as community-acquired (home or outpatient) pneumonia (CAP). Despite the latest advances in medical science, due to high rates of morbidity and mortality from pneumonia, chronic pulmonary disease continues to be a pressing problem for pediatric pulmonologists. Although diagnostic and therapeutic criteria for pneumonia have long been developed and widely interpreted, there are still serious challenges in clinical practice, especially towards early diagnosis and rational treatment of pneumonia in outpatient settings. This article interprets some modern information about the diagnostic and therapeutic criteria for chronic disease in children, as well as prevention, as well as the results of an analysis carried out to identify errors in the diagnosis and treatment of pneumonia in children in outpatient settings.

**Keywords:** children, community-acquired pneumonia, clinical-diagnostic criteria, rational therapy.

**Introduction.** Pneumonia, as one of the serious and life-threatening diseases that often occur in children, is always in the focus of pediatricians' attention. Despite numerous scientific studies on community-acquired pneumonia (OCP), many aspects of it are interpreted differently in different sources, creating some difficulties and affecting the effectiveness of clinical practice. lowers [3-5]. Thus, in recent decades, the approach to the concept of "pneumonia" in various recommendations of the professional community of different countries on the diagnosis and treatment of pneumonia differs significantly from each other [5-8]. In clinical practice, some diagnostic confusion caused by ignoring these differences eventually leads to under- and overdiagnosis of the disease. Thus, an incomplete assessment of the general changes characteristic of pneumonia, and sometimes the absence of wheezing during auscultation, can be the main reason for underdiagnostic cases. In such cases, despite persistent febrile fever, the patient is diagnosed with ARVI and antipyretic drugs are prescribed. On the other hand, exaggeration of the results of a medical examination by doctors and incorrect interpretation of radiographs lead to overdiagnosis of the disease [2-4]. Correct assessment of the clinical signs of pneumonia and the effectiveness of antibacterial therapy can sometimes play an important role in determining the etiology of the disease, even without laboratory tests. For example, persistent fever without toxicosis, conjunctivitis against the background of a rare catarrhal syndrome, asymmetrical multiple wheezing in the chest, etc. such clinical symptoms give reason to suspect an atypical etiology of the disease. Currently, the lack of effect against  $\beta$ -lactamase-resistant antibiotics taken for 1-2 days is an important indicator confirming the atypical etiology of the disease. In suspicious cases, specific laboratory tests can play a decisive role in elucidating the etiology. Thus, at the 2-3rd week of pneumonia, an increase in the titer of specific antibodies against mycoplasma in

the patient's blood is considered as a reliable laboratory sign confirming the mycoplasma etiology of the disease (specific antibodies are not detected at the initial stage). The polymer chain reaction (PCR) method is considered less informative in 17-20% of cases due to the determination of mycoplasma DNA in sputum in children without respiratory symptoms [3-9]. For these reasons, all recommendations presented by various pediatric societies recommend the use of macrolides only in cases where symptoms of atypical pneumonia are noted; In other cases, if an atypical etiology of the disease is suspected, the use of macrolides is recommended only if there is no effect within 24-48 hours from the prescribed penicillin group drugs. In cases where dynamic monitoring of the disease is not possible, initial use of both groups of drugs is possible. At this time, given that pneumococci predominate among the bacterial causes of pneumonia in children under 5 years of age, after 5-6 years in 50-60% of cases only pneumococci, and in other cases - atypical pathogens (mainly *Mycoplasma pneumoniae*, rarely *Chlamydia pneumoniae*). It is necessary to analyze sensitivity to antibiotics[7]. According to recommendations published by the Pediatric Infectious Diseases Society of America and the Infectious Diseases Society and the International Consensus Documents on Current Diagnostic Criteria for Pneumonia, diagnostic criteria for CAP in children older than 3 months are defined as "recording of signs and symptoms." pneumonia in a previously healthy child" [5]. Most pneumonias diagnosed in this way are of viral etiology. This approach to the issue is explained by the fact that in the USA bronchiolitis is traditionally considered as viral pneumonia, and those patients who do not find X-ray confirmation of the diagnosis are involved in outpatient treatment. According to another point mentioned in the recommendations of USA regulatory structures, it is important to correlate the signs and symptoms of the disease with radiological or mi-

crobiological confirmation of the diagnosis for antibiotic therapy and hospitalization of the patient for pneumonia. Unlike the United States, pneumonia in Russia is defined as “a syndrome of respiratory distress against the background of infiltrative or focal changes in the lung parenchyma according to X-ray data, or an acute infectious disease accompanied by physical changes” [2-3]. In Russia, as in other European countries, bronchiolitis is not considered a viral pneumonia. In WHO recommendations, the main signs and symptoms that distinguish bacterial pneumonia from bronchiolitis and other viral lesions of the respiratory tract, highly correlated with radiological criteria, are: cough + shortness of breath/tachypnea, pulling in the lower respiratory tract. chest during breathing [9]. According to WHO recommendations, X-ray examination is considered the “gold standard” in the diagnosis of bacterial pneumonia, that is, in differentiating it from bronchitis, bronchiolitis and other viral lesions, which in most cases are considered. “Pneumonia” of the lower respiratory tract is considered an important method of examination, but does not necessarily require antibacterial treatment. The WHO diagnostic criteria for pneumonia, including persistent febrile fever and other clinical signs, are accepted by the Thoracic Society of Great Britain, as well as pediatric societies in many European countries, and indicate that the diagnosis of bacterial pneumonia should be confirmed. by the presence of infiltrates on an x-ray. According to the recommendations of the WHO expert group, typical bacterial pneumonia is usually characterized by compaction (consolidation) of lung tissue caused by alveolar infiltration [8]. At this time, the bronchovascular pattern is not clearly visible against the background of infiltrative shading, in which the basal (and often intersegmental) boundaries are clearly visible on the radiograph, the edge of the heart and diaphragm rests on the infiltrate and is poorly contoured, and an “air bronchogram” is often observed. Despite the fact that the diagnostic criteria for pneumonia are different in different countries, the treatment plan for pneumonia of the same etiology is almost the same and partially coincides in all countries. Thus, in all countries, amoxicillin is preferred for respiratory tract infections caused by *Streptococcus pyogenes*, *S. pneumoniae* and *H. influenzae*. WHO recommendations for mild and moderate pneumonia recommend taking amoxicillin at a dose of 40 mg/kg twice a day for a 5-day course [4-6]. For severe pneumonia, it is recommended to begin treatment with *ampicillin* (50 mg/kg) or *benzylpenicillin* (50,000 units/kg), administered intramuscularly or intravenously every 6 hours for at least 5 days. After the temperature decreases and intoxication decreases, treatment is continued by taking the drug twice a day at a dose of 40 mg/kg. Due to the fact that vaccination against *Haemophilus influenzae* is included in the National Vaccination Schedule, there is no need for treatment with  $\beta$ -lactam-resistant *amoxicillin/clavunic* acid in young children [1-9]. The American Society of Pediatrics Infectious Diseases guidelines do not necessarily recommend treating all CAP with antibiotics, given that bronchiolitis is considered a viral pneumonia [5]. *Amoxicillin* (90 mg/kg) is prescribed to

patients with moderate pneumonia twice a day. In severe cases of pneumonia, the drug is administered parenterally; the drug of first choice is *ampicillin* (every 6 hours at a daily dose of 150-200 mg/kg) or *penicillin* (200,000-250,000 units/kg every 4-6 hours). In the recommendations of the Russian Pediatric Societies, amoxicillin (at a dose of 50 mg/kg per day) in children over 6 years of age, and amoxicillin/clavuanate (70-100 mg/day) are used for antibacterial treatment of uncomplicated typical CR. kg per day) in children under 5 years of age attending preschool institutions and who have previously received antibiotics) is considered appropriate for use [2-3]. In all recommendations presented, macrolides are recommended only for patients with symptoms of atypical pneumonia or in cases where *amoxicillin* does not have an effect within 24-48 hours. In cases where dynamic monitoring of the patient is impossible, the use of both drugs is allowed[7].

**Goal of the work** to analyze mistakes made during the early diagnosis and treatment of patients hospitalized with a diagnosis of pneumonia.

**Material and methods.** The study was conducted on 68 patients hospitalized with a diagnosis of pneumonia in 2018-2020. Diagnosis of the disease was carried out on the basis of diagnostic and therapeutic criteria adopted by WHO, taking into account the recommendations proposed by pediatric societies in different countries. The study did not include children with other chronic diseases of the bronchopulmonary system, which may be complicated by pneumonia. During the work, the results of clinical laboratory tests (complete blood count, determination of C-reactive protein and procalcitonin) and X-ray studies carried out in all patients on an outpatient basis were analyzed, and the adequacy of therapeutic tactics was investigated.

**Results.** As a result of our research, it was established that the maximum incidence of typical pneumonia occurs at the age of 1-5 years (61.8%), atypical pneumonia (mainly mycoplasma) - at the age of 6-10 years (64.7%). Although the diagnosis of “atypical pneumonia” was not indicated in any of the referrals for hospitalization at the clinic, the diagnosis of “atypical pneumonia” was identified in 47% of patients admitted to the clinic (32 patients). When analyzing the duration of hospitalization, it was found that about 38.2% of patients (26 patients) were admitted to the clinic on the 5th day of illness or later, which is likely due to underdiagnosis allowed at the outpatient stage. This underdiagnosis is associated with the fact that patients are admitted to the clinic in critical condition with obvious signs of intoxication (high fever, refusal to eat, general weakness, drowsiness, etc.) and severe respiratory failure. In addition to cases of underdiagnosis, overdiagnosis of the disease often occurs at the outpatient stage. Thus, some local pediatricians regard any wheezing heard during a physical examination of the patient as inflammation of the lung tissue and, accordingly, an increase in the bronchovascular pattern visible on the radiograph, expansion of the shadow of the root of the lung, peribronchial thickening, areas of hyperventilation, etc. such changes are regarded as a sign of pneumonia, which is considered one of the main reasons for

overdiagnosis. We determined that only 25% (17 children) of outpatient radiographs met the criteria recommended by WHO. Confirmation of the diagnosis of pneumonia in only 17-20% of hospitalized patients once again indicates the fact of overdiagnosis. It should be remembered that in 45-53% of cases of pneumonia, especially dangerous pneumococcal pneumonia, it is not possible to detect the main symptoms of the disease, such as local wheezing and breathing problems. For this reason, the results of separately conducted percussion-auscultation studies are not enough to diagnose the disease [3-9]. In such cases, it is necessary to take into account all the symptoms that aggravate the patient's condition and are usually not reflected when referring to hospitalization (persistent fever  $>38^{\circ}\text{C}$ , wet cough, refusal to eat, vomiting, drowsiness or wakefulness, etc.), as well as the results of a radiological examination. as a "golden standard" they should be properly assessed and their compliance with WHO diagnostic criteria ensured. In another study we conducted, a number of errors were discovered in the choice of the type and dose of the drug in the antibacterial treatment of pneumonia on an outpatient basis. It has been established that 30-35% of patients with pneumonia in the outpatient period are prescribed *amoxicillin/clavunate*, but only slightly more than 10% are prescribed *amoxicillin*. Effective use of *amoxicillin/clavunate* in young children who have not received a vaccine against hemophilus infection has already been proven [9]. However, it is already known that this drug has no advantage over amoxicillin in older children (due to the rare occurrence of pneumonias of hemophilic bacilli and other Gram (-) etiology). It was revealed that the majority of local pediatricians do not follow the recommendations of the WHO and advanced clinics and still allow the use of antibacterial drugs in ineffective doses (20-30 mg/kg per day) according to old recommendations for the outpatient treatment of pneumonia, which often leads to unjustified replacement of the drug. In our personal experience, treatment with amoxicillin/clavunatin at a dose of 20-30 mg/kg at home does not produce an effect, and therefore a significant effect from increasing the dose of the drug in hospitalized patients has already been confirmed. Children without the risk of pneumococcal persistence with community-acquired pneumonia are prescribed amoxicillin and amoxicillin/clavunate at a dose of 50-60 mg/kg per day, and patients with a risk of persistence are prescribed at a dose of 80 mg/kg according to WHO recommendations. and 90 mg/kg, used in the experience of leading USA clinics, provide a significant effect. One of the other reasons we have identified for the ineffectiveness of outpatient treatment and hospitalization of patients with pneumonia is the preference by local doctors of oral cephalosporins of the third generation as the drug of first choice (the instructions for their use contain information about the unjustifiedness of their prescription). use in the treatment of pneumonia is clearly indicated), or in the case of typical pneumonia, initial therapy was started with macrolides instead of amoxicillin (in our study - 41% (28 patients).

**Conclusion.** Our research shows that there are still significant deficiencies in the diagnosis and treatment of pneumonia in the outpatient stage, which is the modern diagnostic method recommended by the WHO and pediatric societies of developed countries for the diagnosis of pneumonia (typical and especially atypical) by field pediatricians. - gives reason to think that he is unaware of therapeutic criteria, or that his knowledge is at a low level.

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# PEDAGOGICAL SCIENCES

## DYNAMICS IN MOTOR ACTIVITY LEVELS BEFORE, DURING AND AFTER THE COVID-19 PANDEMIC

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## ДИНАМИКА В НИВАТА НА ДВИГАТЕЛНА АКТИВНОСТ ПРЕДИ, ПО ВРЕМЕ И СЛЕД ПАНДЕМИЯТА ОТ КОВИД-19

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### Abstract

The article examines an important problem for our time - the insufficient levels of physical activity of people, necessary to maintain a good state of health. In this aspect, the weekly volume of motor activity performed by students and specialists in pedagogical specialties before, during and after the Covid-19 pandemic is investigated. The data obtained from a questionnaire survey have been subjected to a comparative analysis, which shows the presence of a significant level of regression and subsequently a significant level of progress in the weekly volume of motor activity. Subsequently, an attempt is made to reveal the reasons for the above.

### Анотация

В статията се разглежда важен за нашето съвремие проблем – недостатъчните нива на двигателна активност на хората, необходими за поддържане на добро здравословно състояние. В този аспект се изследват седмичният обем на двигателна дейност, извършвана от студенти и специалисти от педагогически специалности преди, по време и след пандемията от Ковид-19. Получените от проведено анкетно проучване данни са подложени на сравнителен анализ, който показва наличие на значително ниво на регрес и впоследствие на значително ниво на прогрес в седмичния обем на двигателна активност. Впоследствие се прави опит за разкриване на причините за горепосоченото.

**Keywords:** students, physical activity, Covid-19

**Ключови думи:** студенти, двигателна активност, Ковид-19

Положителното влияние на активната двигателна дейност върху физическото и психическото здраве на хората е неоспоримо, което е не само научно доказано, но е утвърдено като осъзнато обществено мнение. Редица изследователи в областта посочват, че недостатъчното ниво от движение има мащабни последици за личното, а с това и за общественото здраве [3, стр. 82]. В тази връзка активната двигателна дейност се определя като основен фактор за поддържане на добро здравословно състояние и като следствие на това – наличие на благоприятни възможности за всестранно обществено развитие и усъвършенстване. Или накратко и генерално – движението е предпоставка за човешкото оцеляване. През първата четвърт на настоящия век установените тенденции за нивото на двигателна активност (ДА) в европейски и световен мащаб са обезпокоителни: през първото десетилетие дялът на децата в Европейския съюз, занимавали се с препоръчителните 60 минути умерена до интензивна ДА на ден, е около 25% [6, стр. 1148]; в Република България по данни на Националния статистически институт от 2004 г. средно 21,5% от момчетата и 39,0% от момичетата не реализират необходимото ниво от седмична двигателна активност [7, стр. 59],

като с напредване на възрастта стойностите на посочените относителни дялове се увеличават; от национално проучване за периода 2014-2020 г. върху рисковите за здравето фактори сред населението в България става ясно, че повече от 60% от хората в младежка и зряла възраст са с ниска ДА, над 40% прекарват повече от 5 часа (300 минути) всеки ден в седнало положение, като особено тревожен е фактът, че те са във възрастовия диапазон 20-24 г., а 44,6% не практикуват никакви умерени физически натоварвания през делничните дни [4, стр. 148]. Пасивността към двигателна дейност е рисков фактор за т.нар. хронични незаразни болести, които са резултат от наднормена телесна маса и повишено артериално налягане [2, стр. 69].

Не за подценяване е един период от човешкото съществуване в съвремението – пандемията от Ковид-19. В условията на изолация заради пандемията явленията хиподинамия (недостатъчна за поддържане на добро здраве двигателна активност) и социална изолация са често срещани, което от своя страна води до сериозни здравни смущения. „В етимологията на двете думи („социална“ и „изолация“) ярко изпъква съдържателно различие – изолация (от лат.

insulatos) означава „островен” и смислово пре-  
 праща към уединение и отделяне за разлика от со-  
 циален (от лат. socialis) – обществен“ [1, стр. 36].  
 Резултати от научни изследвания показват, че и  
 преди корона-кризата голяма част от подраства-  
 щите прекарват свободното си време пред телеви-  
 зионните и компютърните екрани, вместо да преби-  
 вават и спортуват сред природата. След настъпване  
 на неприятната в много отношения пандемия, изо-  
 лацията на хората се изрази в редица области на жи-  
 вота – намаляване броя и продължителността на со-  
 циалните контакти, ограничаването на хората при  
 тяхното свободно придвижване и изобщо на при-  
 движдането им в определени моменти, които оста-  
 виха своя траен отпечатък върху тяхното психиче-  
 ско и физическо здраве и нанасят последици върху  
 социализацията им. „Днес коронавируса създава  
 ново социално обстоятелство на продължителна  
 изолация, която може да се раздели на физическа и  
 социална. Първата касае физическото здраве, а со-  
 циалната – психическото здраве, но и двете остро  
 нанасят последици върху социализацията“ [1, стр.  
 36]. Разбира се активното движение не е свързано  
 само и единствено с интензивно преминаване на  
 различни по метраж разстояния, както и не изисква  
 непременно наличие на големи „работни“ площи.  
 Но съгласуваността между необходимостта от ак-  
 тивна двигателна дейност и реалното ѝ провеждане  
 зависи от редица фактори, един от които е изграде-  
 ната вътрешна потребност от (нагласа за) движе-  
 ние. До каква степен е утвърдена тя при студенти и  
 специализанти, обучаващи се за бъдещи педагози,  
 които от своя страна ще бъдат пример за подраства-  
 щите поколения, предстои да разберем.

#### Методика на изследването

Цел на настоящото изследване е динамиката на  
 ДА при студенти и специализанти – бъдещи педа-  
 гози преди, по време и след пандемията от Ковид-  
 19, която от своя страна ще даде отговор на въпроса  
 за изградената при респондентите вътрешна по-  
 требност от движение.

Поставената цел се реализира посредством за-  
 дачите на изследването:

- проучване нивото на ДА на включените в изследването лица преди, по време и след ковид-пандемията;

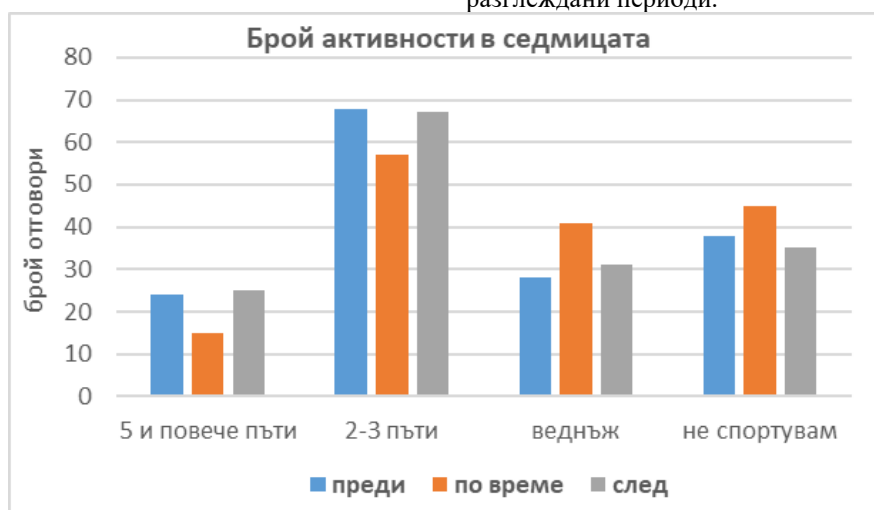
- установяване причините за динамиката на ДА на респондентите за трите изследвани периоди.

Контингент на изследването са 158 студенти и специализанти от Педагогически факултет при Тракийски университет – Стара Загора, от които 8 мъже и 150 жени. Изследваните лица са както следва: 112 студенти от ОКС „Бакалавър“, 38 студенти от ОКС „Магистър“ и 8 специализанти за придобиване на следдипломна квалификация (СДК). През учебната 2023/2024 г., когато е проведено изследването, респондентите се обучават в следните специалности: 117 лица от „Предучилищна и начална училищна педагогика“, 30 от „Начална училищна педагогика с чужд език“, 1 от „Педагогика на обучението по информационни технологии“, 2 от „Социална педагогика“ и 8 от СДК „Начален учител“. Използваният метод на емпирични изследвания е онлайн-анкета с осем поставени въпроси – всички със закрити (скалирани) отговори. За решаване на задачите и постигане на целта на научното изследване се прилагат и математико-статистическите методи тест на Ван дер Верден и сравнителен анализ.

#### Представяне и анализ на резултатите

Получените данни са обработени, а резултатите – статистически анализирани и визуализирани на фигурите по-долу. От отговорите на първите 4 въпроси от анкетната карта, резултатите от които са представени на фиг. 1, 2 и 3, може да се съди за седмичния обем ДА на респондентите, както и за динамиката на ДА през изследваните периоди, а именно – преди, по време и след пандемията от Ковид-19.

Представените на фиг. 1 резултати са получени от отговорите на три въпроса с цел проучване седмичния брой на спортните активности през трите разглеждани периоди.

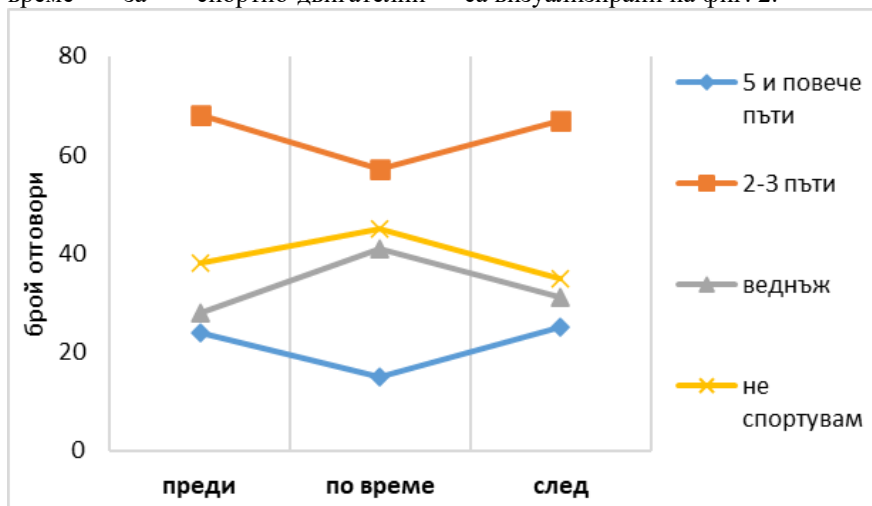


Фигура 1. „Колко пъти седмично практикува(х)те спортни занимания преди / по време / след пандемията (организирано или самостоятелно)?“

Резултатите показват високи нива на ежедневна двигателна дейност, извършвана преди пандемията, при  $\frac{3}{4}$  от изследваните лица (74,05%). Над половината респонденти (56,33%) отделят повече от 40 минути всеки ден, за да практикуват занимания с физически упражнения и спорт, което означава, че преди периода на Ковид-19 посредством реализираното движение са покривали минималния препоръчителен обем от ДА за поддържане на добро здраве. По време на пандемията нивото от двигателна дейност резонно намалява при 5,7% от респондентите, спортували по 5 и повече пъти седмично и с 6,96% при лицата, отделяли 2 до 3 пъти от свободното си през седмицата време за спортно-двигателни

активности. От фигурата се вижда, че 65% от изследваните лица, намалили двигателната си активност по време на пандемията, са извършвали активна дейност веднъж седмично, а останалите 35% напълно са преустановили практикуването ѝ. Обнадеждаващи са резултатите, визуализиращи нивото на ДА след приключване на Корона-кризата: 100% от респондентите, грижещи се за своята ДА чрез 2 и повече занимания седмично, са възстановили дейността си спрямо първия разглеждан период, дори броят на неспортуващите е намалял с 1,9% за сметка на тези, които са провеждали активности веднъж седмично.

Динамиката на представените дотук резултати са визуализирани на фиг. 2.

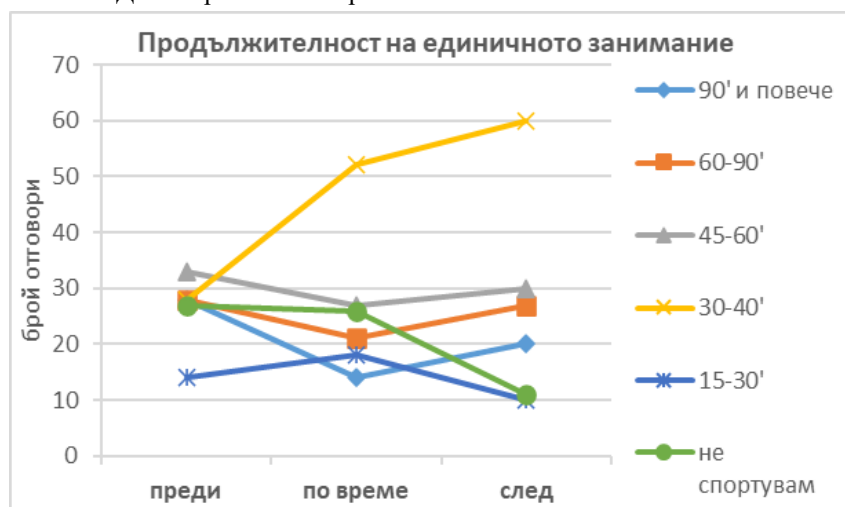


Фигура 2. Динамика на седмичната активност през изследваните периоди

През разглежданите времеви периоди се наблюдават естествени и причинно обусловени различия в нивата на седмичния обем ДА: при високите степени на честота на практикуване от 2 и повече пъти се регистрира първоначален регрес, последван от прогресивно нарастване до изходни нива и обратно – при двата неудовлетворяващи препоръчителния обем от ДА закрити отговора се

наблюдава последователно повишаване и понижаване броя на посочилите ги изследвани лица.

От получените отговори на следващия поред въпрос в анкетната карта се съди за времетраенето на единичното занимание с физически упражнения и спорт, към което респондентите обикновено се придържат. Резултатите са визуализирани на фиг. 3.



Фигура 3.

„С каква продължителност обикновено е единичното занимание с физически упражнения и спорт?“

Голяма част предпочитат и са приели да извършват двигателна дейност за около 30-40 минути, което всъщност е долна граница на препоръчителното ниво за ДА за изследваната възрастова група (стига да се практикува 5 и повече пъти седмично) и особено за втория и третия от изследваните периоди. Почти половината от респондентите (средно 48,1% от всички) провеждат занимания с по-голяма продължителност (от 45 до 90 и повече минути), което е отлично постижение отново с уговорката, че това се прави поне 5 дни в седмицата. При изследване на този показател се

вижда, че броят на респондентите, извършвали двигателна дейност с продължителност под 30 и над 45 минути през първия изследван период, резонно намалява през втория, както и се увеличава през третия, но това не се случва на нивата, на които са били през първия период. Същата тенденция се наблюдава и при лицата, които не спортуват изобщо.

Чрез следващите въпроси от анкетната карта се проучват причините за евентуална промяна в нивата на ДА (фиг. 4 – намалена, фиг. 5 – запазена и фиг. 6 – увеличена).



Фигура 4. „Каква е причината, ако сте намалили двигателната си активност по време на Ковид-пандемията?“

Посочените от респондентите причини за намаляване на движението по време на Ковид-19, приоритетно са две, а именно характерните за пандемията локдауни (21,18%) и дистанционната форма на обучение (22,03%), които принудително са наложени с цел ограничаване разпространението на вируса. На следващите места като причини идват

обстоятелствата липса на време (13,56%), собствено желание (11,87%), забранен/ограничен достъп до мястото на заниманията (10,17%), страх от социални контакти на живо (6,78%), продължително или постоянно боледуване (5,09%), а дялът на лицата без конкретен отговор е 9,32%.



Фигура 5. „Каква е причината, ако сте запазили нивото на двигателната си активност по време на Ковид-пандемията?“

Най-ясно изразената причина за запазване нивото на ДА, която анкетираните лица посочват, е желанието да запазят телесното си тегло (36%). Следващите две причини са осъзната вътрешна

потребност от движение (32%) и желание за поддържане на добри тонус и визуална форма (24%). Малка е частта на онези, при които липсва точно определен отговор (8%).



Фигура 6. „Каква е причината, ако сте увеличили нивото на двигателната си активност по време на Ковид-пандемията?“

Интересни са резултатите, регистриращи причините за увеличено ниво на ДА по време на пандемията в сравнение с периода преди нея: малко над ¼ от отговорилите на въпроса лица (26,7%) са намерили повече свободно време за себе си и са го инвестирали в занимания с активна двигателна дейност. 1/3 (33,3% от отговорилите на въпроса) пък са желали да постигнат положителна промяна в живота си в това отношение, а за цели 40% движещата сила е очертан стремежът за намаляване на телесното тегло.

#### Дискусия

В началото на XXI век Здравното министерство на САЩ актуализира нивата на необходимата за добро здраве ДА, които не се различават от вече утвърдените като норма, но са съобразени с обстойно оценени данни и редица предизвикателства в съвремението [9, стр. 20-21]. Те са утвърдени от Световната здравна организация и се отнасят за две възрастови групи – подрастващи (6-18 г.) и възрастни (18-64 г.). Минималните обеми от ДА, които целят осигуряване на добър здравен статус, са както следва: при децата всекидневни занимания със средна до висока интензивност в продължение на 60 мин. и при лица в младежка и зряла възраст 150 мин. аеробна активност със средна интензивност или 75 мин. аеробна активност с висока интензивност или равностойна комбинация от двете, равномерно разпределени през седмицата (обикновено 5 пъти) [5, стр. 162-163].

В настоящото научно проучване интензивността на заниманията не е изследвана, но продължителността и седмичният им брой са обстойно разгледани и анализирани. Изследваната и представената динамика за нивата на ДА дава информация за влиянието на едно явление като Ковид-19 върху хората и върху нагласата им за двигателно-активен начин на живот, както и върху способностите им да го осъществят.

Известно и безспорно е, че здравето на всеки човек се обуславя от неговия начин на живот, от семейната и социалната среди, но и от личностното поведение, което е резултат от съществуващите вътрешни нагласи за активна двигателна дейност.

Насърчаването на хората към водене на здравословен начин на живот може да има значителен обществен, социален и икономически ефекти [8, стр. 14].

#### Изводи и заключение

След проведеното научно изследване могат да се направят следните изводи:

- при половината от респондентите се наблюдава изградена вътрешна потребност за реализиране на активна двигателна дейност в изискуемите граници;
- другата част от изследваните лица обаче, не демонстрират такава.

Обезпокоителен е не само фактът, че това са хора, които попадат във възрастовия диапазон 20-24 г. (младежка възраст) и от състоянието на здравето им зависят множество сфери на обществени, трудови и социални дейности. Респондентите като бъдещи педагози са онази част от обществото, която с поведението си, притежаваните качества и образование ще влияе пряко посредством личния си пример върху подрастващите поколения – бъдещата активна част на това общество. Изхождайки от посоченото в заключение може да се обобщи, че са наложителни действия в посока акцентиране чрез разнообразни средства и подходи върху нагласата на хората независимо от възрастовата група към системно участие в организирани или самостоятелни форми на двигателна дейност, които да гарантират достатъчни нива на интензитет, обем, продължителност, достъпност, мотивираност, активност и др.

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**ZANGAZUR CORRIDOR AND ITS SIGNIFICANCE****Hasanova Narmin Seymur***Teacher of Agjabadi branch of ADPU*<https://doi.org/10.5281/zenodo.10581856>**Abstract**

The Zangezur Corridor is an important geopolitical and economic passage connecting the Nakhchivan Autonomous Republic, an exclave of Azerbaijan, from the territory of Armenia to the main part of Azerbaijan. The corridor has historical, cultural and strategic importance and serves as an important link for transport, trade and regional connectivity in the South Caucasus region. The creation and start of operation of the Zangezur Corridor is a result of the 2020 Nagorno-Karabakh ceasefire agreement that ended the conflict between Armenia and Azerbaijan. The importance of the Zangezur corridor lies in its potential to reshape regional dynamics. It gives Azerbaijan direct access to its exclave and Turkey, strengthens economic and political relations in the region. For Armenia, this creates an opportunity for economic development and integration into regional initiatives, potentially reducing its dependence on traditional routes. The corridor also has the potential to strengthen peace and stability in a region historically marked by ethnic and territorial conflicts.

The Zangezur Corridor is seen as part of a wider regional transport network connecting the South Caucasus with Europe and Asia. Its development can contribute to the economic growth of the countries involved and increase their geopolitical importance. Successful implementation of the corridor faces challenges, including political will, security concerns and the need to develop substantial infrastructure. The future of the Zangezur Corridor remains a topic of great interest and importance in regional geopolitics and international relations. The evolution of the Zangezur Corridor is poised to have a transformative impact on regional cooperation and economic development in the South Caucasus. It symbolizes a new era of engagement and cooperation, potentially easing long-standing tensions in the region. The development of the corridor is not only important for Azerbaijan and Armenia, but also has wider implications for international trade and geopolitical alignments.

**Keywords:** Regional Integration, Economic Development, Geopolitical Importance, Infrastructure Investments, Peace and Stability, Cultural Exchange.

**INTRODUCTION**

The region, characterized by its rich history and complex geopolitical landscape, entered a new stage of potential transformation with the introduction of the South Caucasus Zangezur Corridor. This corridor, created as a result of the 2020 Nagorno-Karabakh ceasefire agreement, proposes to connect the Nakhchivan Autonomous Republic with the main territory of Azerbaijan through Armenia. Its emergence represents a significant shift in regional dynamics and a path not only to enhanced connectivity, but also to a resolution of long-standing geopolitical tensions. The strategic importance of the Zangezur corridor cannot be underestimated. It serves as a vital link for Azerbaijan's access to both Nakhchivan and its ally Turkey, thereby reshaping regional trade and political alliances. For Armenia, the corridor creates an opportunity for economic development and potential integration into regional economic systems, which can alleviate its geopolitical isolation[1, p.98].

It examines the historical context that led to the creation of the Zangezur Corridor, its potential impact on regional economic and political landscapes, and both the challenges and opportunities it presents for the countries involved. The importance of the corridor extends beyond the immediate region, potentially influencing international trade routes and geopolitical strategies. Thus, understanding the Zangezur Corridor is essential to understanding the evolving dynamics of the South Caucasus and its role on a larger scale. Zangezur Corridor is more than a physical crossing; It represents a new page in the geopolitics of the South Caucasus.

The corridor has the potential to redefine relations not only within the region, but also with major global powers that have vested interests in the area. Its development is closely watched by international stakeholders, including Russia, the European Union and the United States, each of which is affected in different ways by the changing dynamics in this strategically important region. The Zangezur Corridor appears to be a part of wider regional transport networks connecting the South Caucasus with Europe and Asia [2, p. 76]. The historical importance of the Zangezur corridor cannot be overlooked. The South Caucasus has long been a mosaic of cultures, ethnicities and political entities with a history marked by both cooperation and conflict. The Zangezur region in particular has been a point of contention and cultural exchange for centuries, making the current initiative not only a matter of building physical infrastructure, but also a matter of navigating a complex historical and cultural landscape. Along with geopolitical and historical perspectives, the corridor's economic implications will also be explored. The promise of expanded trade routes and easy access to global markets could bode well for the economies of Azerbaijan and Armenia, as well as the wider region. Economic benefits depend on successful diplomatic negotiations, secure and stable operations, and the willingness of regional actors to prioritize economic growth over historical grievances[3, p. 91]. These include logistical and infrastructure barriers, the need for significant financial investment, and the risk of rekindling regional conflicts. The political will and diplomatic acumen of the parties in-

volved will play an important role in solving these challenges. Zangezur Corridor is not only a physical route; It is a symbol of potential changes, embodying the hopes, challenges and complexities of the South Caucasus region. It is important to further explore the nuanced effects of the Zangezur Corridor, especially in the context of regional stability and international relations. The development of the corridor takes place in a region deeply rooted in historical grievances and geopolitical rivalry. Consequently, its progress and success depend not only on infrastructural and economic factors, but also on diplomatic and security considerations[4, p.65]. One of the key aspects of the Zangezur Corridor is its potential role in changing regional security dynamics. Witnessing intermittent conflicts, the South Caucasus stands at a crossroads where the corridor can either serve as a catalyst for peace and cooperation or become a flashpoint for renewed tension. The delicate balance of power in the region, influenced by foreign actors such as Russia, Turkey and Iran, adds more complexity to the development of the corridor. The reaction of the international community to the Zangezur corridor also attracts attention. Global powers have different interests in the South Caucasus, which may affect their relationship with the corridor. For example, the corridor's potential to open up new trade routes may attract investment from European or Asian countries, while creating strategic challenges for others. The role of international organizations and potential peacekeeping or monitoring mechanisms in ensuring the safe and impartial operation of the corridor is another important aspect to consider[5, p.98]. Additionally, the socio-cultural impact of the corridor is an area that requires exploration. The South Caucasus is home to diverse cultures and communities, whose lives and livelihoods can be significantly affected by the corridor. Issues such as population displacement, preservation of cultural heritage and community participation in the development process of the corridor are important to ensure its sustainable and equitable implementation. The Zangezur Corridor is a multifaceted initiative with wide-ranging implications. Its success depends on careful navigation of geopolitical sensitivities, robust economic planning, and an inclusive approach that takes into account the wishes and concerns of all stakeholders. It is important to provide a thorough understanding of the subtle interplay of regional and international factors shaping the corridor's potential impact, challenges, and future [6, p.47].

### CONCLUSION

The Zangezur Corridor stands as a symbol of both hope and challenge in the South Caucasus, encompassing the complexities of regional geopolitics, economic aspirations, and the quest for stability and peace. Its development marks an important turning point in the region stemming from the 2020 Nagorno-Karabakh

ceasefire agreement, offering new avenues for connectivity, economic cooperation and potentially long-standing conflict resolution. With the potential to reshape trade routes, strengthen regional ties, and spur economic growth in Azerbaijan, Armenia and beyond, the corridor's strategic and economic importance is clear. The potential comes with a number of challenges that must be managed with caution and diplomacy. The success of the Zangezur Corridor depends on the ability of regional actors to work together to solve not only logistical and infrastructure needs, but also historical, cultural and environmental issues. In addition, the role of the international community in supporting and monitoring the development of the corridor is important. Global powers and international organizations are interested in the stability and prosperity of the South Caucasus, and their participation can play a key role in ensuring the success of the corridor and its positive impact on regional dynamics. In fact, Zangezur Corridor is more than a physical connection between territories. It is an opportunity for a new chapter in the South Caucasus – one that could lead to enhanced regional cooperation, economic development and lasting peace. The realization of the corridor is not only a regional concern, but also an issue of international importance with the potential to positively contribute to global trade, energy policy and geopolitical stability.

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УДК 378.091.12

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## LEVEL OF FOREIGN LANGUAGE COMMUNICATIVE COMPETENCE OF FUTURE TEACHERS: EVALUATION CRITERIA

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<https://doi.org/10.5281/zenodo.10581869>

### Abstract

The article discusses subcompetences of foreign language communicative competence of future teachers: cognitive-communicative, linguacultural and informational. The content of each subcompetence, their characteristics and components are defined, and criteria for its assessment are proposed. For the development of foreign language communicative competence of future teachers it is necessary to use a complex approach, which includes ensuring a high level of foreign language proficiency of students, the development of linguistic and cultural concepts of the target language and the development of information competence, which encompasses not only the ability to use digital technology, but also the search, evaluation and analysis of the information received.

**Keywords:** foreign language communicative competence, future teachers, cognitive-communicative subcompetence, linguacultural subcompetence, information subcompetence, evaluation criteria.

### Introduction

In the current interconnected world, the capacity to converse in a second language is increasingly crucial. Consequently, the role of instructors teaching foreign languages is more pertinent than ever. One of the most vital skills of future foreign language teachers is communicative competence in a foreign language.

Communicative competence in a foreign language is the ability to communicate effectively in a target language. It includes not only the ability to speak and understand the language, but also reading and writing. The concept of competence was introduced in 1965 by Noam Chomsky who argued that communicative competence is a tendency among "ideal communicators" and requires grammatical correctness, however, according to Hymes, communicative competence includes four components: grammatical competence, discourse competence, sociolinguistic competence and strategic competence, as well as the individual's ability to effectively apply language knowledge in an ever-changing society [1]. They also foster a supportive learning atmosphere and motivate students in language acquisition. Chomsky's emphasis on grammatical correctness acknowledges the importance of a solid linguistic foundation, however the concept of "ideal communicators" might not fully capture the diversity of language use in different contexts. His idea of competence was more concerned with the internalized knowledge of a language's rules, structures, and grammar. While Hymes' communicative competence added a practical dimension to language study by considering the social and pragmatic aspects. It recognized the importance of context and cultural norms in effective communication.

Furthermore, foreign language communicative competence has shown to be a significant indicator of students' achievement in language acquisition [2][3].

Proficient teachers in the language they instruct possess a deeper comprehension of their students' requirements, enabling more effective teaching.

Communicative competence is a structured amalgamation, comprised of distinct components and encompassing multiple tiers: linguistic, conversational, contextual, cultural, and persuasive competences [4]. J. Raven delineates communicative competence as an internal resource system essential for effectively engaging in various interpersonal interactions [5]. These resources encompass a person's cognitive capacities to perceive, assess, and understand situations, the strategic planning of communicative actions during interactions, regulations governing communicative conduct, and methods for rectification. The correction process, driven by communicative competence, aims to alter an individual's system of values and attitudes. While Raven's perspective focuses on the individual's internal resource system, it is important to consider the contextual and relational factors that also influence communicative competence. Effective communication often hinges on understanding and responding to the expectations, norms, and communication styles of others.

Raven's framework highlights the importance of adapting communication strategies to different situations, but it could further benefit from incorporating a more nuanced understanding of cultural and linguistic diversity. Communication competence in one context may not translate directly to another, and individuals need to be mindful of cultural norms and expectations when interacting with others from diverse backgrounds. Diverse perspectives exist regarding the constituents or sub-competences of communicative competence.

### Components of foreign language communicative competence

The comprehensive structure of foreign language communicative competence, as articulated by the Council of Europe, encompasses a multifaceted array of elements. These include the linguistic component, encompassing lexical, phonological, and syntactic knowledge and skills, alongside the sociolinguistic and pragmatic components, which encapsulate a broad spectrum of know-how, including existential competence and an understanding of language systems and their sociolinguistic variations [6].

In alignment with the evolving landscape of foreign language professional education, it becomes judicious to consider and delineate several specific sub-competencies that bear significant relevance.

- The cognitive-communicative competence engages cognitive functions alongside communicative

skills, fostering an ability to employ knowledge and aptitudes for effective communication while enhancing the individual's personality and cognitive processes such as memory, attention, and verbal reasoning.

- The linguistic sub-competence involves a nuanced grasp of the cultural and linguistic intersections within language use.

- The informational sub-competence delves into the acquisition and utilization of informational resources, playing a pivotal role in shaping the depth of a learner's sociocultural, discursive, and foreign language experiences.

Initially, **cognitive-communicative competence (CCC)** is a sub-competence of foreign language communicative competence, which includes skills and abilities necessary for the effective implementation of language to solve cognitive tasks. CCC itself includes the following components:

Table-1.

**Components of cognitive-communicative competence**

|                                           |                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Understanding the meaning of speech       | Ability to comprehend the content of this process, highlight its main ideas and arguments. This skill is necessary for students to be able to obtain information from foreign language communication, understand their meaning and use this information to solve various tasks                                                  |
| Analyzing a speech                        | The ability to identify the structure of a speech, its composition, linguistic means and their role in creating meaning. This skill is necessary for students to recognize how the speech is organized, how its author uses language to express his/her thoughts, and how the speech affects the participants of communication. |
| Speech synthesis                          | Creation of new speech based on existing experience and information. This skill is necessary for students to be able to express their thoughts in a foreign language, to create various speech products (e.g., essays, reports, presentations, etc.).                                                                           |
| Speech evaluation                         | Ability to evaluate a speech in terms of its content, structure, linguistic means and compliance with the communicative goal. It is necessary for learners to be able to critically evaluate speech in a foreign language, to determine their advantages and disadvantages.                                                     |
| Problem solving with the help of language | Ability to use language to search for information, formulate hypotheses and test them, make decisions, etc. This skill is necessary for learners to be able to use language to solve various problems in real life.                                                                                                             |

The second component of foreign language communicative competence is **linguacultural** sub-competence. B. B. Vinogradov in 2004 considered linguacultural competence as a person's ability to use language in accordance with the norms and rules of the culture in which it is used. Vinogradov believed that linguacultural competence includes knowledge of linguistic norms, cultural customs and traditions[7].

B. I. Karasik in his scientific work published in 2002, emphasized the following components of linguacultural competence:

- Language proficiency: this includes proficiency in phonetics, morphology, syntax, lexicon and semantics of the language.
- Cultural awareness: this includes information about history, geography, religion, art, science, philosophy and other areas of culture.
- Awareness of the relationship between language and culture: this includes awareness of how language reflects culture and how culture affects language[8]. While the awareness of this relationship is crucial, the practical application of this knowledge in real-time communication scenarios might pose challenges. It requires individuals to navigate complex cultural nuances during communication.

Karasik believed that linguacultural competence is an important component of communicative competence, which is necessary for successful communication in an intercultural environment. Therefore, linguacultural competence is a person's ability to understand and use language in the context of the culture in which it is used.

Baizhanova A.M. proposed the similar components of lingocultural competence and suggested that linguacultural competence is a complex education that includes knowledge of the language, culture and society of the country of the target language, as well as the ability to use this knowledge in communication. It includes the following components:

Language: grammar, vocabulary and phonetics of the foreign language.

Cultural knowledge: the history, traditions, customs, religion, art and literature of the country of the target language.

Society: the political system, economy, social structure, etc. of the country of the target language.

Ability to use knowledge of culture and society in communication: ability to adapt one's behavior to the cultural norms of the country of the target language, ability to avoid situations that could be considered as

violation of cultural norms[9]. While the model presents a comprehensive view, operationalizing and measuring these components can be challenging. Assessing the "ability to use knowledge in communication" involves subjective judgment and may lack concrete criteria. Baizhanova's model aligns with the broader trend in language education that emphasizes not only linguistic competence but also cultural and sociolinguistic competence. Integrating this model with others, such as Hymes' communicative competence, could provide a more nuanced understanding of language learners' abilities.

The formation of linguacultural competence occurs through several stages: motivational, informational and formation stage [10].

At the initial phase, labeled "motivational," the emphasis lies in fostering psychological preparedness for effective communication. According to M.I. Dyachenko, L.A. Kandybovich, and various researchers, readiness denotes a specific mental condition enabling an individual to interpret situations or initiate action [11]. This stage aims to pique students' interest in acquiring insights about diverse cultures and their people, highlighting the world's vast diversity and the individuals residing within it. However, it is essential to consider the potential variability in students' motivational factors. Different individuals may be motivated by distinct aspects of cultural exploration or language learning. It is possible provide further insights into how educators can tailor motivational strategies to address the diverse needs and interests of students. Additionally, the effectiveness of this motivational phase might be influenced by external factors, such as the teaching methods employed, the learning environment, and the cultural relevance of the materials presented. The primary objective is to instill a positive approach toward learning about varied cultures and cultivate a desire for cross-cultural interaction. Integrating authentic materials like rhymes, songs, and realia fosters student motivation and engagement in foreign language classrooms. Exposure to authentic materials heightens students' cultural awareness and concentration levels. Such exposure enables students to navigate genuine interactions both within and beyond the classroom environment.

The main objectives of the second, informational stage are the collection and processing of learning material that constitutes the learning content. Learning content is considered as a constantly changing and developing category related to the learning process. It includes the following components:

- Linguistic
- Cultural
- Communicative skills.

And at the last stage of linguacultural subcompetence formation there is a determination of ways of

skills manifestation in modern conditions and practical consequences. Students formulate possible strategies to counteract prejudices and preconceptions. As Bazylova and et.al. note that at the stage of formation there is an integration of linguistic and cultural knowledge and skills into a unified system. The authors emphasize that at this stage students should be able to use their knowledge and skills in various communication situations.

The last component of foreign language communicative competence is **informational sub-competence**.

Informational competence includes the following components:

- Information search skills: the ability to use various sources of information, including printed, electronic and oral, as well as the ability to determine the relevance of information for the task.
- Information processing skills: the ability to analyze information, highlight the main points, draw conclusions and generalizations.
- Information evaluation skills: the ability to critically evaluate information, determine its reliability and relevance.
- Information communication skills: the ability to present information in various forms, including oral and written [12].

In addition, information competence includes adherence to academic ethics. This means that a person with information competence knows how to use information in accordance with the rules of academic ethics, in particular, knows how to properly cite sources of information and avoid plagiarism.

Information technology (IT) can play a significant role in the development of cognitive-communicative competence (CCC) by providing students with access to authentic educational resources, enabling computer modeling, and creating a technologically enhanced learning environment.

For the understanding of informatial competence, the TPACK model, which was provided in 2006 by Mishra and Koehler, should be emphasized.

The TPACK framework is a holistic model that integrates three types of knowledge: Technological Knowledge (TK), Pedagogical Knowledge (PK), and Content Knowledge (CK). It is a useful framework for teachers to consider when designing and implementing technology-enhanced learning activities[13].

Technological Knowledge (TK) refers to the teacher's knowledge of technology tools and resources, and how to use them effectively in the classroom. This includes knowledge of hardware, software, and applications, as well as an understanding of how to use technology to support different learning styles and needs.

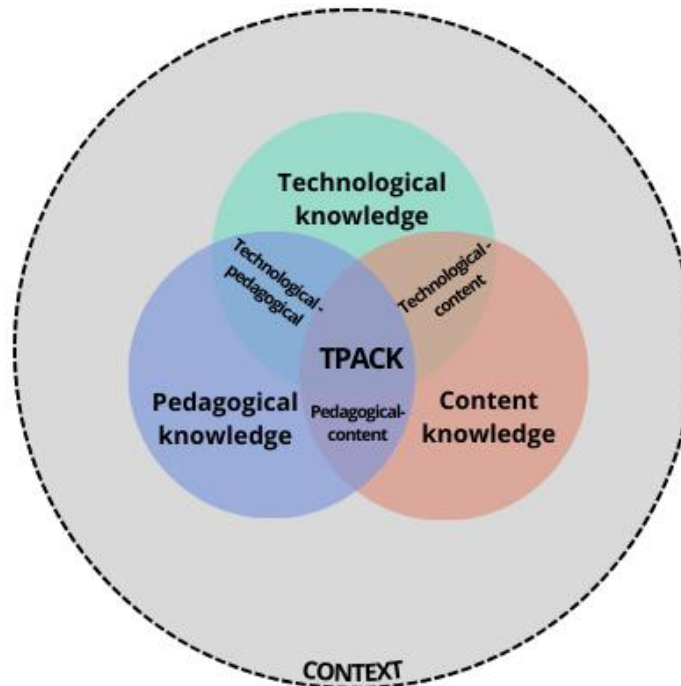


Figure 1 - TPACK model by Mishra and Koehler, 2006

Pedagogical Knowledge (PK) refers to the teacher's knowledge of teaching and learning theories and practices. This includes knowledge of how to create a positive learning environment, how to manage a classroom, and how to assess student learning.

Content Knowledge (CK) refers to the teacher's knowledge of the subject matter being taught. This includes knowledge of the key concepts and principles of the subject, as well as an understanding of how to make the subject matter accessible and engaging for students.

The TPACK framework suggests that the most effective teaching with technology occurs when teachers have a deep understanding of all three types of knowledge. When teachers have strong TPACK, they are able to use technology in ways that support effective pedagogy and content delivery. This model facilitates a more complete understanding of how knowledge is organized under the conditions of using information technology in education from the perspective of a future teacher. Informational competence is achieved if these skills are acquired either completely or partially.

#### Assessment criteria for foreign language communicative competence

Formation of these sub-competences within the foreign language communicative competence can be examined by means of assessment, but evaluation of the competence is a challenging issue. Competence includes not merely facts and knowledge, but skills and abilities, therefore the most appropriate means of assessment is through the application of criteria. It is suggested to use three levels, namely low, medium and high level. In each degree the student masters certain characteristics and abilities. Moreover criteria-based assessment is more transparent than traditional assessment methods because the criteria and the assessment process are clearly defined and known to the candidate in advance. This helps to build trust in the assessment process and to provide feedback to the candidate on their performance.

**Assessment criteria for foreign language communicative competence**

| Sub-competence\Level    | Low                                                                                                                                                                                                                                                                                                                           | Medium                                                                                                                                                                                                                                                                                                                                     | High                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cognitive-communicative | <ul style="list-style-type: none"> <li>- Limited understanding of basic linguistic structures.</li> <li>- Difficulties in expressing their thoughts and ideas in a foreign language.</li> <li>- Limited stock of active vocabulary.</li> <li>- Difficulties in listening comprehension of foreign language speech.</li> </ul> | <ul style="list-style-type: none"> <li>- Basic understanding of grammatical structures and vocabulary.</li> <li>- Ability to maintain basic conversation on everyday topics.</li> <li>- Limited proficiency in complex language constructions.</li> <li>- Requires additional support when communicating in a foreign language.</li> </ul> | <ul style="list-style-type: none"> <li>- Deep understanding of grammatical structures and vocabulary.</li> <li>- Ability to express complex ideas and articulate thoughts accurately.</li> <li>- Ability to apply a variety of cognitive strategies to successfully solve communicative problems.</li> <li>- Effective interaction in a foreign language in a variety of contexts.</li> </ul>                                                                                                                                                        |
| Linguacultural          | Students have a basic knowledge of grammar and vocabulary of a foreign language, but lack the skills or understanding to recognize and use sociocultural norms. They may make mistakes in understanding and producing foreign language speech, which can lead to misunderstandings and conflicts in communication.            | Learners have a more profound knowledge of the grammar and vocabulary of the foreign language, as well as some familiarity with sociocultural norms. They can communicate in most situations, but may have obstacles in complex situations related to the cultural peculiarities of the country of the target language.                    | <ul style="list-style-type: none"> <li>- Mastery of the use of culturally specific language constructions, demonstrated by a high level of linguistic flexibility and accuracy.</li> <li>- Deep understanding of cultural contexts, ability to adapt easily to different cultural circumstances, successful interaction in a variety of linguistic environments.</li> <li>- High sensitivity and receptivity to cultural aspects through language, ability to accurately and appropriately interpret messages in a sociocultural context.</li> </ul> |
| Informational           | <ul style="list-style-type: none"> <li>- Limited information retrieval and processing skills.</li> <li>- Limited understanding of information resources.</li> <li>- Difficulties in assessing the reliability of information.</li> </ul>                                                                                      | <ul style="list-style-type: none"> <li>- Basic skills in searching and analyzing information.</li> <li>- Ability to identify relevant information for specific tasks.</li> <li>- Conscious use of various information resources.</li> </ul>                                                                                                | <ul style="list-style-type: none"> <li>- Effective skills in searching, analyzing and evaluating information.</li> <li>- Ability to critically evaluate and select the most appropriate information resources.</li> <li>- Active application of information skills in educational and professional contexts.</li> </ul>                                                                                                                                                                                                                              |

The previously indicated three levels of formation of each sub-competence can demonstrate the proficiency of the students' foreign language communicative competence. At the lowest tier, students typically lack sufficient or any command of these attributes and skills, significantly impacting their cross-cultural communication and overall proficiency in the foreign language. The intermediate tier is marked by foundational knowledge suitable for basic communication or addressing challenges in a foreign language setting. The teacher should personally adapt each description of a particular proficiency level based on the lesson's topic, goals, and objectives to assess the development of these skills objectively and accurately.

#### Conclusion

In the modern educational context, the formation of future teachers requires a comprehensive development of foreign language communicative competence. This competence is not limited to mere knowledge of

the language, but includes a number of subcompetences, such as cognitive-communicative, linguacultural and informative. Each of these subcompetencies plays a key role in the formation of future teachers' skills of effective communication in a foreign language.

The cognitive-communicative subcompetence represents the student's ability to use language taking into account the norms and rules of culture. This subcompetence includes understanding of various aspects of cognitive processes such as perception, evaluation and interpretation of situations. The key criteria for assessing the cognitive-communicative subcompetence are the level of mastery of cognitive skills in the context of intercultural communication and the student's ability to use them effectively in learning. Linguacultural subcompetence expresses the student's readiness to classify, systematize and process information using language. It includes not only knowledge of cultural features, but also the ability to apply them to solve communicative tasks in educational discourse. Criteria

for assessing linguacultural subcompetence may include the student's level of mastering cultural norms and values, as well as the ability to integrate them into the educational process. The informative sub-competence implies the student's ability to effectively collect and process learning material related to language learning. Assessment of this subcompetency may include analyzing the student's success in collecting and interpreting the material, as well as his/her ability to apply the acquired knowledge for successful learning. Key evaluation criteria include the effectiveness of information resource utilization and its impact on the level of informative competence development.

In general, the assessment of subcompetences of foreign language communicative competence of future teachers should be comprehensive and adapted to specific learning objectives.

It is important to take into account that these subcompetences are interrelated and influence each other. Students who have successfully mastered cognitive-communicative, linguacultural and informative subcompetences will acquire not only language skills, but also the ability to effectively apply them in pedagogical activity. Thus, the development of subcompetences in foreign language communicative competence of future teachers is a complex and important process that requires a flexible approach and attention to the individual characteristics of each student. Assessment should stimulate the development of all aspects of communicative competence, creating a solid foundation for successful professional activity in the educational environment.

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## STUDYING OBJECT-ORIENTED PROGRAMMING IN SCHOOL

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## ВИВЧЕННЯ ОБ'ЄКТНО-ОРІЄНТОВАНОГО ПРОГРАМУВАННЯ В ШКОЛІ

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<https://doi.org/10.5281/zenodo.10591908>***Abstract**

The article discusses the problems of studying object-oriented programming (OOP) in educational institutions. The main aspects that require teachers' attention are identified, including the choice of programming language, the order in which OOP concepts are taught, the necessary learning environment, and the inclusion of modeling and design elements. The problems of choosing a programming language for learning OOP are pointed out, providing a comparison between C++, Java and Python. Caution is expressed against using C++ due to its complexity, and a recommendation is made to use Java as a purer object-oriented language. The article also raises the issue of methods of teaching OOP, indicating the need to emphasize abstract thinking and design already at the initial stage. A recommendation is given for the use of graphical tools to facilitate the understanding of OOP concepts. The issue of choosing a programming environment for an introductory course in OOP is considered. It is noted that integrated graphic systems can be too complex for initial training, which is why the use of special environments, such as the BLUE system, which simplifies the process of creating methods and objects, is proposed. The importance of building an effective approach to learning OOP, which takes into account the choice of language, the order of teaching, the environment and the use of graphic tools, is emphasized.

**Анотація**

У статті розглянуто проблеми вивчення об'єктно-орієнтованого програмування (ООП) в середніх навчальних закладах. Визначено основні аспекти, які потребують уваги вчителів, включаючи вибір мови програмування, порядок викладання концепцій ООП, необхідне середовище навчання та включення елементів моделювання та дизайну. Вказано на проблеми вибору мови програмування для навчання ООП, надаючи порівняння між C++, Java та Python. Висловлено застереження щодо використання C++ через його складність, а також надано рекомендацію щодо використання Java як більш чистої об'єктно-орієнтованої мови. Стаття також порушує питання методів викладання ООП, вказуючи на необхідність акцентування уваги на абстрактному мисленні та дизайні вже на початковому етапі. Надано рекомендацію щодо використання графічних засобів для полегшення розуміння концепцій ООП. Розглянуто питання вибору середовища програмування для вступного курсу з ООП. Зазначено, що інтегровані графічні системи можуть бути надто складними для початкового навчання через що запропоновано використання спеціальних середовищ, таких як система BLUE, яка спрощує процес створення методів та об'єктів. Підкреслено важливість побудови ефективного підходу до вивчення ООП, який враховує вибір мови, порядок викладання, середовище та використання графічних інструментів.

**Keywords:** Object-oriented programming, school, teacher, C++, Java, Python, educational programs.

**Ключові слова:** Об'єктно-орієнтоване програмування, школа, учитель, C++, Java, Python, навчальні програми.

На початку 20-х рр. ХХІ ст. об'єктно-орієнтоване програмування (ООП) стало домінуючим стилем програмування. Методика вивчення ООП у навчальних закладах різного рівня висвітлена в багатьох працях вітчизняних науковців [1-3, 6, 7]. Проте вчителі, зазвичай, відчують проблеми під час ознайомлення початківців з об'єктно-орієнтованою концепцією та програмуванням і тому розробка ефективних підходів до навчання основ ООП в школі та на початкових курсах у вищих навчальних закладах все ще залишається актуальною серед науковців [4, 5]. Педагоги в цій галузі продовжують експериментувати із різними стилями, методами та підходами до навчання.

Насамперед відзначимо, що ООП – це парадигма програмування, яка використовує концепцію «об'єктів», щоб організувати код. Основна ідея ООП – моделювання програмного коду як сукупності взаємодіючих об'єктів, які представляють екземпляри класів.

Основні поняття ООП включають: (а) **класи** – шаблон або визначення для створення об'єктів. Він визначає властивості та методи, які об'єкти цього класу можуть мати; (б) **об'єкти** – конкретний екземпляр класу (представляє собою конкретний екземпляр даних та функціоналу, описаного в класі); (в) **інкапсуляцію** – сприяє об'єднанню даних та методів, що працюють з цими даними, в один об'єкт, що дозволяє приховувати деталі реалізації від зовнішнього світу та сприяє зменшенню залежностей між різними частинами програми; (г) **наслідування** – дозволяє створювати нові класи на основі вже існуючих (підклас може успадковувати властивості та методи батьківського класу, а також додавати або перевизначати свої власні); (д) **поліморфізм** – дозволяє використовувати об'єкти різних класів з однаковим інтерфейсом без необхідності зазначення їх конкретного типу (сприяє виразній та гнучкій роботі з об'єктами) [10].

Таким чином, ООП робить код більш читабельним, облегшує його розуміння та підтримку. Багато сучасних програмних мов, таких як Java, C++, Python, використовують принципи ООП для створення програм.

Вчителі, які вперше ознайомлюють початківців з ООП, можуть стикатися з низкою проблем, найпоширенішими із яких стали:

**1. Складність абстракції:** ООП використовує концепції, такі як класи, об'єкти, наслідування, інкапсуляція та поліморфізм, які можуть бути для новачків важкими для розуміння. Вчителі можуть зіткнутися з труднощами у поясненні цих абстракцій.

**2. Зміна мислення:** ООП вимагає від програмістів зміни підходу до розв'язання завдань. Деякі вчителі можуть стикається з труднощами в навчанні учнів при переході від процедурного мислення до об'єктно-орієнтованого.

**3. Відсутність практичного досвіду:** для повного розуміння ООП важливо мати практичний досвід. Вчителі можуть стикнутися із проблемою недостатньої кількості практичних завдань та вправ для закріплення отриманого матеріалу.

**4. Недостатність ресурсів:** У навчанні ООП може бути обмежена кількість доступних навчальних ресурсів та прикладів, що може ускладнити розуміння концепцій.

**5. Велика кількість коду:** в осягненні розуміння ООП важливу роль відіграє практика, але велика кількість коду при вивченні може стати викликом для новачків, і вчителі повинні знайти баланс між теоретичними поясненнями та практичним використанням [9].

Вирішення вищезазначених проблем може включати в себе збалансований підхід, використання конкретних прикладів, практичних завдань та можливо використання додаткових навчальних ресурсів для підтримки процесу вивчення ООП [10].

Як видається, оптимальною є наступна схема навчання програмуванню, яка до того ж без особливих проблем вписується у навчальну програму з інформатики, затверджену МОН:

- Scratch-програмування (2-4 класи);
- основи структурного (алгоритмічного) програмування (5 клас);
- ознайомлення з об'єктним програмуванням (6 клас);
- ознайомлення із програмуванням на Android (7 клас);
- основи об'єктного програмування (8 клас);
- основи функціонального програмування (9 клас) [9].

Важливо також розглянути декілька важливих питань, які вимагають вирішення у контексті досліджуваних питань. Перше із них – *яку об'єктно-орієнтовану мову слід вивчати?*

Більшість курсів програмування у середніх школах та вищих навчальних закладах фокусуються на популярних об'єктно-орієнтованих мовах програмування, таких як C++, Java та Python. Остання, зокрема, стала популярним вибором для навчання програмуванню в школах через простоту та читабельність коду. Java та C++ використовуються для введення учнів у більш сучасні концепції програмування та комп'ютерних наук. Важливо зауважити, що програми навчання можуть змінюватися в залежності від регіону, школи або навчального закладу. Наприклад, у деяких програмах можуть також використовуватися інші мови програмування, такі як JavaScript, C#, або навіть більш високорівневі мови, такі як Scratch, для навчання основам програмування [10].

Все ж, значна кількість курсів програмування у середніх школах спрямовані на такі об'єктно-орієнтовані мови як C++ та Java. Хоча засновники мови Python, передусім, орієнтувались на спрощення вивчення програмування, однак такі аспекти

мови як динамічна типізація, відкритість об'єктів та множинне успадкування не сприяють використанню цієї мови як початкової при вивченні ООП [10].

У навчальних програмах з інформатики в переважній більшості середніх шкіл перевагу віддають мові C++ через її потужність та відносну простоту реалізації класичних алгоритмів і структур даних. Однак C++ немає багатьох характеристик, якими повинна володіти мова для навчання ООП. Зокрема, це «гібридний» характер мови, використання небезпечних типів, дуже складна об'єктна модель і недостатня читабельність. Тому її класифікують як не найкращого кандидата для навчання ООП [10].

На противагу Java вважається «чистою» об'єктно-орієнтованою мовою і немає багатьох важливих недоліків C++. Ринковий успіх Java також є ще одним позитивним фактором на її користь і тому, з-поміж різноманітних альтернатив, Java видається кращим вибором для початку освоєння об'єктно-орієнтованого програмування [8, с. 3].

Корисною у вивченні ООП є мова Visual Basic, яка виступає повноцінним засобом програмування для Windows і вбудована у Windows Office. Це дає змогу непрофесійним програмістам розширювати можливості Word, Excel тощо. Однак ця мова не є популярною на теренах України [8, с. 3].

Важливо також дати відповідь на запитання: *«Яким повинен бути порядок викладання об'єктно-орієнтованих концепцій?»*.

Викладання основ ООП на початковому рівні залишається серйозною педагогічною проблемою, оскільки потребує певних зусиль, перш ніж розпочнеться фактичне кодування [10]. Робота на цьому етапі повинна бути зосереджена на пошуку відповідей на такі питання: яким буде результат завершення виконання (роботи) програми?; які класи та об'єкти будуть потрібні та які їх функції?; яким буде інформаційне наповнення та функціональність кожного об'єкта? Як об'єкти спілкуватимуться? [7].

ООП та проєктування можна полегшити за допомогою простих графічних інтегрованих графічних допоміжних засобів. Навіть проста нотація, яка використовує прямокутники, овали та стрілки, може бути дуже корисною. Використання домашньої діаграмної нотації значно полегшує розуміння зв'язків об'єкт → клас → екземпляр [7].

Зауважимо, що викладання об'єктно-орієнтованих концепцій у школі має відбуватися системно та логічно, з урахуванням особливостей учнів і їхнього розвитку [10]. Як видається, викладання об'єктно-орієнтованих концепцій повинно відбуватися відповідно до загальної схеми:

#### 1. Визначення вікових особливостей учнів:

- врахування психологічних особливостей учнів різного віку;
- врахування рівня математичної підготовки учнів [6].

#### 2. Загальне введення в об'єктно-орієнтоване програмування:

- пояснення базових ідей та понять, таких як об'єкти, класи, спадкування, інкапсуляція та поліморфізм;

- використання простих прикладів та аналогій для роз'яснення концепцій [6].

#### 3. Практичні завдання та проєкти:

- впровадження практичних завдань та проєктів для закріплення знань;
- створення малих програм або ігор, що дозволяють учням використовувати об'єктно-орієнтований підхід на практиці [6].

#### 4. Засоби викладання:

- використання інтерактивних методів, таких як графічні інтерфейси, демонстрації, анімації;
- використання мов програмування, які підтримують об'єктно-орієнтований підхід, таких як Java, Python, або C++ [6].

#### 5. Зв'язок із реальними прикладами:

- пояснення користі та застосування об'єктно-орієнтованого програмування у реальному житті;
- залучення прикладів з реальних проєктів та індустрії, щоб показати учням, як об'єктно-орієнтований підхід використовується на практиці [6].

#### 6. Зростання складності:

- поступове збільшення складності завдань та проєктів для забезпечення поступового розвитку вмінь учнів;
- запровадження додаткових тем, таких як шаблони проєктування, робота з базами даних, і т. д., на більш пізніх етапах [6].

#### 7. Оцінювання та звітність:

- використання різних методів оцінювання, включаючи тести, проєкти, лабораторні роботи та взаємну оцінку;
- регулярне оновлення програми на основі відгуків та власного досвіду

Важливо створити позитивне та зацікавлене середовище для учнів, де вони можуть ефективно вивчати та застосовувати об'єктно-орієнтовані концепції [6].

Не менш важливе питання – *яким має бути середовище навчання?* Для успішного вивчення вступного курсу з ООП важливим є відповідне середовище програмування, яке складається з редактора й операційної системи. Використання у навчанні інтегрованих графічних систем стає все поширенішим. Однак ці системи, по суті, є середовищами для професійного програмування, їх придатність як допоміжних засобів навчання під час вступного курсу є сумнівною, оскільки вони набагато потужніші та складніші, ніж потрібно, а їхні вдосконалені функції роблять їх менш зручними для такого курсу. Як компроміс, розроблено спеціальні середовища для об'єктно-орієнтованого навчання. Популярним прикладом у такій ситуації є система BLUE. Версії BLUE на C++ і Java забезпечують дуже просте та зручне середовище для створення методів, об'єктів і керування ними [5].

Відповідаючи на запитання: *«Коли і наскільки глибоко варто включати елементи моделювання та об'єктно-орієнтованого дизайну?»*, варто зазначити, що об'єктно-орієнтовані програмні продукти базуються на об'єктах та їхніх зв'язках. Основна

увага має бути зосереджена на розв'язанні проблем належного моделювання та проєктування об'єктів і класів. Тому починати з «Hello World!» є недоцільно, оскільки в такому випадку синтаксис ставиться перед вирішенням проблем програмування. Ефективним і, переважно, рекомендованим є підхід, який ґрунтується на використанні абстракції та дизайну з самого початку. Хоча абстрактне мислення може вважатися складним для засвоєння багатьма учнями, але воно є важливим компонентом об'єктно-орієнтованого програмування. Абстракція, з другого боку, виступає як компонент моделювання та дизайну також в інших предметах початкового рівня [5].

Отже, побудова ефективного підходу до вивчення об'єктно-орієнтованого програмування є важливою, оскільки значною мірою впливає на структуру даного курсу та успішність його засвоєння. Вивчення ООП повинно починатися з акценту на моделювання та дизайн об'єктів і класів, замість простого синтаксису. Абстракція виступає як важливий компонент навчання, хоча може бути важкою для розуміння для деяких учнів. Важливо зробити правильний вибір мови для навчання ООП – хоча мови, такі як C++, Java та Python, є популярними, все ж Java може бути кращим вибором для початківців через її чисто об'єктно-орієнтований характер та ринковий успіх. У контексті досліджуваних питань, важливою проблемою є ефективний порядок викладання ООП на початковому рівні – необхідно зосередитися на питаннях проєктування програм, використання графічних інструментів для полегшення розуміння концепцій та вирішення питань щодо взаємодії об'єктів. Водночас для успішного вивчення ООП необхідне відповідне середовище програмування. Спростити навчання можуть спеціальні середовища такі, наприклад, як система BLUE, яка надає зручне середовище для створення та управління об'єктами.

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# PHILOLOGICAL SCIENCES

## NARRATIVE TECHNIQUES IN THE TEXT INTERPRETATION

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<https://doi.org/10.5281/zenodo.10581878>

### Abstract

This article touches upon the significant aspect in text interpretation. The interpretation of English prose has its focus on a number of structural elements that construct the scheme for the discourse. These elements are used to produce certain effects; for instance, the type of the plot, the narrative voice, the narrative mode, methods of thought representation.

**Keywords:** homodiegetic; heterodiegetic; focalization; mimesis; diegesis; interior monologue; psychonarration; narrated monologue; stream-of-consciousness

To analyse a piece of prose is to comprehend its complex structural unity of means of expression and expressed tone, form and content. The systematic nature of all narrative techniques used in a text, their interrelation and interdependence, the consideration of all expressive means - all these are the factors that determine the completeness, depth and perception of the text and serve to reveal the thematic content of the literary text, and, consequently, help its adequate interpretation.

It is essential that students should formulate the main idea conveyed by the author (the main line of the thought, the author's message) at the initial stage of text interpretation. The next stage is to give a general definition of the text under study, following the structural elements.

While considering the length and events of prose, any narrative has one or more plot-lines. There are numerous single plot novels as well as multiple plot lines. The latter ones can have a main plot-line and several subplot-lines. The purpose of sub-plots is to contrast the main plot when, for example, there is the same chain of events in the similar sphere [1, pp 258-270]. The further distinction is between tightly-plotted and loosely-plotted narratives. In tightly-plotted texts everything happens for a reason and one event is the consequence of another. When each plot line is brought to a satisfactory ending, the narrative has a closed structure. For loosely-plotted narratives all the events or episodes are linked by a protagonist, whereas there is less emphasis on the causal connection between events. Such type of prose is specific with open-ended plots.

Narrative voices are defined by a person who tells a story. There is a classification of the technique as a homodiegetic narrator/ first-person narrative; a heterodiegetic narrator/ third-person narrative; and, occasionally, a second-person narrative. If the homodiegetic narrator is also the protagonist of the narrative, it is an autodiegetic narrator [2, pp 163-186].

One more distinction is between *telling* and *showing* or *an overt narrator* and *a covert narrator*. The overt narrator makes their judgements and evaluation, expresses their opinion openly. In case of the covert

narrator we know nothing about the speaker's own position. Sometimes a heterodiegetic narrator acquires the position of the omniscient narrator - the one who is able to tell us the thoughts and feelings of all the characters, though the story focuses on the point of view of one or two characters. Moreover, a homodiegetic or a heterodiegetic narrator can function as an unreliable narrator. The main reason for such transformation is to deliberately lead the reader to distrust and produce suspense. To the category of narrative voices we add the subtype of a heterodiegetic narrator - free indirect style - thoughts and feelings of a character expressed directly in the form of one or two affirmatives or rhetorical questions.

To make the classification complete we suggest students define the type of focalization that can function as perspective of the story. An external focaliser is a focaliser who is external to the story and who is thus often called narrator-focaliser because the focus of perception seems to be that of the narrator [3, pp 73-74]. The purpose of this type is to create a distance and to undermine the empathy with the protagonist. An internal focaliser is a, usually limited, focus of perception of a character in the story, and thus also called character-focaliser. Internal focalisation helps the readers to empathise with the character-focaliser.

Further classification deals with narrative modes. Narrative modes are the kinds of utterance through which a narrative is conveyed [4, pp 26-34]. For the text interpretation it is advisable to define four types of text presentation: mimesis/diegesis, report, description, and comment. Mimetic narrative mode is direct speech, whereas in diegetic one the speech is rendered indirectly. Report is the mode that informs the reader about events and actions in the story. Reports are frequently mingled with narrator comment. Description is a narrative mode that represents objects in space. It can be subdivided into three categories: description of place, of time, and of character. Notably, these elements are usually combined in narrative. In comment we find evaluations of the story's events and characters, general observations or judgements made by the narrator. Such evaluations can be more or less explicit.

Representation of thought/consciousness is considered the equally essential part of text interpretation. Three major methods of thought representation have been identified, depending on the level of noticeable narrator interference. They are: interior monologue, psychonarration, and narrated monologue or free indirect discourse [5, pp 12-17].

*Interior monologue* is intended to present a character's thoughts directly, imitating as much as possible the way this character might 'actually' have thought his thoughts. In other words, it is a longish passage of uninterrupted thoughts. It is a narrative technique, necessarily limited to verbal representation – that tries to reproduce non-orderly and associative patterns of thought. When other sensual perceptions are included, especially visual representations, we have the example of a psychological concept – stream of consciousness. Due to heated arguments around these two ways of representation, we have finally identified both of them as narrative techniques, with the focus on the distinctive feature of stream-of-consciousness: representation of one's thoughts that are not in fact orderly and wellformulated but more of a jumbled-up sequence of associations.

In *psychonarration* the heterodiegetic narrator remains in the foreground throughout, even adds some general observations not originating in the character. While we learn about the character's thoughts and feelings, we hear it entirely in the narrator's voice, syntax and vocabulary. The difference in effect is quite noticeable; the reader remains much more distant from the character's consciousness.

In *narrated monologue* the narrator refers to the character in third person and narrative past, the syntax becomes less formal (incomplete sentences, exclamations, ellipses). This technique can create immediacy but can also be used to create ironic distance [6, pp 69-75].

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## FAMILY EDUCATION STRATEGIES AND PERSONAL FEATURES OF MOTHERS IN CHILDREN WITH EARLY SIGNS OF BEHAVIORAL DISORDERS

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<https://doi.org/10.5281/zenodo.10581901>

### Abstract

**Purpose.** The article discusses the issues of maternal attitudes towards young children, which determine the formation of mental personality structures, and serve as a parameter for the formation of a healthy personality. An overview of approaches to the role of parental attitude in the formation of mental, physical and emotional health of a child is presented. Maternal attitude is considered as the basic mechanism of personality victimization in case of violation of maternal attachment. Attachment is considered as the primary setting, transferred by the child in the future to all social relationships, and determining the level of his cognitive, psychoemotional and psychomotor development. The role of mental deprivation in the formation of the child's primary victim vulnerability is outlined.

**Methodology.** The methodology is based on the assumption that maternal parenting styles depend on her personal characteristics, social factors, and psychological reasons for the birth of a child. The mother's actual parenting attitude will affect the disruption in the upbringing of children. An analysis of a study of 128 women with children under four years old is presented.

**Results.** Factor analysis made it possible to identify four main types of maternal attitudes towards children responsible for the specifics of the emergence of victimhood. The factorial determinants of the emergence and manifestation of different types of parental relationship have been determined.

**Conclusions.** There are consistent differences in children's behavior disorders with different styles of maternal relationships.

**Keywords:** maternal attachment, maternal attitude, victimization, young children, behavioral disorders

### Introduction

The significance of the parent-child relationship for the mental development of young children is a well-established fact. In recent times, there has been a large number of studies dedicated to this topic (Frosch, Schoppe-Sullivan, & O'Banion, 2019; Reiss, Ganiban, Leve, et al. 2023; Andronnikova, 2023). However, questions about the specificity of the mother-child relationship, the mechanisms of its formation, and its influence on the child's development still remain relevant.

The development of social relations, geopolitical processes, the impact of urbanization, female emancipation, and scientific and technological progress have led to a certain narrowing of the role of family pedagogy in child rearing. Parent-child relationships have largely come to be determined by the social environment.

The development of social relations, geopolitical relationships, the influence of urbanization, women's emancipation, and scientific and technological progress have led to a certain narrowing of the role of family pedagogy in child upbringing, and parent-child relationships have become largely determined by the social environment.

The shift in gender and ethnic values, including in terms of the mother's role in child upbringing and her attitude towards the family in general, is an important trend of modernity. As a result of the observed geopolitical, world-systemic, socio-economic processes, the priority of the role of the "mother" has shifted in favor of the role of the "successful woman". The value system of the modern woman has changed. The values of

being a homemaker and family caretaker have been replaced by the values of a successful career, education, and material well-being. Gender expectations and the content of corresponding female roles have changed. However, it is precisely maternal care, love, and attention that remain the foundation for shaping a child's personality, their psychological well-being, and psychological "health".

Reiss, Ganiban, Leve et al. (2023) note that it is the system of interactions between mother and child that plays the most influential role in their emotional, cognitive, and neurobiological well-being. This position is supported by other authors who study early childhood issues. Such keen interest is far from accidental, as it is found that the first years of life are a period of the most intensive personality development, laying the foundation for physical, mental, and moral health. The future of the child largely depends on the conditions in which these years unfold.

Researches made by many authors (Freud, 1999; Erickson, 1993; Horney, 2016; Winnicott, 2005; Bruman, Radionova 1999 etc.) speak of the criticality of the quality of care of the mother in the first weeks and months of life.

Georgiou (2008) in his research of 377 children and their mothers, notes that there is a line of influence between mother's responsiveness, overprotection, and the experience of child victimization in school. Miguel, Villodas, Bagner & Thompson (2018) in their research identified parenting patterns of mothers as a potential pathway through which symptoms of maternal depression affect a child's behavioral problems. This is in line with research by Gravener, Rogosch, Oshri et al (2012),

which found associations between behavioral problems in toddlers (average age of 20 months), childhood attachment and maternal depression. Also finds confirmation in researches of other authors (Śliwowski, Kossakowska, Jarecka, Świtalska, & Bielawska-Batorowicz, 2020; Pagani, Harandian, Necsa, & Harbec, 2023).

The general conclusion of many approaches that research the role of the mother in the child's life is the statement of the child's need for the presence and maintenance of a sense of security and confidence in its provision on the part of adults, primarily the mother. (Śliwowski, Kossakowska, Jarecka, Świtalska, & Bielawska-Batorowicz, 2020; Scheid, Miller-Graff, & Guzmán, 2020). It is ensured by the manifestation of an adult's care and demonstration to the child of his positive and emotional attitude towards him. Pagani, Harandian, Necsa, & Harbec (2023) pay special attention to how postpartum depression in mothers affects child development.

The focus of the research conducted by Russian scientists is primarily on the function of the mother in providing emotional comfort to the child, viewed through the lens of distorted mother-child interactions. According to several authors (Varga, 1986; Filippova, 2001; Andronnikova, O.O., 2023), it is precisely the deformation of parent-child relationships that becomes the source of disruption in the child's emotional and personal sphere and mental health from infancy to adolescence. This includes studies on parental attitudes, parenting styles, and various aspects of parent-child interactions.

Considering the causes and mechanisms of such influence as a central theme, the authors (Varga 1986; Koloskova 1989; Skoblo, Dubovik 1992, etc.) point out the basic attitude towards the world which is formed in early childhood (Varga [4], Koloskova[7], Skoblo[8], etc.). Sufficient attention is paid to the construct of the "inner world of a person" (Vasilyuk, 2001) or the "psychological space of personality" (Nartova-Bochaver, 2002), which include basic self-conceptions and conceptions of the world. The content of this construct is characterized by an actively trusting attitude towards the world (Koloskova, 1989) and a stable positive-emotional mood. The formation of the content of basic trust in the world relies on the subjective experience of the child, which is directly dependent on the mother's behavior. In addition to meeting the child's physiological and emotional needs, the mother's role also includes providing support for the child's active attitude towards the world. In this case, the mother perceives the child not as an object, but as a subject of emotional experiences and activities.

Filippova (2002), studying the emotional well-being of a child at different ages and its correlation with the mother's attitude and behavior, notes that it is not only manifested in a predominantly positive mood. The consequence of a mother's positive attitude toward a child is the development of a constructive style of experiencing the results of activities, successes and failures, the development of cognitive motivation and the child's activity, the ability to engage in joint activities

with adults, the attitude toward adult evaluation, the development of self-control, the style of experiencing the situation of separation from a close adult, and the experience of the family situation.

The maternal attitude is singled out as a basic parameter influencing the course of early ontogenesis, and we consider it as a determinant of the emergence of victimization in a particular environment. The characteristics of the parents (primarily the mother), as the primary "agent" of socialization, are the social component of victimization in the four-dimensional approach biological-psychological-social in cultural determination. The process of socialization of the child through the violation of maternal attachment becomes the fundamental parameter of victimogenesis. This position is supported by research by Alizadeh Maralani, Mirnasab, & Hashemi (2019), who studied in a sample of 300 elementary school students what parenting style is associated with victimization. The authors noted that the authoritarian parenting style is associated with aggressive student behavior, while the victim's children were often brought up in families with a tolerant parenting style.

Considering the phenomenon of maternal attachment, it is necessary to note its unconscious nature and structural structure, containing affective, cognitive and behavioral components (Vasilenko, 2011), the content of which is determined by the experience gained in interaction with the mother in early childhood. Vasilenko (2011) designates attachment as a primary social attitude, which is subsequently transferred by the child to all social relations. Attachment disorder leads, according to many authors (Bowlby, 2003; Bozhovich, 2001; Winnicott, 2005 and others), to the emergence of maternal deprivation and personality development disorders. The influence of maternal attachment on adolescent behavior is presented in researches Silinskas, Kiuru, Aunola, Metsäpelto, Lerkkanen, & Nurmi, (2020). The authors note that it is maternal attachment that creates the context that amplifies the influence of parental stress on adolescent behavior.

Thus, the specificity of interaction between mother and child at an early age is the basis for the emergence of victim processes. Lack of maternal attachment, its low quality, will affect the psycho-emotional, psychomotor and cognitive development of the child, determine the specifics of his self-attitude and the level of self-esteem. Violation of any of the attachment components will lead to the corresponding type of victimization and the emergence of victim behavior.

Violations of the basic mechanism of maternal attachment, according to many authors, lead to mental deprivation. So Yaroslavtseva (2014) considers the phenomenon of mental deprivation as a psychological state, manifested in immaturity and distortions of personal development and psychophysiological activity of the body, provoking social and psychological maladjustment. Considering the role of mental deprivation in the formation of different types of victimization, it is necessary to take into account the primary conditions associated with the peculiarities of the perinatal period and the presence of biological pathology. Let us designate the specificity of the impact of maternal attach-

ment on the further trajectory of the child's development, depending on the primary type: normative ontogenesis, dysontogenesis of psychological initiation, dysontogenesis of biological initiation, dysontogenesis (Andronnikova, 2019).

The initially adaptive type of development in a situation of violation of maternal attachment and the mother's demonstration of emotional coldness and rejection, depending on the level of resilience, can further maintain the trajectory of adequate social and psychological development, subject to compensation from a significant microenvironment. In the absence of devictimizing compensation, the violation of maternal attachment leads to the emergence of victimogenesis of socio-psychological initiation. The consequence of the absence of maternal attachment will be the difficulty of building emotionally close relationships, violation of personality boundaries, a pronounced tendency to the formation of dependence. The violation of maternal attachment and the chosen styles of maternal attitude will have a huge impact on the child with primary maladjustment of the biological type. In conditions of primary biological vulnerability, low maternal attachment and inappropriate styles of maternal attitudes lead to a victimizing trajectory of development, with corresponding emotional, behavioral cognitive attitudes (Andronnikova, 2023).

The decisive role in building the trajectory of individual development is played by maternal attachment and attitude to the child in the case of dysontogenesis of biological or psychological initiation. It is the maternal attitude that will determine the opportunities for devictimization and the formation of a non-victimized development strategy. However, if, in a situation of dysontogenetic development, the formation of the basic emotional mood with the corresponding cognitive parameters arising as a result of the maternal attitude is disturbed, then ontogenesis shifts to the zone of victimogenesis, with the corresponding types of socio-psychological disorders.

Thus, it is maternal attachment and the general attitude of the mother to the child, which is manifested in the strategies of maternal education in early childhood, that is the fundamental parameter of ontogenesis. An empirical research was carried out to investigate various aspects of maternal attitudes and the factors of their determination.

The hypotheses of the study are as follows:

1. The style of maternal relationship with the child is determined by the psychological and socio-economic characteristics of women, as well as by the peculiarities of their upbringing in the parental family.
2. Reliable differences in the signs of behavioral disorders in children will be observed with different styles of maternal relationship.

### **Materials and methods**

The research was conducted on a random sample of young women (128 people), aged 20 to 30, the condition was the presence of children under the age of 4 years. Children were monitored by specialists for the presence of behavioral disorders, including those of a victim nature. All participants in the study were informed about its goals and gave voluntary consent to the participate. Women have different social status (housewives, employees, workers), varying levels of material well-being (from low to high) and marital statuses (married and single mothers). We did not classify women into subgroups based on the type of child behavioral disorder.

We used such empirical methods as questioning, testing. The test material is presented in the form of techniques such as: 16 factor personality questionnaire 16PF by R. Cattell (form C); questionnaire "Measurement of parental attitudes and reactions" (PARI), authors E. Schaefer and K. Bell; the method of diagnosing parental attitudes (ORO), authors A.Ya. Varga and V.V. Stolin. The multifactorial personality questionnaire PF-16 author R. Cattell (form C) is aimed at diagnosing a person's personality traits and shows the balance between two opposing personality characteristics. The Parental Attitudes and Reactions Inventory (PARI) is designed to examine the mother's attitudes toward various aspects of family life and the family roles she represents. Reveals 23 aspects, 15 of which relate to parent-child relationships (emotional contact, emotional distance, concentration on the child), 8 describe the attitude to the family role. The method of diagnosing parental attitudes (PDA) is aimed at identifying parental attitudes towards children (3-10 years old). The questionnaire contains 61 questions and allows you to identify the type of relationship as a system of feelings towards the child.

After conducting the initial testing, a comprehensive examination was conducted to analyze the social and psychological characteristics of the women who took part in the study. Following this, a factor analysis of the gathered data was performed in order to identify specific factors associated with their upbringing. In prospect using the Kruskal - Wallis test, the difference in the presence of violations in the behavior of the children of mothers, divided into subgroups according to the method of diagnosing parental attitudes, was revealed.

### **Results**

The questionnaires were processed and the socio-economic characteristics of the women participating in the study were highlighted. The data is presented in Table 1.

Table 1

| <b>Socio-economic characteristics of women participating in the study</b> |       |
|---------------------------------------------------------------------------|-------|
| Question items in the questionnaire                                       | B %   |
| <b>Family status</b>                                                      |       |
| Married                                                                   | 57,14 |
| Single                                                                    | 16,3  |
| Civil marriage                                                            | 8,16  |
| Remarriage                                                                | 8,16  |
| Single-parent family in divorce                                           | 10,2  |
| <b>Education</b>                                                          |       |
| Higher                                                                    | 63,3  |
| Secondary - special                                                       | 22,44 |
| General only                                                              | 16,33 |
| <b>Availability of work</b>                                               |       |
| Works                                                                     | 73,5  |
| Does not work                                                             | 26,5  |
| <b>Material wealth</b>                                                    |       |
| Average                                                                   | 57,14 |
| Above average                                                             | 20,4  |
| High                                                                      | 8,16  |
| Short                                                                     | 6,12  |
| Dependence on parents                                                     | 16,3  |
| <b>Availability of housing</b>                                            |       |
| Availability of separate housing                                          | 41,22 |
| Live with parents                                                         | 38,68 |
| Renting housing                                                           | 20,1  |
| <b>Relationships with parents</b>                                         |       |
| Good                                                                      | 73,5  |
| Conflict                                                                  | 24,5  |
| <b>Having brothers and sisters</b>                                        |       |
| Have brothers or sisters                                                  | 67,34 |
| No brothers or sisters                                                    | 30,6  |
| <b>Relationships with brothers/sisters</b>                                |       |
| Good relationship with them                                               | 57,14 |
| Neutral                                                                   | 22,66 |
| Conflict                                                                  | 20,2  |

According to the table, the following "risk factors" can be identified in relation to negative attitudes towards the family role and the child: divorce (10.2%); lack of professional education (16.33%); dependency on parents (16.3%); conflicting relationships with parents (24.5%); conflicting relationships with siblings (20.2%).

Table 2 presents the psychological characteristics of the women participating in the study. The questionnaire included questions aimed at identifying planned pregnancy, reasons for its preservation, and the position of the child in the mother's value system. The questionnaire also included a question aimed at self-assessment of the type of relationship with the subject, when she was a child in her parental family from her mother's perspective.

Table 2

**Psychological characteristics of women participating in the study**

| Question items in the questionnaire                           | Sample in % |
|---------------------------------------------------------------|-------------|
| Attitude towards motherhood                                   |             |
| The gender of the child is the same as expected               |             |
| Yes                                                           | 77,5        |
| No                                                            | 22,44       |
| Was the pregnancy planned?                                    |             |
| Planned                                                       | 30,6        |
| Unexpected                                                    | 32,65       |
| Something in between                                          | 36,7        |
| Motives for maintaining pregnancy                             |             |
| child from a loved one                                        | 59,2        |
| for the sake of the child                                     | 57,14       |
| maintaining relationships                                     | 30,6        |
| meeting social expectations                                   | 8,16        |
| maintaining one's own health                                  | 48,9        |
| receiving material reward                                     | 2,04        |
| acquiring mother status                                       | 34,7        |
| as a protest                                                  | 10,2        |
| abandonment of the past                                       | 14,3        |
| Parenting style of the subjects' parents (by self-assessment) |             |
| Authoritarian                                                 | 30,6        |
| Democratic                                                    | 40,8        |
| Conniving                                                     | 28,6        |
| Guardian                                                      | 8,2         |
| The child's place in the value system                         |             |
| First                                                         | 55,1        |
| Second                                                        | 22,44       |
| Below                                                         | 22,44       |

According to the results of the Parental Relationship Assessment (ORO) methodology, prevailing parenting strategies were identified (Table 3). The categorization into a specific parenting type was based on the expression of scale indicators in the methodology: according to the leading scale. The transition from the

ORO methodology scales to the adopted classification was necessary to align the parenting style that the participants identified as their parents' strategy towards them with the one they themselves implement towards their child.

Table 3

**Predominant maternal strategies**

| Parenting style/<br>maternal attitude | Methodology scales, parental attitude questionnaire,<br>OPO | Entire sample in<br>% |
|---------------------------------------|-------------------------------------------------------------|-----------------------|
| Democratic                            | Cooperation                                                 | 25,1                  |
| Authoritarian *                       | Control                                                     | 25,0                  |
| Permissive *                          | Control                                                     | 39,8                  |
| Guardian                              | Symbiosis                                                   | 10,1                  |

\* this style was determined based on the Cooperation scale and the degree of expression of the leading behavioral type.

Further, based on the obtained diagnostic results, a factor analysis was conducted. The four factors obtained, corresponding to the types of maternal relationship, allowed for the identification of the specificity of personal characteristics, socio-demographic, and psychological factors that determine the type of relationship with the child. Comparing the behavioral characteristics of children with mothers of the identified types of relationship helped achieve the set objectives and test hypotheses.

**The discussion**

The factor analysis of various parameters of the parental attitude of women made it possible to single out four main factors with the corresponding type of

upbringing, which reveal the specifics of the determination of the emergence of the type of parental attitude and the peculiarities of its manifestation.

Firstly, it is a set of parameters associated with authoritarianism in the relationship between parents and children (25% of the entire sample). Considering the factorial weight of various parameters, the following aspects can be distinguished as significant:

The authoritarian type of parenting attitude will be characterized by such parameters as a high level of emotional distance with the child (0.844), lack of optimal emotional contact (-0.576), and a low level of concentration on the child's needs (-0.588). Much attention in such a family is paid to the organization of life and household needs (0.65), the emotional and other needs

of the child are often ignored (0.796). Significant characteristics of the parental sphere of such mothers are the underdevelopment of parental feelings (0.757), the projection of their own undesirable qualities onto the child (0.764) and the introduction of conflict between spouses into the sphere of upbringing (0.63). This means that there is an emotional rejection of the child in the family (0.836), based on the projection of his own undesirable qualities onto the child, increased moral normativity and excessive demands (0.64), implemented through a system of severe sanctions (0.639), up to cruel treatment (0.725). Poor development of parental feelings correlates with a high level of rejection of the parent himself in childhood (0.56). The parameter of introducing conflicts between spouses into the sphere of upbringing will be manifested in the form of a difference in parental messages caused by competition with each other and the need to express dissatisfaction through seemingly acceptable ways of "caring for the child". In addition, this parameter is associated with the instability of the upbringing style (0.719), manifested in the inconsistency of sanctions for the child's behavioral manifestations, his infantilization and a decrease in initiative (0.717). Characteristic features of mothers with an authoritarian style of upbringing are also avoidance of communication with the child (0.538), especially if the child is dissatisfied with something, intimidation of him with the terrible consequences of his actions (0.614) with the actualization of the state of expectation of punishment, which leads to the development of anxious and suspicious character traits of the child, inability to partner interaction (0.629). In addition, such mothers perceive their family role and the need to be with the child on maternity leave as "martyrdom" (0.584), which is often compensated for by high irritability (0.816) and severity in educational influences (0.575).

The socio-economic characteristics of women adhering to an authoritarian style of upbringing were: the presence of a permanent job, average income, the absence of their own housing, the presence of marital conflicts (0.671). The attitude towards motherhood is associated with the predominance of negative motives for maintaining pregnancy, which is not planned. The following psychological characteristics of mothers with an authoritarian type of upbringing are reliably significant: the emotionally volitional sphere is characterized by a tendency towards inconsistency of goals, difficulties in fulfilling socio-cultural requirements, and high freedom from the influence of group norms (0.644). The emotional sphere is more often saturated, there is expansiveness, a tendency to emotional leadership, impulsivity in interaction (0.679). In addition, the expressed success in establishing and maintaining interpersonal relationships (0.676), entrepreneurial spirit, decisiveness, the ability to not notice difficulties or actively overcome them (0.52).

The group adhering to the democratic style of education consists of 32 people from the total number of participants in the research (25%). According to the data of mathematical analysis, it turned out that women of this group are divided into several types, differing in some parameters that are significant in determining the

specificity of the influence on the child, but there are general patterns that determine the formation of the style of educational influences.

Women with democratic parenting styles are characterized by a high level of harmony in intermarital relations associated with the ability to provide emotional and moral support to each other (0.522). Such couples are characterized by the ability to create a system that allows both partners to develop, while achieving inner comfort and emotional stability of the family. The attitude towards a child in women with a democratic style of upbringing is characterized by optimal emotional contact (0.686), including the ability to build partnerships with a child (0.632), attentiveness to his needs (0.503), stimulating their verbalization (0.587), encouraging children's activity (0.698). The parameter of the desire of such mothers to accelerate the development of the child (0.561) is somewhat ambiguous, which, however, can be explained by the existing fashion for accelerated development.

The psychological characteristics of women in this group include: a high level of sociability, good nature and ease of communication (0.644), the ability to emotional expression; gullibility, which includes tolerance, agreeableness, the ability to care for others and work in a group (0.535); high speed of solving practical problems while focusing on external reality and the ability to maintain a presence of mind in stressful situations (0.503); low anxiety, high level of internal calm (0.529).

The factorial determination of the overprotective (10% of the total sample) style of upbringing is associated with such parameters as: excessive concentration on the child (0.634), expressed in excessive care for him and the creation of the safest possible situation, leading to the formation of dependence relationships. Based on the results of the analysis of the factors, several different components were identified that make up the choice of this strategy: a pronounced phobia of the loss of a child (0.973), his emotional acceptance (0.964), high anxiety (0.927), minimal sanctions against a child (0.869), possibly due to fear of harming him (0.706), suppression of the child's activity (0.924), including the aggressive plan (0.739), the desire to reduce the speed of the child's development (0.881), infantilize him (0.836), while ignoring his needs (0.695). Overcoming the child's resistance and excessive interference in his world can lead to serious psycho-emotional difficulties. The factor of preference for children's qualities in a child (0.565) is a significant factor, which often leads to the development of mental infantilism.

The parental position of such a mother is characterized by the instability of the parenting style (0.960), educational uncertainty (0.719), the limited perception of oneself as a mother (0.869), and the introduction of marital conflicts into education (0.680).

Among the characteristics of the mother, there is a rich imagination (0.934), introversion (0.812), emotional coldness (0.745), fearfulness (0.741), tension (0.627), a tendency to feel guilty (0.656), with high initiative (0.875), discipline (0.601) and ambition (0.791). The child's opinion is not taken into account by

such a mother (0.678), excessive care is observed (0.606) in the absence of adequate requirements for him (0.654). Thus, a reliably expressed psychological property of such a mother is high anxiety, possibly due to personal life circumstances.

Separately, I would like to designate the type of women with a permissive strategy of maternal education, the manifestation of which is combined with high authoritarianism (40% of the sample). The manifestation of this strategy of education is expressed in the following parameters: hypoprotection (0.831); excessive demands on the child (0.733); symbiosis (-0.73); ignoring the needs of the child (0.654); no phobia of loss of a child (0.653); parental obsession, interference with the child's world (-0.652); emotional acceptance of the child (0.597); inability to cooperate (0.590); underdevelopment of parental feelings (0.605); self-confidence, assertiveness (0.557); infantilization of a child (0.541); minimum sanctions (0.516).

Factor analysis made it possible to single out a number of parameters that serve as determinants of the formation of this educational strategy. The psychological characteristics of the mother: independence, sharpness, initiative (0.792); refinement, ambition (0.789); independence, rigidity, practicality (0.608); internal tension, impatience (0.598); willingness to cooperate, sociability (0.578); independence, independence in views (0.540). This is an active type of women, aimed at social interaction and career, with clear leadership inclinations. For such women, motherhood is not a priority and is often regarded as an unpleasant but necessary stage in life.

The socio-economic characteristics of women in this group include a high material status (0.689) and the presence of separate housing (0.593). The main staff are women with higher and secondary specialized education, employed in work, with a good financial situation and good relations with relatives. The leading style of upbringing in the parental family is guardian (0.570), with pronounced characteristics of the second strategy (democratic or authoritarian) and pronounced dominance of the mother (0.533).

The attitude towards motherhood in this group is complicated by the predominance of negative motives for maintaining pregnancy, which is often accidental. For women, the sex of the child is important. The favorite pastimes of these women in childhood are outdoor games or helping adults, loneliness.

Considering the factor content that determines the type of education, it is necessary to group the main parameters into clusters. As a result, the characteristic manifestations were: the presence of the mother's guardian style of upbringing in the parental family, which probably causes a fairly high level of egocentrism, leading to detachment from her own child, with a complex of requirements for independence from the child and from herself. However, at the same time, there is a high willingness to provide the necessary assistance, if the child is able to ask for it. This suggests that this group of mothers may have impaired perception of a small child and there is an expectation of an adult position from him. Negative motives for main-

taining pregnancy, underdevelopment of parental feelings, preference as children's games of activities not related to the formation of maternal behavior, gives us reason to assume a violation of the gestalt of motherhood.

Subsequently, we compared the presence of signs of behavioral disorders in children, dividing mothers into groups according to the leading type of upbringing (Kruskal-Wallis criterion). Significant differences in signs of aggressive behavior of children were observed between the groups of overprotective parenting style and authoritarian ( $p \leq 0.05$ ), permissive ( $p \leq 0.05$ ) parenting styles. According to the parameter of signs of victim behavior in children, a significant difference is observed between the groups of the hyper-protective style of parental attitude (the highest indicator) and the groups of authoritarian ( $p \leq 0.05$ ), democratic ( $p \leq 0.05$ ) styles of upbringing.

### Conclusion

An analysis of the regularities of the relationship between the style of upbringing of young children and the strategy of upbringing in the parental family allows us to make an assumption that undoubtedly needs additional research. There is a general tendency to change the style of parenting: the permissive strategy of maternal upbringing, which is characteristic of young women from foster families who are inclined towards a career and expect non-childish behavior from a child, comes to the fore. Emotional coldness and disinterest in psycho-emotional contact with a child can cause corresponding problems in him (various violations of the victim plan, differentiating in accordance with the leading emotional-interpersonal disorders with corresponding behavioral tendencies: a feeling of loneliness, uselessness, abandonment, a tendency to addictions, auto-aggression), leading to mental health problems. The democratic style considered to be adequate is represented in 25% of the sample and is directly related to the parameters of well-being in a married couple and the psychological maturity of the woman herself, which causes serious concern in light of modern trends towards infantilism and the collapse of the family institution. Also, 25% of the subjects demonstrated the authoritarian style of parenting, which is more characteristic of young mothers who have a low level of parental feelings, emotional coldness and a high level of irritation towards the child. Attempts to integrate a small child into their world, without taking into account his needs, leads to his depersonalization and, in the future, the ease of applying various sanctions to him, including cruel treatment. Such a mother's upbringing strategy leads to the emergence of aggressive or passive victim deformations, leading to impaired social functioning and psychological health. Thus, only 25% of children from the studied sample have a chance, within the framework of early education, to receive adequate conditions for the formation of a non-victim type of personality with appropriate interpersonal and personal competencies.

### Conflict of interests

The authors declare no conflict of interest.

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# PHILOSOPHICAL SCIENCES

## SITUATING DECONSTRUCTIONISM AND RECONSTRUCTIONISM IN AFRICA: TOWARDS A SYNERGY OF UNDERSTANDING

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<https://doi.org/10.5281/zenodo.10581906>

### Abstract

The idea of African philosophy has been debated by both African and non-African orientations as an impossible academic enterprise and the debate seem to favour the Afrocentric scholars.<sup>1</sup> Although, the effort is aimed at proving the existence of African Philosophy and whether it has achieved its desired objectives. However, the problem that contemporary African philosophers grapples with inter alia, borders on the question of methods and critical approaches to doing an authentic African Philosophy. This expectedly has led to the polemics oscillating among excavationist, deconstructionist, reconstructionist, and conversationist approaches. A critical probe on the basic thesis and nature of these approaches reveals that they maintain divergent dispositions toward each other. This of course, constitutes retardation to the general quest to establishing authenticity significant to African Philosophy and culture one that is relevant in contemporary era of science and technology. This paper comparatively engages deconstructionist and reconstructionist as critical approaches fundamentally aims at seeking a synergy between these two apparently opposing orientations. The work argues that, owing to the peculiarity of cultures and the universality in the nature of man, there cannot be entirely cultural peculiarity or universality in Philosophy. Therefore, given the African experience, Africa Philosophy should be situated consciously in a synthesis between the particularists and the universalists views.

**Keywords:** Deconstructionist, Reconstructionist, Particularist, Universalist, African Philosophy, and, Synergy

### Introduction

It is germane to state that what we today call African philosophy is the brainchild of historical necessity. The infamous historical experiences of slavery, colonialism and racism in the African continent inadvertently led African scholars to activate their intellectual prowess in self-retrospection, in search of identity, self-assertion and affirmation. The fact is rightly described by Kwasi Wiredu thus “These ugly episodes of slavery, colonialism and racialism not only shaped the world’s perception of Africa; they also instigated a form of intellectual revolt from the African intelligentsias. The frustration with the colonial order eventually led to angry questions and reactions out of which African philosophy emerged, first in the form of nationalisms and then in the form ideological theorizations. But the frustration was borne out of colonial caricature of Africa as culturally naïve, intellectually docile and rationally inept”.<sup>2</sup> In other words, “A principal driving force in post-colonial African philosophy has been the quest for self-definition”<sup>3</sup> and to remedy the already battered African self-concept and image. It could be argued that while the pre-colonial African philosophy began with wonder and curiosity, the postcolonial philosophy was inspired by frustration which was the necessary implication of

the prejudicial representation of Africans by the west. Moreover, the contemporary African philosophy like any other philosophies subtly inspired by factors curiosity and frustration but most fundamentally is propelled by the question of relevance and the expediency for African philosophy to cope with western imperialists and hegemony in the guise of globalization. Wiredu further opine that:

This search is part of a general postcolonial soul-searching in Africa. Because the colonialists and related personnel perceived African culture as inferior in at least some important respects, colonialism included a systematic program of de-Africanization. The most unmistakable example, perhaps, of this pattern of activity was in the sphere of religion, where mighty efforts were made by the missionaries to save African souls perceived to be caught up in the darkness of “paganism.” But, at least, it did seem to them that Africans had something somewhat similar to religion, and some of them actually wrote books on African religion and even, in some cases, mentioned that subject in their university teaching.<sup>4</sup>

Besides, the three historical antecedence mentioned earlier, some African scholars were inadvertently influenced by even the disparaging ostentatious

<sup>1</sup> Valentine Ehiachioya Obinyan, The Rubrics of African Philosophy [http://www.academia.edu/31569578/THE\\_RUBRIC\\_OF\\_AFRICAN\\_PHILOSOPHY](http://www.academia.edu/31569578/THE_RUBRIC_OF_AFRICAN_PHILOSOPHY) Retrieved 2017.

<sup>2</sup> Kwasi Wiredu, Introduction: African Philosophy, in Kwasi Wiredu ed. “Our Time, in A Companion to African Philosophy”, Oxford: Blackwell Publishing Ltd, 2004, p. 1

<sup>3</sup> Ibid.

<sup>4</sup> Ibid.

dispositions of Western scholars who denied Africans the capacity of rigorous and analytic thoughts system. The polemic became precarious owing to the fact that man as a rational being is by his rationality endowed with the potentials for critical thoughts and articulation. Hence, one can safely describe this western intention as intellectual conspiracy. Enumerating some of the infamous western scholars involved in this despicable intellectual caricature. According to Jonathan Chimakonam :

This caricature was created by European scholars such as Kant, Hegel and, much later, Levy-Bruhl to name just a few. It was the reaction to this caricature that led some African scholars returning from the West into the type of philosophizing one may describe as systematic beginning with the identity of the African people, their place in history, and their contributions to civilization. To dethrone the colonially-built episteme became a ready attraction for African scholars' vexed frustrations. Thus began the history of systematic African philosophy with the likes of Aime Cisaire, Leopold Senghor, Kwame Nkrumah, Julius Nyerere, William Abraham, John Mbiti and expatriates such as Placid Tempels, Janheinz Jahn and George James, to name a few.<sup>5</sup>

Consequent upon these formidable historical antecedence, African have undertaken the herculean task to establish African philosophy. They have individually and collectively articulated worldviews saturated with indisputable layers of sagacity contrary to the western perception, caricature and intellectual conspiracies. As a result, Chimakonam sees African philosophy thus:

The development of African philosophy through the periods yields two vital conceptions for African philosophy, namely that African philosophy is a critical engagement of tradition and individual thinkers on one hand, and on the other hand it is also a critical construction of futurity. When individual African philosophers engage tradition critically in order to ascertain its logical coherency and universal validity, they are doing African philosophy. And when they employ the tools of logic in doing this, they are doing African philosophy. On the second conception, when African philosophers engage in critical conversations with one another and in construction of new thoughts in matters that concern Africa but which are nonetheless universal and projected from African native thought systems, they are doing African philosophy. So, the authentic African philosophy is not just a future project, it can also continue from the past.<sup>6</sup>

However, despite the appreciable feat in recent times in the development of African philosophy, many questions are still begging for answers in the areas of methodological approach and whether African Philosophy are not critical in outlook except when it is veered towards westernization. Given the universal feature of Philosophy, are Africans and her scholars immune to this universal character since sometimes philosophical

enterprise strives from particular lived experience before they are universalized. It is for this reason Chimakonam continue to harp on dialogical approach when he says "must African philosophy be tailored to the pattern of Western Philosophy, even in less definitive issues? If African Philosophy is found to be different in approach from Western Philosophy, so what? Are logical issues likely to play any major roles in the structure and future of African Philosophy? What is the future direction of African philosophy? Is the problem of the language of African Philosophy pregnant? Would conversations in contemporary African Philosophy totally eschew perverse dialogue? What shall be the rules of engagement in African philosophy?" These questions are likely to shape the next lines of thought in African philosophy.<sup>7</sup>

In an attempt to resolve the above questions, African philosophers have been involved in polemics which have eventually given rise to few critical approaches to the study of African philosophy. These approaches include; excavationism, Afro-Constructionism/Afro-Deconstructionism, Critical Reconstructionism/Afro-Eclecticism and Conversationalism. The work examines the deconstructionist and reconstructionist approaches in order to investigate how possible it is to marry these two critical approaches in order to improve African situation. Generally, "the re-constructionists have the belief that there is an ultimate truth out there and if we look in the archives we will discover it. Whereas, the deconstructionists believe that ultimate truth does not exist; it can never be obtainable no matter how many sources one looks at because each source has an inherent human bias in its sheer existence".<sup>8</sup> The thrust of this argument is to interrogate the deconstructionist and reconstructionist approaches towards creating a synergy between these two critical perspectives, however, to understand these approaches there is the compelling need to first of all present the excavationist approach.

### **The Excavationist Approach**

The Excavationists seek to advance the cause of African philosophy by systematizing the African cultural world-views. Some of them aimed at retrieving and reconstructing presumably lost African identity from the raw materials of African culture, while others sought to develop compatible political ideologies for Africa from the native political systems of African peoples.<sup>9</sup> Members of this movement have all been grouped under the school known as ethnophilosophy, and they thrived in the early period of African philosophy. Their concern was to build and demonstrate unique African identity in various forms. A few of them include Placid Tempels, Julius Nyerere, John Mbiti, Alexis Kagame, Leopold Senghor, Kwame Nkrumah and Aime Cesaire.<sup>10</sup>

The general nature of the excavationists or ethnophilosophers is the notion of going back to the basis to exhume ossified African values, folklores, sagacious ideals and other elements of African antiquity and immaterial culture that epitomizes African wisdom and

<sup>5</sup> Jonathan O. Chimakonam, History of African Philosophy in Internet Encyclopedia of Philosophy <http://www.iep.utm.edu/afri-hi/>

<sup>6</sup> Ibid.

<sup>7</sup> Ibid.

<sup>8</sup> Shannon Nutt, p. 1.

<sup>9</sup> Chimakonam, p. 4

<sup>10</sup> Ibid, p.5.

critical perception of reality. Their general philosophy resides with the belief that an authentic African philosophy is that devoid of any form of infiltration of any form of western ideals, concepts and paradigm. In this way, the excavationists' critical perception holds that African identity is unique and therefore an authentic African Philosophy must be one that is culturally rooted.

### **Afro-Constructionism/Afro-Deconstructionism**

The concept, "deconstructionism", was developed by French philosopher Jacques Derrida, has been applied to religion by various thinkers. Derrida has provided many definitions of deconstruction. But three definitions are classical. The *first* is early, being found in the 1971 interview "Positions" and in the 1972 Preface to *Dissemination*: deconstruction consists in "two phases".<sup>11</sup> At this stage of his career Derrida famously (or infamously) speaks of "metaphysics" as if the Western philosophical tradition was monolithic and homogeneous. At times he also speaks of "Platonism," as Nietzsche did. Simply, deconstruction is a criticism of Platonism, which is defined by the belief that existence is structured in terms of oppositions (separate substances or forms) and that the oppositions are hierarchical, with one side of the opposition being more valuable than the other. The *first phase* of deconstruction attacks this belief by *reversing* the Platonistic hierarchies: the hierarchies between the invisible or intelligible and the visible or sensible; between essence and appearance; between the soul and body; between living memory and rote memory; between *mnēmē* and *hypomnēsis*; between voice and writing; between finally good and evil.<sup>12</sup>

This concept developed by Derrida was adopted by some African philosophers in an attempt to disparage the excavationists approach to the study of African philosophy. The Afro-deconstructionists sometimes called the Modernists or the Universalists are those who sought to demonstrate a kind of non-alliance with the excavationist on the ground that their raw materials as embedded in culture are substandard cultural paraphernalia. They are opposed to the idea of unique African identity or culturally-bounded philosophy to a philosophy that will integrate African identity with the identity of all other races.<sup>13</sup> Perhaps, the basic foundation of the deconstructionist approach is Africans share in the essence of humanity as does other races, therefore, an authentic African philosophy should reflect the universality of human essence and identity. In other words, even while African philosophy must reflect the unique cultural perspective of Africa, it should nevertheless incorporate what Africans share in commonality with other races.

Some members of this orientation include Paulin Hountondji, Kwasi Wiredu, Peter Bodunrin, Macien Towa, Fabien Eboussi Boulaga, Richard Wright and Henri Maurier. Their opponents are the Afro-constructionists, sometimes called the Traditionalists or Particularists who sought to add rigor and promote the works

of the Excavators as true African philosophy. Some prominent actors in this movement include Innocent Onyewuenyi, Henry Olela, Lansana Keita, C. S. Momoh, Joseph Omoregbe, Janheinz Jahn, George James, Sophie Oluwale and, in some ways, Kwame Gyekye. Members of this twin-movement have variously been grouped under ethnophilosophy, philosophic sagacity, professional, hermeneutical and literary schools and they thrived in the middle period of African philosophy. This is also known as the period of the Great Debate.<sup>14</sup>

### **Reconstructionism/ Afro-Eclectics**

A few Afro-deconstructionists of the middle period evolved into Critical Reconstructionists hoping to reconstruct from the scratch an authentic African philosophy that would be critical, individualistic and universal. They hold that the edifice of ethnophilosophy, which they had demolished in the middle period, contained no critical rigor. Some of the members of this movement include, Kwasi Wiredu, Olusegun Oladipo, V. Y. Mudimbe, D. A. Masolo, Odera Oruka and, in some ways, Barry Hallen and J. O. Sodipo. Their opponents are the Afro-Eclectics who evolved from Afro-constructionism of the middle period. Unable to sustain this advocacy about the structure of ethno-philosophy they had argued, accounts, saying "Maybe we can combine meaningfully, some of the non-conflicting concerns of the Traditionalists and the Modernists."<sup>15</sup> According to Chimakonam the basic thesis of the Afro-eclectic school can be summed from three different outlooks, first, African traditional Philosophy is not rigorous enough as claimed by the Modernists then, that deconstructionist program of the Modernists did not offer and is incapable of offering an alternative episteme is also a fact; and lastly maybe the rigor of the Modernists can be applied on the usable and relevant elements produced by the Traditionalists to produce the much elusive, authentic African philosophy.<sup>16</sup>

### **The Imperative for a Synergy**

African Philosophy for these scholars becomes a reflection of the outcome of synthesis resulting in the application of tools of critical reasoning on the relevant traditions of African life-world. This proponents played a vital reconciliatory role, the importance of which was not fully realized in African philosophy. Most importantly, they found a way out and laid the foundation for the emergence of Conversationalism. Members of this twin-movement thrived in the later period of African philosophy. Chimakonam is of the opinion that:

Beyond this modest line, no other reconstructionist crusader of the time actually went beyond deconstruction and problem identification. Almost spontaneously, Afro-reconstructionism evolved into Afro-eclecticism in the early 1990's when the emerging Critical Reconstructionism ran into a brick wall of inactivity. The argument seems to say, "If it is not philosophically permissible to employ alternative logic different from the one in the West or methods, perhaps we can make do with the merger of the approaches we have identified in African philosophy following the deconstructions."

<sup>11</sup> Positions, pp. 41-42, Dissemination, pp.4-6

<sup>12</sup> Leonard Lawlor, <https://plato.stanford.edu/entries/derrida/>

<sup>13</sup> Chimakonam, p. 6.

<sup>14</sup> Ibid.

<sup>15</sup> ibid

<sup>16</sup> Ibid.

These approaches are the various schools of thought from ethnophilosophy, philosophic sagacity, ideological school, universal, literary to hermeneutic schools which were deconstructed into two broad approaches namely: The traditionalist school and the modernist school also called the particularist and the universalist schools.<sup>17</sup>

The Eclectics are those who think that the effective integration or complementation of the African native system and the Western system could produce a viable synthesis that is first African and then modern.<sup>18</sup> A. Uduigwomen, could be regarded as the founder of this school in African philosophy. In his 1995 work *"Philosophy and the Place of African Philosophy,"* he gave official birth to the Afro-eclecticism. Identifying the Traditionalist and Modernist schools as the Particularist and Universalist schools, he created the eclectic school by carefully unifying their goals from the ruins of the deconstructed past.

Uduigwomen states that, the eclectic school holds that an intellectual romance between the Universalist conception and the Particularist conception will give rise to an authentic African philosophy. The Universalist approach will provide the necessary analytic and conceptual framework for the Particularist school. Since, according to Uduigwomen, this framework cannot thrive in a vacuum, the Particularist approach will in turn supply the raw materials or indigenous data needed by the Universalist approach. From the submission of Uduigwomen above, one easily detects that Eclecticism for him entails employing western categories in analyzing African cultural paraphernalia. If this is what he implies, I do not totally agree with him, western logic or methodological approach cannot be the paradigm for an authentic African philosophy. Calling for cross-breeding of ideas should not imply jettisoning African logical method of reasoning and analysis in place of western thought system

However, Afro-Eclecticism is not without its inherent problems. The first problem though, is that it does not supply the yardstick for determining what is to be admitted and what must be left out of the corpus of African tradition. Everything cannot meet the standard of genuine philosophy, nor should the philosophical selection be arbitrary. Hountondji, a chronic critic of traditional efforts once called Tempels' Bantu philosophy a sham. For him, it was not African or Bantu philosophy but Tempels' Philosophy with African colouration. This could be extended to the vision of Afro-eclecticism. On the contrary, it could be argued that if Hountondji agrees that the synthesis contains as little as African paraphernalia, then it is something new and in this respect can claim the tag of African philosophy. However, it leaves to be proven how philosophical that little African paraphernalia is. Hence, this lacuna in Afro-Eclectics of not stating what aspects or material from the African tradition and materials from western philosophy to be fused would be taken care of by the hermeneutics who suggested that the ossified (archaic

and unproductive) African cultural philosophies must be discarded; while the pragmatic elements of African past would be fused with only elements of western thought that are relevant to the general African interest.

### **Towards a Synergy**

Without disputing the fact that every philosophy is a cultural philosophy and that the philosophy of a people essentially reflects their unique historical experience, perspective on reality and their outlook on the world generally in the context of their cultural periscope; yet scholars must not lose sight of the basic fact that irrespective of the cultural peculiarity and unique experiences of peoples, yet all men from across the globe are united in their unique experience and ontological statues of humanity. Hence, African philosophy like the philosophies of other cultures of the world must reflect this universality of philosophy. Implicit in this assertion is the fact that authentic African Philosophy must have a unique African value and tradition as well as embodying aspects of the universal culture of man especially as typified in the globalized world. Yet, even while responding to the globalized nature of the world, African philosophy as a matter of expediency must not be wary of the fundamental demand for originality, creativity, innovation, peer-criticism and cross-pollination of ideas in prescribing and evaluating their ideas. This is a fundamental demand curiously at the fulcrum of a synergy between the deconstructionist and reconstructionist tensions. This is clearly articulated by V. Obinyan thus:

It should be borne in mind that African philosophy is a deep reflection on the African episteme, experience, his/her personality and the world. Hence, its interest to seek relevant solution to the problem in today's world. But this cannot be if the African do not understanding the rubrics of his/her philosophy. However, the African must understand that he/she is always in a world that is fast globalizing. The African must open his/her mind to the fact that in this process, there is a constant interaction of cultures and this interaction will open him/her to even more problem regarding his/her personality world-view and existence or continuity. Therefore, bearing in mind the essence or objective of his/her value system, the beauty of his/her history and the validity of his her world-view, the African have a veritable tool for a complimentary existence in the contemporary world and with the rubrics of African philosophy, the African can do African philosophy with the singular objective of contributing meaningfully to human and infrastructural development of himself/herself and the world.<sup>19</sup>

Sequel to this, one may propose a dialogue between the conversionists and hermeneutical methods encapsulating a formidable synergy between deconstructionism which rejects cultural Philosophy as against purely universal tenets and the reconstructionist which on the other hand proposes jettisoning the thesis of the deconstructionist orientation hence a proposal for a Philosophy that is entirely laden in universal ideals.

<sup>17</sup> Ibid.

<sup>18</sup> Ibid.

<sup>19</sup> Valentine Ehiechioya Obinyan, The Rubrics of African Philosophy [http://www.acedemia.edu/31569578/THE\\_RUBRIC\\_OF\\_AFRICAN\\_PHILOSOPHY](http://www.acedemia.edu/31569578/THE_RUBRIC_OF_AFRICAN_PHILOSOPHY) Retrieved 2017.

The fusion as canvased by the eclectic scholars can best be achieved through the hermeneutical approach. Before going further to the attempt towards establishing a synergy, we wish to state without mincing words that, there cannot be a purely universal philosophy, devoid of local contents. As a result, the interconnectedness of the conversationist and hermeneutical approaches lies not only in the synergy between the deconstructionist and reconstructionist, but also in an authentic African Philosophy, an African philosophy that is relevant to the philosophic needs of the contemporary man. And the needs of the contemporary man, whether as an African or a man anywhere in the world is not just about episteme or attaining true wisdom about reality, rather it includes the necessary advancement in science and technology and improved global peace and cooperation amongst all peoples.

The Conversationalists are those who seek to create an enduring corpus in African philosophy by engaging elements of tradition and individual thinkers in critical conversations. They emphasize originality, creativity, innovation, peer-criticism and cross-pollination of ideas in prescribing and evaluating their own ideas. They hold that new episteme in African philosophy can only be created by individual African philosophers who make use of the "usable past" and the depth of individual originality in finding solutions to contemporary demands. They do not lay emphasis on analysis alone but also on critical rigor and what is now called "arumaristics", a creative reshuffling of thesis and anti-thesis that spins out new concepts and thoughts. Members of this movement thrive in this contemporary period and their school can be called the conversational school. Some of the philosophers that have demonstrated this trait include Pantaleon Iroegbu, Innocent Asouzu, Bruce Janz, Jonathan Chimakonam, Ada Agada, Jennifer Lisa Vest, and so forth.

In examining hermeneutical approach, Philosophy takes lived experience as its starting point, and the lived experience of most Africans revolves around a struggle to cope with the omnipresent effect of cultural and economic imperialism of Europe. As a result, the principal objective for African philosophy for hermeneutists should be how to achieve liberation from injuries imposed by European hegemony. In his book, "The Hermeneutics of African Philosophy" Tsenay Serequeberhan makes use of the work of Hans Gadamer and Martin Heidegger to approach African philosophy with a point of view of what he considered to be the central dilemma of postcolonial situation. This aids at resolving the tension between the continuing hegemony of Europe in the guise of its neo-colonial puppets and the continuing influence of pre-colonial traditions, especially on the rural masses. Serequeberhan's aim is to provide a means whereby African can be reasserted as the subjects rather than the mere objects in the historical transformation of human kind.

Serequeberhan posits that both ethno-philosophers and western trained professional philosophers have imposed on Africa paradigms that have their primary origin in European social development. According to him, both portray European vision of Africa. Specifically, he views ethno-philosophers such as Senghor and Tempels as merely appreciating the taxonomy of racial differences developed by Europe, and constructing as positive the same characteristics devised by Europeans as evidence of African's inferiority<sup>20</sup>. I seem to agree with Serequeberhan on this point; as I have already shown above. Furthermore, Claude Wauthier, affirmed the above position, "modern African thought in both imaginative ideological manifestation, has been largely conditioned by the violent historical encounter of Africa with the west. Western imperialism justified its incursion into Africa by devaluation of the black race. This ideological devaluation of the black race ascribed an inferior quality to African culture as well as promoted the idea that African people manifested a child-like or pre-logical mentality"<sup>21</sup>. As for professional philosophers, Serequeberhan's attitude was equally disparaging, he accused the likes of Nkrumah and Hountondji as merely replacing the capitalist yoke with a communist one as Serequeberhan maintain, it is a form of colonialism in the guise of theory<sup>22</sup>.

As an antidote to this globalization of European civilization, he recommends the works of liberationists like, Aime Csaire, Franz Fanon and Emile Cabral, who argue that European's violent conquest of Africa is to be opposed by an equally violent expulsion<sup>23</sup>. Now, concerning how is work is relevant towards creating a synergy between deconstructionism and reconstructionism, Serequeberhan proposed that in the noble task of exhuming the neo-colonial remnant of European domination, westernized urban Africans must fuse their talents and concerns with the neo-westernized masses of rural Africa. In the fusion of these two fractured worlds, Serequeberhan writes, the possibility of African freedom is concretised.<sup>24</sup> It is in this return to the source where urbanized Africans put their knowledge to the service of the rural masses, that Serequeberhan locates the key to true African liberation. In this fusion, both the ossified tradition of the past and the imposed tradition of the colonizer are transformed, and the modern Africa emerges as a new hybrid capable of acting rather than being merely acted upon.

Of course, this return to the source, (going back to critically access our traditional African philosophy bequeathed to us by our forebears) which I consider to be a fundamental key to the discovery of a true African identity, is not the uncritical and romantic adoption of traditional beliefs and practices for their intrinsic values, rather both the weaknesses and strengths of traditional African philosophy is exposed to critical review and the stunted potential of afro-cultural development is released. Also, materials from western philosophy

<sup>20</sup> Serequeberhan, T., 1994, *The Hermeneutics of African Philosophy: Horizon and Discourse*, New York: Routledge. p 362

<sup>21</sup> Claude Wauthier, *The Literature, and Thought of Modern African Thought*, London: HEB, 1978, P. 184

<sup>22</sup> Serequeberhan, quoted in Chukwu Julius, *Issues in African Philosophy*, London: Oxford University Press, 1985, p. 346.

<sup>23</sup> Serequeberhan, T. *The Hermeneutics of African Philosophy: Horizon and Discourse*, New York: Routledge. 1994

<sup>24</sup> Ibid, 353

whether in the form of ideas or methods are also scrutinized. Subsequently, whatever passes this stringent scrutiny is fused with what has been adjudged pragmatic in African traditional philosophy to give rise to an authentic African philosophy that has both the particular and universal nature. Particular in the sense that it possesses original elements of African culture; and universal because it reflects the universal nature of humanity, especially in a globalized world.

### Conclusion

The work examined the deconstructionist and reconstructionist critical arguments on the assessment of African philosophy. It crystallized the fact that the extreme positions taken by these two orientations are detrimental to achieving authentic African philosophy if not reconciled. This understanding is against the basic fact that given the peculiarity of cultures and the ironic globalized nature of the world coupled with the fact of the universal nature of philosophy; there can neither be a purely cultural philosophy nor a purely universal philosophy. Therefore, erecting a synergy between the deconstructionist perspective and reconstructionist approach becomes compellingly categorical.

Pursuant to the fact established above, I argue that it is only when African scholars have properly and intelligently fused African philosophy with the important elements from the West and has diligently quarantined the philosophy in question with Wiredu's conceptual decolonization will it qualify as African philosophy. What I advocate therefore, is a harmonization of Orika, Wiredu, Nkrumah and Serqueberhan's thoughts and apply them to the existing branches of the existing philosophies called 'African Philosophy, the end product would be an authentic African philosophy. I call for a harmonization after a strict or stringent scrutiny, because no one theory is all encompassing. The philosopher must bear in mind that what we today call medieval philosophy is nothing but a polygamous marriage between four traditions- Greek philosophy in its Greco-Roman version, Christian tradition, Arab Islamic tradition and Jewish tradition. This of course leveraged the robustness and richness of medieval western philosophy. Moreover, worthy of mention is the conventional belief among African thinkers that pioneers of western philosophy relied on materials and ideas from the ancient Egypt civilization.

It suffices to conclude this seminar paper in agreement with A. F. Uduigwomen, 'our view however remains that African philosophy embraces all thoughts of Africans that have been carried out on along the method

of philosophy, be they in ethics, metaphysics, epistemology, politics, science etc. we share Wiredu's position that for a philosophy to be seen as African, we must not necessarily originate it, but to appropriate, internalised and apply it in the peculiar existential reality of Africa.<sup>25</sup> In this light, the works of Martin Luther, Placide Tempels and a host of other foreign philosophers whose philosophies embody or articulate the African collective yearnings and aspiration, and African's perception and interpretation of reality are considered authentic African philosophy.

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<sup>25</sup> A. F. Uduigwomen, *Footmarks on African Philosophy*, (ed), Lagos: Obiorah and Ogbinaka Publishers Ltd, 1995, p. 134

# POLITICAL SCIENCES

## LOBBYING AS DEMOCRACY BUILDING OR BUYING INFLUENCE

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<https://doi.org/10.5281/zenodo.10581914>

### Abstract

Lobbying is a special form of gaining influential individuals or groups. It involves the process of developing effective communications with those who have a certain power. The process is considered successful if influential individuals or groups manage to support certain initiatives in the future and intensify their activities in the direction of realizing the planned goals. Lobbying means a way of representing interests in politics, in the executive and legislative power, and influence through personal contacts on public opinion through the media. This is where the method of selective influence on decision-making with a certain strategy comes to the fore. The main goal of lobbying is to gain influence in decision-making and it concerns the relationship with legislative and executive bodies. The term lobbying is associated with a negative perception due to its association with corrupt criminal acts, giving and receiving bribes, trading in influence, and the like. Legitimacy of lobbying derives from the legal regulation, which defines lobbying participants, the conditions they must fulfill in order to participate in the lobbying process, rights and obligations, the manner of conducting lobbying procedures, the content of the lobbying contract, keeping records, submitting reports, as well as penal provisions for non-fulfillment of rights. and the obligation of lobbying participants. That is why it is important to introduce lobbying activities through legal regulations both for action at the supranational European level and at the national level.

Is it and how is it possible to suppress corruption in the highest authorities through legal regulations and lobbying strategies and techniques?

**Keywords:** lobbying, democracy, corruption, legal regulation

### 1. INTRODUCTION

The term lobbying is of Anglo-Saxon origin and came from the British parliamentary tradition, from the word lobby, which since the 17th century has denoted the vestibule of the House of Commons of the English Parliament, where representatives met with representatives of various interest groups, who tried to persuade or dissuade them from adopting certain decision.<sup>26</sup> Lobbying deals with public decisions, and that's why everyone who tries to influence certain decisions revolves around the place of decision.<sup>27</sup> Lobbying can be said to be a specialized part of public relations whose purpose is to establish and maintain relations with state authorities, especially with the aim of influencing the adoption of laws and regulations.<sup>28</sup> Most often, lobbying refers to the actions of individuals and interest groups that influence the decisions of representatives of the legislative and executive authorities, and whose goal is to promote and protect certain legitimate interests that these individuals and groups represent or represent.<sup>29</sup> It is extremely important to correctly define the very term lobbying so that the main challenges of lobbying are recognized and successfully solved. Lobbying can refer to public activities such as demonstrations or public business activities of various institutions and non-governmental organizations or associations. In a narrower

sense, lobbying can be seen as an activity that tries to convince someone in the governing structure, usually an elected member of the government, to support rules or laws that give a certain advantage to a community, organization or industry over others. The Council of Europe by the term lobbying means a coordinated effort in order to influence policy and the decision-making process with the aim of obtaining a certain result from the government, authorities or elected representatives. In the voluntary register of lobbyists of the European Commission and the Parliament, the definition of lobbying is very similar, which considers the key action on EU institutions with the aim of influencing the process of adoption decision. The American Lobbying Disclosure Act of 1995 states that a lobbyist is one who, on behalf of a third party, wants to influence government structures, in this case members of the Senate and Congress. The elements that significantly determine lobbying practice are the representation of special interests, through communication with public office holders and the attempt to influence the formation of public policies. Therefore, lobbying is always an action with various individual interests whose goal is to influence decisions at the political level.

It is possible to achieve influence in several different ways, through direct and indirect communication

<sup>26</sup> Vidačak Igor (2007) Lobiranje, interesne grupe i kanali utjecaja u Europskoj uniji. Planetopija, Zagreb, str.11.

<sup>27</sup> Tomić Zoran (2008) Odnosi s javnošću, teorija i praksa. Synopsis, Zagreb, str.76.

<sup>28</sup> S Cutlip, s, Center, A., Broom, G (2003) Odnosi s javnošću Mate, Zagreb u Tmić, Z. (2008) Odnosi s javnošću, teorija i praksa, Synopsis, Zagreb, str.76.

<sup>29</sup> Golubović, Dragan (2009) Zagovaranje i lobiranje u parlamentu i organima izvršne vlasti: uporedna iskustva i preporuke za Srbiju, Beograd: Program ujedinjenih nacija za razvoj - UNDP. Str. 13.

with civil servants aimed at the general public, which should animate the public to take action to influence the formation of public policies.<sup>30</sup> The draft Law on Lobbying, which regulates this activity, should be prepared by the government. It defines concrete solutions - who can and who cannot lobby and for whom. Lobbying can be done by individuals, entrepreneurs, legal entities, business associations without legal entity status, as well as non-governmental organizations. This activity must be carried out in accordance with the law and the contract on lobbying. When talking about who may not lobby, the ban applies to public officials and their relatives, for a period of at least two years from the date of termination of the public official's office. Lobbyists have long been the target of criticism. Considerations are focused on whether their work is only a legitimate representation of interests or more manipulations inconsistent with democratic principles, even corruption. Most European countries have a law that regulates the area of lobbying and neighboring countries have gone much further, therefore this important area should be regulated because it is an important part of the overall economic and political life.

Serbia has a law on lobbying, and so does the Association of Lobbyists. The main activity of professional lobbyists is the work of passing laws and by-laws in favor of beneficiaries. Bosnia and Herzegovina needs a Law on Lobbying because this important activity must be legally regulated and introduced into the country's legal system. Adopting a law on lobbying defines the rules of the game in that area, because lobbying is often mentioned in a negative context. Individuals, companies and parties are ready to allocate large sums of money in order to reach their goal, to bring their political program closer to the statesmen of the world's largest powers, or to implement a program of national importance. The media often testify that political parties, companies, religious institutions, and even states today use the multiple advantages of lobbying without hesitation. Parties in power and opposition are equally interested in lobbyists abroad, regardless of whether they have just appeared on the political scene, stage or have many years of experience.

The first associations that the term lobbying evokes are precisely politics and persuasion, therefore this term is not sufficiently separated from politics. There are also bribes and corruption that are mentioned along with lobbying.<sup>31</sup> Most people think that people who engage in lobbying are politicians, but also people who are persuasive, good speakers, influential, resourceful and rich internal and external politics, and business. People who are familiar with lobbying believe that lobbying is necessary and useful when thinking about the relations of a certain state with the world and improving its image in cross-border cooperation.

## 2. APPLICATION OF THE LAW ON LOBBYING

The law on lobbying in Serbia began to be implemented in 2019, and on the recommendation of the group of countries to fight corruption in the Council of Europe - GRECO, which should have been implemented by the end of 2016 as the most important measure to increase the publicity of the work of legislative bodies.<sup>32</sup> The law was adopted as one of the last measures in the fight against corruption, although its adoption was planned in national strategic documents from 2005 and 2018. As a rule, the Law on Lobbying provides that the lobbyist must address in writing the official or official who is working on the adoption of a regulation and explain who he works for and which act is in question so that later they jointly report all contacts to the agency for the prevention of corruption. The problem is the application control. The drawback of this law is that it does not contain any mechanism to determine whether an interested person, instead of lobbying based on the prescribed rules, used some informal form of communication with decision-makers. The legislator completely excluded such informal contacts from the concept of lobbying, also missed is to ensure their transparency or to expressly prohibit them. However, it would be difficult to determine the extent to which everything was respected and if the rules on informal lobbying were much clearer. Clearer rules would make it easier to determine whether directly interested individuals, companies, organizations or associations have made formal addresses to government bodies, parliamentary groups and lobbyists in general. Authorities should keep records of such addresses because they may have the character of contact with unregistered lobbyists. The most information should be available when interested parties hire professional mediators or registered lobbyists to represent their interests before the authorities that pass general legal acts.<sup>33</sup>

As a problem, GRECO recognized that this law regulates only lobbying that takes place according to formal rules, but not that which takes place through informal contacts of lobbyists with the president, the prime minister, the ministers and their advisers, and the heads of the cabinet. Another big problem is that there is no obligation for officials and state bodies to disclose who all of the formal and informal lobbyists have addressed them. Serbia had to fulfill all recommendations by the end of September 2023. The provisions of the Law on Lobbying provide that the authority is obliged to keep records of lobbying contacts for officials who are elected, appointed, appointed, employed or otherwise employed in that authority. It is also the duty of every lobbied person to prevent the occurrence of harmful consequences for the public interest that may arise as a result of lobbying. It can be reasonably assumed that the number of cases of lobbying, if not by registered lobbyists, then at least by unregistered lobbyists, is far greater than is thought. Since there are no reported cases of lobbying by unregistered lobbyists,

<sup>30</sup> <https://transparency.hr/hr/antikorupcija-detalji/sto-je-lobiranje-393> pristupljeno 19.01.2023.

<sup>31</sup> [https://rtv.rs/sk/drustvo/sta-je-u-srbiji-lobiranje\\_160506.html](https://rtv.rs/sk/drustvo/sta-je-u-srbiji-lobiranje_160506.html) preuzeto 19.01.2023.

<sup>32</sup> Zakon o lobiranju Republike Srbije „Sl. Glasnik RS“, br. 87/2018 i 86/2019

<sup>33</sup> Transparentnost Srbije,(2022), Koruptivni rizici u propisima i lobiranje, str.7.

there is a strong suspicion that such cases are not reported. Unregistered lobbying exists, which the Law allows, and the information about their work published by associations that gather domestic or foreign businessmen, indicating the measures they proposed to the Government of Serbia or individual ministries, based on the interests and problems pointed out by their members, speaks of this.

This situation is caused by weaknesses in the Law itself, where there is no clear obligation for officials and other lobbied persons to report lobbying contacts within the authorities. In addition, the possibility of public control is minimal, because there is no duty to proactively publish data on work meetings of public officials. This is the reason why, in addition to improving the laws and practices of institutions, it is necessary to pay more attention to the training of public officials and employees in connection with the recognition of lobbying activities to which they are exposed and the proper recording of such activities.<sup>34</sup>

Ethical rules on lobbying stem from the Code of Conduct for lobbying participants, with the aim of affirming the lobbying profession in the fight against corruption. All participants in the lobbying process are obliged to act in accordance with the principle of integrity, which includes legality, transparency and responsibility in work, as well as ethics in order to preserve the reputation of the lobbying profession itself and the personal reputation of each of the lobbying participants. All participants in the lobbying process should be guided by the principle of public interest protection. Therefore, they are obliged to prevent any harmful consequences for the public interest, as soon as they notice it. The shortcomings of the law on lobbying will necessarily have to be eliminated during its wider application in practice in order to improve its effectiveness in preventing corruption.

It is planned to keep registers of foreign natural and legal persons in which they can be registered only with confirmation that they are registered as lobbyists in their country. However, there is no guaranteed reciprocity for registered lobbyists.<sup>35</sup>

The law on lobbying in Montenegro was adopted and entered into force at the end of 2014. But all other former Yugoslav republics also have a law on lobbying, Macedonia, Croatia, Slovenia and Serbia, all except Bosnia and Herzegovina. Not only does Bosnia and Herzegovina lack a law on lobbying, it also lacks a good lobbying organization that would facilitate the process of advocating state interests. If such a law were to be adopted, it would provide BiH with a safer path towards European integration, which is one of the primary goals of the foreign policy strategy. Given that the European Commission has given a recommendation for granting candidate status to Bosnia and Herzegovina, lobbying for the interests of this country in Brussels,

but also in other member states, would be of great importance. In order for any lobbying to be successful, there should be a clear goal and a clear strategy to reach that goal. Bosnia and Herzegovina has<sup>36</sup> almost no experience in the field of lobbying because very few lobbies and therefore this area needs to be regulated.

### 3. EU RULES ON LOBBYING

The most dominant technology companies in the world dominate the market so much that they have started to behave according to their own rules. The European Union is now encountering great resistance when trying to introduce some of its own rules in this sphere. The weight of such resistance is indicated by the fact that technology companies in Europe spend as much as 97 million euros per year on lobbying. It exceeds the pharmaceutical, chemical and financial sectors combined. Due to the attempt to bring the largest technology companies that dominate the market into line, so that they do not abuse their power, the European Union is working on two key laws. the Law on Digital Markets (ZDT) and the Law on Digital Services (ZDU). The first should force large companies to act responsibly, i.e. not to use their power to stifle competition and not to abuse user data for profit. The proposals of ZDT and ZDU for the EU are crucial in regulating the digital economy. Another law prohibits the publication of illegal and harmful content that may harm society in any way. "Facebook" did something like that with the disinformation it was making money from. This law also deals with improving the protection of user data, so that it is not misused for targeted marketing.<sup>37</sup>

Although these new laws should come into force, they have already been declared the strictest digital regulation in the world due to the very high accompanying penalties. Even the biggest technology companies are apparently not ready to change the behavior that brought them to the top, so they are allocating huge money to lobbying houses in order to at least soften the new regulation, if they cannot change it. Tech lobbyists now outnumber and are better paid than pharmaceutical, chemical, and financial lobbyists combined.

In the list of 10 companies that allocate the most for lobbying, all the places are filled by technology and digital companies, except for two, which include the pharmaceutical company "Bayer" and the oil giant "Shell".<sup>38</sup> About 600 technology and digital companies are lobbying in Brussels, which annually allocate a total of 97 million euros so that their voices are heard in the right places. That's more than any other sector of the economy. Only the first 10 digital companies set aside 32.7 million euros for lobbying. This is more than the 10 largest chemical companies (17.7 million euros), the 10 strongest vehicle manufacturers (9.8 million euros) and the same amount of companies from the financial industry (12 million euros) put together for these purposes. However, not everything is technological and

<sup>34</sup> Transparentnost Srbija,(2022) Koruptivni rizici u propisima i lobiranje, str.9-10

<sup>35</sup> <https://www.politika.rs>, pristupljeno 28.1.2023.

<sup>36</sup> Lobiranje u 21.stoljeću – neiskorištena prilika Bosne i Hercegovine: Fredrich-Ebert-Stiftung Bosni i Hercegovini,

<https://bosnia-and-herzegovina.fes.de/vijesti/default-3d84bf2883>, preuzeto 28.1.2023.

<sup>37</sup> <https://www.bankar.me/2021/11/10/lobiranje-na-digitalnom-trzistu-eu-kad-tehnoloski-giganti-odrijese-kesu/>, pristupljeno 29.1.2023.

<sup>38</sup> Ibid

digital. companies so generous. In fact, most of them (75 percent) allocate less than 200,000 euros per year for lobbying, which means that this game is mainly led by the "big ones". A total of 612 companies, lobby groups and business associations work for all these corporations from the digital and technological world, which regularly send their representatives to meetings with European legislators. Their lobbyists are trying to influence the reduction of penalties, but also a different legal approach to law breakers. They believe that not every case of violation of regulations is the same and that the technology giants should therefore not be punished "standardly" but on a case-by-case basis. Proponents of these laws claim that it would completely destroy their purpose of creating a corporate culture in which it will be understood that companies behave responsibly towards their users.

Because of the whole situation with the digital giants and not only them, this is a unique opportunity for the EU not only to limit the power of the tech giants, but also to ban them from using loopholes and operating in the gray area. The Digital Services Act should stop the practice of spying on citizens, but also the spread of hate speech, disinformation and illegal content.<sup>39</sup>

The largest percentage of companies lobbying in the European Union, 20 percent, comes from the USA, followed by European ones, mostly from Germany, Great Britain, and France. However, these data should be taken with a grain of salt, because some American companies, such as "Amazon", "Facebook" or "Dropbox", have registered subsidiaries on the old continent, so they are run as European companies. Less than one percent of lobbying companies come from China. Although they are not numerous, they have a certain influence, since they are big and powerful like "Huawei" or "Alibaba".<sup>40</sup>

That every company wants a good lobbyist is indicated by the fact that after a career in high government positions, German politicians often move to companies as advisers - for high salaries and with high hopes of businessmen that they will get lobbyists who know how to use good connections. When former German chancellor Gerhard Schroeder became head of the North European Pipeline Company's supervisory board in December 2005, just months after retiring from political office, the German public was horrified. There were several reasons for this, and the biggest among them is not that Schroeder became an official of a Russian concern, but that the change happened so quickly and without twisting. This kind of transfer of politicians to the economy is actually said to be a legal form of corruption, unfortunately.

Great discussions were started about the morality and credibility of politicians, but it was only years later that the so-called Advisory Body of the Government, which deals with specific cases of officials who leave politics and move into the economy, began its work. It

is incredible that that body also consists of former politicians who resisted the challenge of big business. Now, no minister or state secretary can become an official of a private company until he passes their control. Unless, he is not separated from his new employment by more than 18 months.<sup>41</sup>

Every company dreams of a good lobbyist, since the best person who can lobby among MPs and ministers is someone who has spent years with them in the same party and dealt with the same political projects? This is also the reason why corporations open their pockets and pay large salaries to those who can be good lobbyists. It is considered that the legal regulation of lobbying in Serbia is characterized as crucial in the fight against economic and political bribery. There was a lot of talk about the great anti-corruption potential of the aforementioned law on lobbying. Trading in influence was a product of politics and cannot be suppressed only by criminalizing it in the Criminal Code. Until the rules of influence on decision-makers are made official and transparent, there will always be those who can end up with the authorities from the lowest to the highest level, so for one new arrest there will be three new influence peddlers.<sup>42</sup>

Lobbying is regulated differently everywhere in the world, and the USA is a special case where lobbying is legally regulated in detail. Old and new EU members have a special approach to lobbying. The so-called "old members" of the EU, i.e. The countries of Western Europe adopted the basic principles of lobbying through practice in the 60s of the last century, and in them this area is regulated by rules and regulations, while the new EU members are trying to raise awareness of the obligation of lobbying rules with special laws and make the actors comply with those rules.

In any case, the legal regulation of the lobbying profession brings multiple benefits from the suppression of corruption to the legalization and decriminalization of this important area. Thanks to lobbying, decision-makers often hear the opinions and needs of voters from marginal social groups more loudly and clearly. Most citizens describe lobbying in simple language: a tycoon pays a minister, deputy or party leader, and then they do everything to satisfy the interests of the owners of the money. Soga is the basic reason for the adoption of the law is the suppression of corruption in making political decisions and the prevention of conflicts of interest of officials, but it is questionable whether this can be solved by a single law because there is no universally accepted way to regulate lobbying. Despite the law, America has a problem with lobbyists' decision-making methods and motives: they remain far from the eyes and ears of the public. In order for lobbying not to turn into legalized corruption, the penal policy should be very strict. It is necessary for the state to create a registry of lobbyists as it exists in America, but despite all this, many believe that the law cannot prevent corrupt behavior.<sup>43</sup> It is a fact that

<sup>39</sup> Ibid

<sup>40</sup> Ibid

<sup>41</sup> <https://www.bankar.me/2020/01/09/zasto-je-dobar-lobista-san-svake-kompanije/preuzeto> 30.1.2023

<sup>42</sup> <http://www.vreme.com/vreme/protiv-podmicivanja/preuzeto>, 30.1.2023.

<sup>43</sup> Ibid

everything boils down to the ways of money, and bribery cannot be put into law. No matter how much lobbying is put before the eyes of the public through the law, it will not be known if someone will push money to someone and when.

#### 4. REGULATION OF LOBBYING IN THE EU

The European Union, i.e. Brussels as its seat, is the center of various interest groups, which, in different ways, try to influence the adoption or blocking of some decision by the EU institutions. The implications of the act in question may indirectly include a considerable number of participants, but its immediate effects are certainly greater.<sup>44</sup> Lobbying actors or participants in this process are different entities. They include a variety of groups, from multinational companies and trade associations, to local or regional authorities and public agencies.<sup>45</sup> Lobbyists do not have to come only from member states, but, e.g. from other countries such as China, Japan or the USA, and the officials and departments of the European Commission, Parliament, Council and other EU bodies and agencies are often activated as lobbyists. This shows how obvious it is on how many different levels lobbying can take place in the European Union and how dynamic the process is with how many participants. At the same time, it is not about the one-sided benefit of the lobbyist. Namely, the EU institutions also receive feedback on how certain measures are accepted among a certain group, as well as well-argued proposals for their further development, as well as very professional knowledge in a certain area, which unfortunately is not uncommon. aside when evaluating the results of lobbying. In addition, there is a constant tendency to increase the number of actors in this process, which can also be explained by the enlargement of the Union. Indeed, on the map of the world of lobbying, Brussels is placed right behind Washington in terms of the number and concentration of lobbyists, and although the estimates are very different, they generally hover around 15,000 lobbyists, and some even go up to 30,000.<sup>46</sup> The European Parliament continuously expresses its aspirations for the introduction of a mandatory transparency register. In 2014, the President of the Commission, Jean Claude Juncker, asked the question transparency of lobbying into the political agenda, promising that by 2016 a request for mandatory registration will be submitted. The anti-corruption report of the European Union from 2014 explains the importance of lobbying transparency, stating that in the overall complexity of creating public policies, it is desirable for the public administration to be involved in dialogue

with external participants, and all interested parties should have the right to express their opinion, but in a transparent way, in order to reduce the risk of corruption, which is possible through legislation or registration mechanisms.<sup>47</sup> Namely, the Commission also made an important undertaking regarding the transparency of lobbying. It introduced the practice of publishing information regarding meetings held between lobbyists and members of the Commission, their offices and executive directors. As far as the EU is concerned, it is possible to identify four main concerns related to lobbying activities, determining the exact number of interest groups, information on lobbying costs and determining conflict of interest. In this sense, the news from September 28, 2016 is very significant, namely the Commission's proposal on a mandatory transparency register for all EU institutions: the Parliament, the Commission, and the Council. Frans Timmermans, then First Vice-President of the Commission, proposed a simple solution; there are no meetings with decision-makers without prior registration. Through the registry, the public will see who lobbies, who they represent and how much they spend.<sup>48</sup> Namely, since the Commission introduced prior registration in the transparency register in 2014 as a prerequisite for establishing contact with its members, as many as four thousand new registrations have been recorded. For the sake of greater efficiency, the Commission is ready to provide additional funds and more effective mechanisms for monitoring compliance with the Code of Conduct.<sup>49</sup> At the same time, over a hundred associations and civil society organizations (led by ALTER-EU, Civil Society Europe and Transparency International EU) sent an open letter to representatives in the Parliament on March 17, 2017, fearing a reduction in the performance of the Registry, urging the representatives to advocate the following items during negotiations: meetings only with registered lobbyists, allocation of funding to the Joint Secretariat to ensure data quality, retention of the current definition of lobbying, which includes both direct and indirect lobbying and the obligation to create a legally binding and long-term register.<sup>50</sup> On that track, the Commission formally adopted a new Code of Conduct for Commission members. The most important news is the extension of the suspension period from 18 months to two years for former members of the Commission, and to three years for the former president of the Commission. For the first time, a conflict of interest was defined and situations that could potentially fall under that term were described, and members of the Commission

<sup>44</sup> <https://www.politika.rs/sr/clanak/80913/Priza-za-krupan-biznis-preuzeto> 30.1.2023.

<sup>45</sup> Vidačak, Igor, (2007), *Lobiranje, interesne skupine i kanali utjecaja u Europskoj uniji*, Planetopija, Zagreb, str.12.

<sup>46</sup> Chambers, Anthony, *The Lobbying of the EU-How to achieve greater transparency*, Civitas: Institute for the Study of Civil Society February 2016, dostupno na: <https://www.civitas.org.uk/content/files/Anthony-Chambers-EU-lobbying.pdf>, posjećeno 1.2.2023.

<sup>47</sup> Report from the Commission to the Council and the European Parliament-EU Anti-Corruption, Report, Brussels, 3.2.2014., dostupno na: [https://ec.europa.eu/home-affairs/sites/homeaffairs/files/e-library/documents/policies/organized-crime-and-human-](https://ec.europa.eu/home-affairs/sites/homeaffairs/files/e-library/documents/policies/organized-crime-and-human-trafficking/corruption/docs/arc_2014_en.pdf)

[trafficking/corruption/docs/arc\\_2014\\_en.pdf](https://ec.europa.eu/home-affairs/sites/homeaffairs/files/e-library/documents/policies/organized-crime-and-human-trafficking/corruption/docs/arc_2014_en.pdf), posjećeno 2.2.2023.

<sup>48</sup> Reuters, EU executive proposes tighter lobbying rules, 28. septembra 2016., dostupno na: <https://www.reuters.com/arzicle/us-eu-ethics-lobbying/en-executive-proposes-tighter-lobbying-rules-idUSKCN11Y2PW>, posjećeno 3.2.2023.

<sup>49</sup> [http://europa.eu/rapid/press-release\\_IP-16-3182\\_hr.htm](http://europa.eu/rapid/press-release_IP-16-3182_hr.htm), posjećeno 3.2.2023.

<sup>50</sup> Civil Society Europe, *The European Parliament must do more to improve lobby, transparency*, dostupno na: <https://civilsocietyeurope.eu/2017/03717/the-european-parliament-must-do-more-to-improve-lobby-transparency/>, posjećeno 3.2.2023.

must report every donation above 10,000 euros, regardless of whether it is a potential conflict of interest or not. Data on the travel expenses of Commission members were published for the first time on February 28, 2018, where data on expenditures and other costs are available for each Commission member, and travel should be carried out in the most economical way.<sup>51</sup> It is also a big novelty in the area of application of the rules, and now the work will be assisted by an independent ethics committee that will be authorized to advise and make recommendations in relation to all issues related to the Code. In case of violation, he can issue a warning and publish it to the public. Members of the Commission are also allowed to run for office in the Parliament without taking leave, which will be applied after the Parliament agrees to update the Framework Agreement between the Parliament and the Commission. In order to increase transparency, the Commission will also publish annual reports on the implementation of the Code.<sup>52</sup>

##### 5. TRANSPARENCY OF LOBBYING AND LEGAL REGULATIONS

Brussels recognized the necessity of regulating lobbying as a legal and very important activity for the democratic process, especially for the importance of transparency and public availability of information. However, when it comes to individual members of the Union, the situation is very different and colorful. There are many reasons for this, but certainly the country's legal framework, political culture, or collective consciousness play an important role when it comes to the legal regulation of lobbying and its transparency. Nevertheless, it is generally accepted that lobbying regulation schemes are derived from concerns about the deficit of democracy, openness and transparency of government, equality and access to public relations, and the constant need to manage the flow of information to and from authorities. In addition, a certain regulatory model cannot simply be transferred to another country. There are certain gaps in existing legislation on lobbying, but often only better implementation is needed, not necessarily a complete overhaul of current regulatory policies. We should not forget the fact that lobbying is immanent in democracy, and different types of democratic systems, rules, customs, etc., result in different types of lobbying. That's why, even if there was a perfect model, it would be almost utopian to expect that it would produce the same effects in another country. This is precisely why the regulation of lobbying should not be studied for itself, but in a more general perspective of the current system of interest groups and the political and institutional framework. According to the European Parliament's data on the current situation in the EU countries, eight member states

have so far passed legislation on lobbying and introduced mandatory registration: France, Ireland, Lithuania, Austria, Poland, the Netherlands, Slovenia, which regulated this issue within the Law on Integrity and Prevention corruption, the United Kingdom as a recent member.<sup>53</sup> Croatia, Serbia and Macedonia also have laws on lobbying, while in Germany, Italy and Romania registration is voluntary. Belgium, Luxembourg, Denmark, Estonia, Sweden, Slovakia, Bulgaria, Greece, Cyprus, Malta, and Portugal have neither legislation on lobbying, nor a code of conduct, nor even a register of lobbyists. It should be said that in two countries, Germany and the Netherlands, lobbying is regulated in the parliament, but only in the lower house - in Germany by the Rules of Procedure of the Bundestag, and in the Netherlands by the Rules of Procedure of the House of Representatives. The upper houses of the parliaments of those countries did not regulate the contacts of lobbyists with their members either by the rules of procedure or by any other act.

In the last decade, the adoption of regulations in European countries has been intensified, and in that period about ten current regulations related to the regulation of lobbying activities were adopted. Improving transparency and greater participation of citizens in the adoption of legal regulations is their goal in general and is part of the broader fight against corruption in the sense of its prevention.

In the EU, there is a Transparency Register that was established on the basis of an agreement between the European Commission and the European Parliament from 2012, and supplemented in 2014. The Transparency Register was established to answer key questions such as the interests being represented, who is representing them and with what means. The transparency register system is jointly managed by the European Parliament and the European Commission.<sup>54</sup> Law offices, trade associations, non-governmental organizations, religious organizations and public bodies are registered in the Register. The register clearly separates the area of economic and non-economic activity. Registration in the register is not mandatory for all lobbyists operating in the European Union, but those who are not registered cannot access the premises of the European Parliament and the European Commission. In addition to the aforementioned Register, there is a Code of Conduct in the EU, adopted by the European Commission and the European Parliament. It establishes the rules for all those who are registered in the register and establishes basic

<sup>51</sup> Access Info Europe European Commission stars publishing travel expenses proactively, dostupno na: <https://www.sccess-info.org/article/30403>, posjećeno 4.2.2023.

<sup>52</sup> European Commission – Press release, New Code of Conduct strengthening ethical rules for Members of the European Commission enters into force, Brussels, 31. januar, 2018m dostupno na: [http://europa.eu/rapid/press-release\\_IP-18-504\\_en.htm](http://europa.eu/rapid/press-release_IP-18-504_en.htm), posjećeno 4.2.2023.

<sup>53</sup> Grosek, Kristina, Claros, Eulalija, Regulation of lobbying across the EU, European Parliamentary Research Service, Members, Research Service, dostupno na: [http://www.europal.europa.eu/RegData/etudes/ATAG/2016/595830/EPRS\\_ATA\(2016\)595830EN.pdf](http://www.europal.europa.eu/RegData/etudes/ATAG/2016/595830/EPRS_ATA(2016)595830EN.pdf), posjećeno 4.2.2023

<sup>54</sup> Registar transparentnosti dostupan je na: <http://ec.europa.eu/transparencyregister/public/homePage.do?Locale=hr#hr> pristupljeno 5.2.2023.

principles for the norms of behavior in all relations with the EU institutions.<sup>55</sup>

The issue of lobbying was also dealt with by the Council of Europe, which in 2017 adopted the Recommendation on the legal regulation of lobbying activities in the context of public decision-making.<sup>56</sup> This was also done by the Organization for Economic Cooperation and Development (OECD), which in 2010 adopted the Recommendation on Principles for Transparency and Integrity in Lobbying.<sup>57</sup> The OECD recommendation is aimed at building an efficient and fair framework for open and accessible adoption and implementation of public policies.

From an economic point of view, the interests that prevail in industrial waters, and for which certain companies and organizations on the market fight to achieve them, are the work of economic activity. The influence on the adoption of legal acts, as well as the discussion of their regulations and established norms, is the responsibility of law and political science. Influence on executive actors and legislative authorities, through agendas through communication channels, during the process of making specific decisions in the field of public policy, represent the part that defines the concept of lobbying from the aspect of political science grounded. One of the generally accepted reasons, from an economic but also a cultural point of view, is the developed level of business culture and a favorable climate in industrial relations. In these countries, awareness prevails not only among society, but also among individuals, about business ethics in which rules and legal norms are the basis for creating a business environment in which the rules of the game are respected. From there, you can see why it is no surprise for these countries that lobbying is perceived as any activity because the rules and behaviors of lobbyists who respect "moral principles" are harmonized and marked as highly moral. Therefore, most countries have either implemented this area with an ethical code of conduct for lobbyists and lobbyist organizations, or these activities are regulated by government decrees and parliamentary regulations.<sup>58</sup>

For countries that have emerged from the communist regime and planned economy, which, unfortunately, are identified with the image of a less stable business ethics, with an insufficient degree of accepted business culture, but also an unstable market economic climate, lobbying should be regulated by law.

Regulating this activity by law with clear lobbying rules, especially for the countries of the former communist regime, is to provide an intensity of transparency that is strategically and legally framed by the fight against corruption, which contributes to the reduction of this vicious disease of society. On the one hand, this, in addition to the display of greater transparency, contributes to the relations between all actors operating within the postmodern society, as well as the holders of public functions, to be constructive and more realized, realizing together not only functionality but also legality in the interests achieved.

In the academic literature, there is no unified position on whether interest groups strengthen or weaken the democratic legitimacy of government in a political community. While some authors, such as Schwarzmantel (J. Schwarzmantel), believe that interest groups strengthen the democracy of the political process by representing the political and social demands of parts of civil society that have been neglected by official public institutions and because they represent sources of specific information and expertise, other authors, such as Dahl (Robert Dahl), Lindblom (Charles Lindblom) and Galbraith (John K. Galbraith), emphasize that the actions of interest groups hinder and "distort" the decision-making process by giving advantage and power to social actors and organizations with greater resources, abilities, time and social contacts necessary for the achievement of individual goals.<sup>59</sup>

The basic assumption is that groups, associations and lobbying agencies that represent private or special interests disrupt the political process that takes place within the institutional framework of the European Union and in the long term harm community public interests, the realization of proclaimed democratic values and guaranteed human and civil rights. The management of public affairs at the supranational level by means of public policy networks that, often in an informal way, gather diverse technocratic, parapolitical and social actors, seems to increase the already existing democratic deficit, from which the European integrationist project has suffered since its inception.<sup>60</sup>

## 6. LOBBYING STRATEGIES AND TECHNIQUES

The choice of strategy also leads to the field of using different techniques. In the modern world, two basic types of lobbying techniques are distinguished:

<sup>55</sup> Kodeks ponašanja dostupan na: <http://ec.europa.eu/transparencyregister/public/staticPage/displayStaticPage.do?locale=hr&reference=CODE OF CONDUCT> pristupljeno 5.2.2023.

<sup>56</sup> Preporuka CM/Rec(2017)2 o pravnom uređenju lobističkih aktivnosti u kontekstu donošenja javnih odluka (Recommendation CM/Rec(2017)2 of the Committee of Ministers to member States on the legal regulation of lobbying activities in the context of public decision making), usvojena 22. marta 2017. dostupno na stranicama Vijeća Evrope: [https://search.coe.int/cm/Pages/result\\_details.aspx?ObjektId=0900001680700a40](https://search.coe.int/cm/Pages/result_details.aspx?ObjektId=0900001680700a40)  
<https://rm.coe.int/legal-regulation-of-lobbying-activities/168073ed69> pristupljeno 5.2.2023.

<sup>57</sup> OECD Principles for Transparency and Integrity in Lobbying dostupno na internet stranicama OECD-a

<http://www.oecd.org/gov/ethics/oecdprinciplesfortransparencyandintegrityinlobbying.htm>

<http://www.oecd.org/corruption/ethics/Lobbying-Brochure.pdf> pristupljeno 5.2.2023.

<sup>58</sup> Randelović, Nebojša i Jelenković, Predrag (2014), Pravna regulativa, istorijski i politički aspekti lobiranja- Srbija i države u okruženju. Niš: Zbornik radova Pravnog fakulteta u Nišu. (66):197-206. str.200

<sup>59</sup> Endru Hejvud, (2004) Politika, Clio, Beograd, str. 173-7.

<sup>60</sup> Rozental je još sredinom sedamdesetih godina prošlog veka pisao da na politički proces u institucionalnom okviru tadašnje EEZ veliki uticaj imaju mreže elita i to korištenjem suptilnog lobiranja iza zatvorenih vrata (John Peterson and Elizabeth Bomberg, Decision-Making in the European Union, MacMillan Press Ltd, Basingstoke and London, 1999.p.6).

direct lobbying and indirect lobbying. Direct lobbying implies direct influence on legislative bodies, while indirect lobbying influences decision-makers indirectly, through the use of the media.

Direct lobbying involves personal meetings with decision makers. This means that it is necessary to establish a dialogue in order to be informed, as well as addressing a lower instance and moving up and not down the hierarchy.<sup>61</sup> In most cases, direct contact is the most effective way to present our point of view on a certain problem, but it is also the most difficult to organize. Since politicians represent a large number of people, the request for such a meeting is very rare and may be one in a thousand. If this type of contact is made, the lobbyist must keep in mind that it will be easier to achieve your goal if you influence the interlocutor with meaningfulness, clarity and simplicity, by turning data into a clear and convincing synthesis. Professional politicians are used to not making impulsive and hasty decisions, therefore, after the first conversation, you should not expect a quick result.

Another type of direct lobbying is a telephone conversation. Telephone calls have the quality of immediacy and personal directness, are easier to arrange and are therefore more frequent than face-to-face meetings. By applying the tactics of telephone calls, lobby groups in international relations try to gain the support of decision-makers. Calls from several parties in a large number of cases express the same or similar demands, and a strong influence can be exerted on the interlocutors. It is especially easy to mobilize non-governmental organizations with telephone calls, in order to initiate political actions. The system of "telephone trees" is used by many organizations, which works so that each member of the lobby group is obliged to call and maintain contact with one or more activists in certain areas. These others then call the contacts that "belong" to them and thus the message about certain activities is transmitted very quickly until the whole group is informed.<sup>62</sup>

Written address is also one of the forms of direct lobbying. A large number of lobbying strategies consists of tactical written address to members of various bodies, officials, officials and administration. These are exclusively private letters, as opposed to press releases or open letters. A written document has the advantage that it can be sent to several levels at the same time. The greater the number of different addresses from which letters on the same issue are sent, in which a large number of individuals refer to one organization, the greater the pressure that is exerted on the decision maker. Written petitions are a special technique. Lobbyists try in this way to involve as many individuals as possible in writing petitions to certain politicians, gathering them around a problem that they consider to be of general interest.

Indirect lobbying includes the use of the media. When making public decisions, there is a process of an evolutionary nature. In order to avoid outdated and unusable information, constant review is necessary because the status of each item can change daily. Tracking the development of the item in real time is necessary because opportunities to forward a message are rare.<sup>63</sup>

Media propaganda by lobbyists is used as one of the indirect techniques of influencing public opinion. Public opinion is made up of current beliefs, attitudes and affectively colored judgments. That is why it is very fluid, subject to changes, control and manipulation of political and economic power centers. The mass media play a particularly important role in the formation of public opinion.<sup>64</sup> Lobbyists, through their influence on the means of information, that is, their good contacts with editors and journalists in general, indirectly influence the formation of public opinion in the direction they want.<sup>65</sup> In this way, lobbyists use public opinion through the mediatization of a problem, presenting it to the ordinary world as a problem that can affect each of us.<sup>66</sup> In this regard, lobbyists seek support for something that troubles the common man and thus try to create a critical mass of support for their cause. In these efforts, lobbyists seek the possibility of establishing contacts with as many media as possible. If a large number of media outlets publish the same information, commented on in a similar way, it will create an attitude among readers about the truthfulness and correctness of the information. So, when one piece of information unknown to people is published, from several sides and with the same comment, in their eyes the image is created exactly as the lobbyists wanted, taking care that it be published both in the local and national media.

How does all this affect decision makers? In every society, the government and other state bodies have great respect for public opinion, they try to create and preserve a positive image among their voters. That is why decision-makers tend to harmonize their interests with the interests of voters as much as possible, because their support in elections depends on it. In this way, by forming public opinion, lobbyists at the same time exert influence on decision-makers, who, to a greater or lesser extent, adhere to the court of public opinion. All this shows that when they schedule direct lobbying techniques, lobbyists always have public opinion at their disposal, which is a powerful weapon in the hands of capable lobbyists.

An indirect way of lobbying is also the media support of experts. Before a certain controversial subject goes to the public, lobbyists first inform the competent decision-makers about it. This is also a good chance for lobbyists to present their version of the emerging problem to politicians. To substantiate the seriousness of the situation, lobbyists occasionally hire experts in certain fields to provide expert opinions. Experts who give their opinion on an issue in their field can

<sup>61</sup> Klamann, M. (2004), *Lobiranje*, Beograd, str.123.

<sup>62</sup> Đorđić, A. (2007), *Interesne grupe i lobiranje kao postupak u međunarodnim odnosima*, Beograd, str.489.

<sup>63</sup> Klamann, M. (2004), *Lobiranje*, Beograd, str. 70.

<sup>64</sup> Vidanović, I. (2006), *Rečnik socijalnog rada*, Beograd, str.211.

<sup>65</sup> Lemert, J.B. (1981), *Does Mass Communication Change Public Opinion After All*, Nelson Hall, Chicago, str.32.

<sup>66</sup> Zetter, L. (2008), *Lobbying The Art of Political Persuasion*, Hampshire, str.91.

significantly contribute to the strengthening of the positions represented by lobbyists. Those expert opinions that correspond to the arguments presented by the lobbyists are taken and combined with the entire documentation that the lobbyists deliver to the politicians. Here, attention should be paid to the fact that lobbyists, even when hiring experts, try to leave the impression that the experts reacted independently. Lobbyists do this in order to avoid accusations that they influence experts, that is, that experts are financially dependent on lobbyists. Expert opinions that support a certain thesis will be less contested if it is not possible to establish any financial connection between the lobbyist and the experts whose opinions the lobbyist refers to.

Another way of indirect lobbying is securing public promises, which is a technique closely related to the technique of using the media. After mediating a certain problem, while they wait for the decision-maker to take a stand, to declare whether he supports the position of public opinion (in this case, lobbyists too), or not. Given that decision-makers are not inclined, at least publicly, to be against such orchestrated campaigns that are conducted in the name of general interests, lobbyists see this as a chance to get their promise to support the views of a certain group. If the lobbyists succeed in persuading the officials to make public positive comments regarding a certain problem, those statements are later used as part of the existing argumentation in the conversation with the officials. This means that lobbyists are now publicly advertising and calling for promises and the given word of officials in their favor.<sup>67</sup>

## 7. CONCLUSION

If we start from the experience of the countries in whose legal systems the lobbying profession has taken root, as a natural conclusion the regulation of this area is imposed exclusively in the form of laws and not by rules, regulations or other by-laws. There are several reasons for this: The first is that in countries that are going through a socio-economic transition, where the path

for the establishment and development of strong democratic institutions is yet to be established and where there is not yet a sufficiently developed awareness of compliance with the rules, this area must be regulated by law, because in this way the lobbyist profession will be further strengthened and strengthened. Awareness of hiring a lobbyist and compliance with the lobbying procedure must have a legal basis to once again send a clear signal to all future participants

of the lobbying process, that there are clear rules and sanctions in the system. Another reason why it is necessary to legally regulate this area is the need for the state to send a clear message to the European Union that, like other Eastern European countries, it is ready to make corruption in this area completely meaningless, enabling all interested clients to protect and realize their interests in a legal and transparent way. The third reason lies in the fact that by passing this law, a certain country places itself on the same level as other coun-

tries in the region and promotes itself as a serious partner of the EU in the process of European integration. It can be said in the end that if lobbying is carried out publicly and if equal access of professional lobbyists to public decision-makers is foreseen, this will have the ultimate effect of improving the quality of the legislative process.

A critical examination of the structural characteristics of interest groups, their model of action and the institutional environment of the EU shows that there are indications that lobbying in the EU institutions does not always take place in accordance with the generally accepted standards of the democratic political process, nor does it correspond to the requirements of promoting public interests. This is especially the case with the lobbying activities of multinational corporations operating in the common market. The cases of corruption and conflicts of interest discovered in the work of Union institutions and the analysis of publicly available aspects of the activities of groups, associations and lobbying agencies that represent the business interests of the largest corporations present in the common market seem to testify to the exploitation of the purpose of the supranational political process. The goals and effects of corporate lobbying harm in the long term the realization of community public interests, proclaimed democratic values and guaranteed human and civil rights. The favoring of corporate interests by primarily officials and officials of the Commission is noticeable and leans on the tradition of pragmatic philosophy based on the argumentation contained in the analyzes and studies originating from the so-called community of knowledge. Lobby groups that represent corporate interests undermine the already weakened democratic legitimacy of the supranational political process because they try in various ways to make their own influence on community decision-making points dominant, if not the only one, thus closing the door to the influence of representatives of other social interests, creating a kind of cartel of the public policy network in some area that does not allow access to interested social parties that represent different views on public issues that are the subject of decision. The financial supremacy of corporate lobbies over other social interests enables their influence on supranational decision-makers in a large number of "small" issues of community public policy, such as regulatory measures and technical standards, while civil organizations have enough resources only for mobilization around the most important issues. In addition, corporate interest groups are in a more comfortable position because they usually defend the existing situation in some communitarian public policy and regulations, that is, preventing the introduction of changes and new measures. Civic organizations, on the contrary, generally advocate for changes and regulation of issues related to the social and environmental effects of corporations' operations, and this represents a far more complex operation in the realization of social interests.

The idea of European integration is based on the belief that supranational institutions can effectively

<sup>67</sup> Common Cause, Report from Washington, open and accountable government an action program for citizens in the 1974. elections, Washington, 1974.

solve the problems faced by modern consumer societies at the beginning of the new millennium. The reasons of efficiency and benefit were throughout the history of the European integration project the main arguments in favor of further strengthening the authority and expanding the competences of joint institutions. In accordance with the proclaimed values of democracy, the rule of law and human rights, the purpose of the activities of supranational institutions is the realization of the general interest - the satisfaction of the citizens' need for a dignified and quality life. Everyday life in the member states of the European Union is increasingly conditioned by the content and manner of implementation of decisions made at the community level. That is why it is important to properly regulate lobbying activities aimed at Union institutions in order to prevent the violation of democratic standards in the supranational political process and prevent the predominance of corporate and other private interests over the common good.

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# TECHNICAL SCIENCES

## RESEARCH THE CHARACTERISTICS OF ASYNCHRONOUS ELECTRIC MOTORS USING MATLAB SIMULINK SOFTWARE

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## ИССЛЕДОВАНИЕ ХАРАКТЕРИСТИК АСИНХРОННЫХ ЭЛЕКТРОДВИГАТЕЛЕЙ С ПОМОЩЬЮ ПРОГРАММНОГО ОБЕСПЕЧЕНИЯ MATLAB SIMULINK

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### Abstract

The article focuses on researching methods to evaluate the impact of parameters ( $K_{2U}$ ,  $K_z$ ) on the working modes of motors with different currents and capacities, based on computer models. Research on the operating modes of asynchronous motors is carried out on a computer model with MATLAB/Simulink interactive programming.

### Аннотация

Статья посвящена разработке метода оценки совместного воздействия параметров эксплуатации ( $K_{2U}$ ,  $K_z$ ) на режимы работы АД различных серий и мощностей, основанного на компьютерном моделировании. Исследование режимов работы АД проведено на компьютерной модели, реализованной на основе пакета «SimPowerSystems» интерактивной среды программирования MATLAB/Simulink.

**Keywords:** Electric Power System (EPS); Electrical Energy Quality (EQE); Negative sequence voltage unbalance factor ( $K_{2U}$ ), Load factor ( $K_z$ ); Asynchronous electric motor (AM)

**Ключевые слова:** Электроэнергетическая система (ЭЭС); Качество электрической энергии (КЭЭ); Коэффициент несимметрии напряжений по обратной последовательности ( $K_{2U}$ ), Коэффициент загрузки ( $K_z$ ); Асинхронный электродвигатель (АД)

### Введение

Качество электрической энергии (КЭЭ), связанное с несимметрией напряжений, одна из актуальных проблем в электрических сетях вьетнама.

Экспериментальные исследования показали, что несимметрия напряжений имеет достаточно высокий уровень, преобладает как постоянно действующий фактор при работе электрических сетей. Указанная ситуация, способствует повышению количества рисков технологических отказов, и главным образом, требует адаптивности эксплуатируемого электрооборудования.

Как известно, эффективное функционирование электротехнических комплексов (ЭТК) про-

мышленных предприятий зависит от безаварийной работы отдельных его элементов, в частности асинхронных электродвигателей (АД). Исследования низковольтных асинхронных электродвигателей, работающих на вьетнаме, показывают, что высокая аварийность электродвигателей связана с условиями эксплуатации. Систематизация причин отказов АД позволяет судить о том, что большая часть отказов происходит вследствие некачественного питающего напряжения, при этом вероятность выхода из строя по причине такого типа отказа оценивается в 50% от всех возможных вариантов поломок. Стоит заметить, что экономический ущерб от поломок, потенциально связанный с низким КЭЭ, помимо затрат на восстановление оборудования,

включает в себя ущерб от многочисленных остановок производственного процесса предприятия и упущенной прибыли.

Комплексное решение обозначенной проблемы невозможно без совершенствования методов, ориентированных на оценку и увеличение срока службы АД, их эффективной реализации с использованием программного обеспечения, учитывающих эксплуатационные режимы работы асинхронных электродвигателей [1,6].

Исследования в области разработки и внедрения методов оценки срока службы АД, главным образом, направлены на улучшение эффективности и технико-экономических показателей работы ЭТК, посредством обеспечения безаварийной работы АД в условиях совместного воздействия эксплуатационных факторов. Данные исследования являются востребованными инновационными решениями, основанными на интегрированной информации различных методов исследования. Сказанное выше определяет актуальность проблемы и основных направлений данной работы [2,7].

### Материалы и методы

Достижение задач исследования работоспособности электродвигателей в разнообразных режимах работы эффективно проводить с использованием программных продуктов, в частности применяя компьютерное моделирование на основании пакета «SimPowerSystems» интерактивной среды программирования MATLAB/Simulink.

При формировании имитационной модели исследования использована стандартная модель из библиотеки Simulink с представлением величин в относительных единицах.

Компьютерное моделирование физических процессов, протекающих в АД возможно условно разделить на этапы:

- 1) формирование структурной схемы посредством подбора блоков модели из библиотеки Simulink среды программирования MATLAB;
- 2) соединение элементов схемы модели, обобщение их в единую модель исследования;
- 3) расчёт параметров схемы замещения блоков модели, например, таких как асинхронный электродвигатель.

Компьютерная модель исследования, основанная на пакете

«SimPowerSystems» в среде MATLAB/Simulink, изображена на (рис.1).

Разработанная модель исследования (рис.1) представляет собой схему, состоящую из элементов: асинхронного электродвигателя (блок Asynchronous Machine); трёх однофазных источников напряжения (блоки AC Voltage Source); блоков для измерения основных параметров электродвигателя (блоки Power, Ideal Rotational Motion Sensor); блока задания нагрузки на валу электродвигателя (блок Moment); измерителей напряжения (блок Voltage Measurement) и тока (блок Current Measurement); осциллографов для измерения тока, напряжения, момента и скорости (блок осциллографа Scope); графопостроителя для отображения механической характеристики электродвигателя (блок XY Graph); блоков контроля формы синусоиды питающего напряжения (блоки Three-Phase Sequence Analyzer, Sequence Analyzer).

Реализация расчёта параметров схемы замещения блоков компьютерной модели основана на использовании значений параметров каталожных данных АД, кроме того, расчёте параметров на основании этих данных. Для моделирования режимов работы АД выполним расчёт недостающих данных по методике профессора И. В. Черных, изложенной в [3,5].

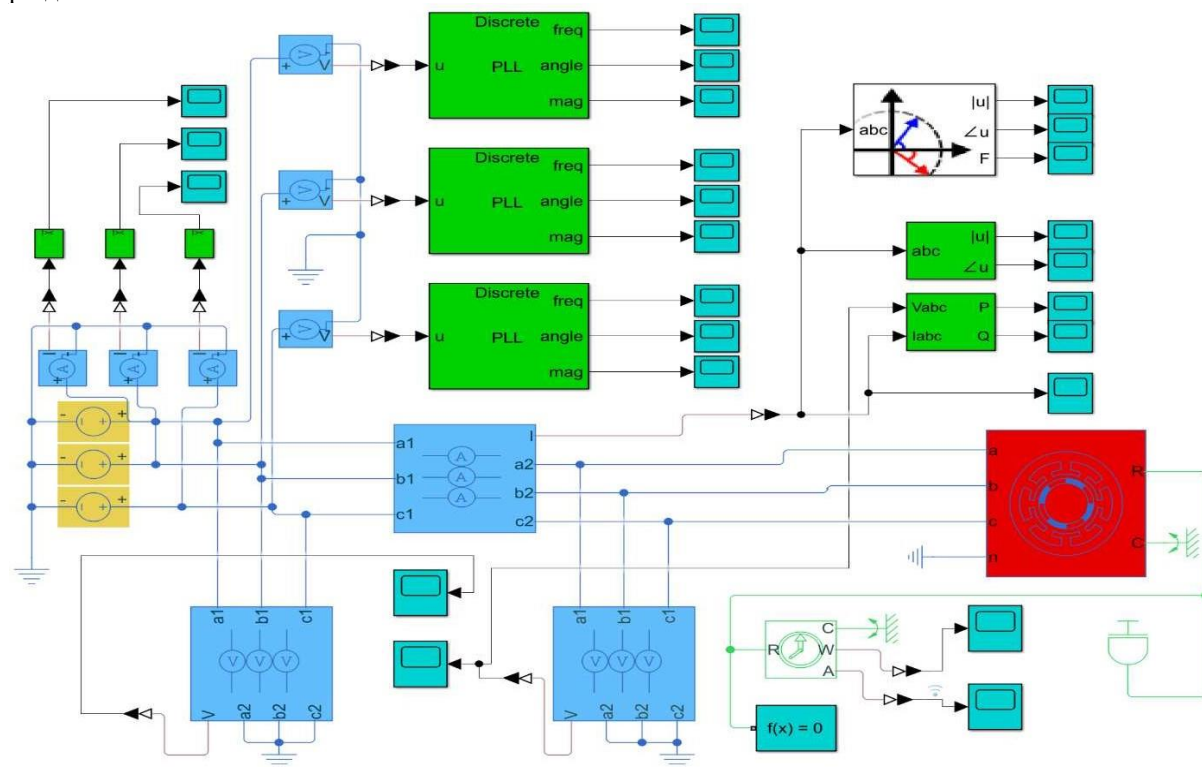
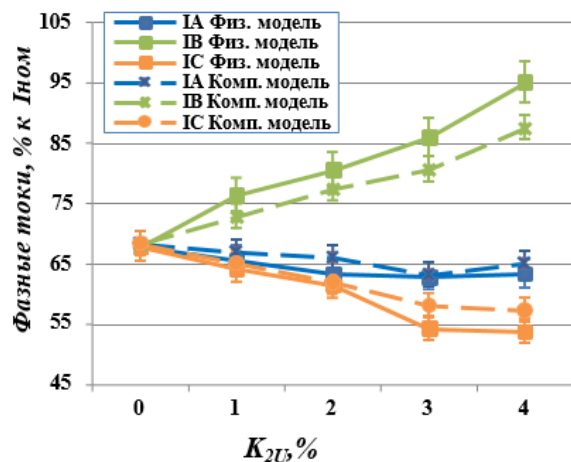


Рис. 1. – Модель работы АД при несимметричном питающем напряжении, сформированная в среде MATLAB /Simulink

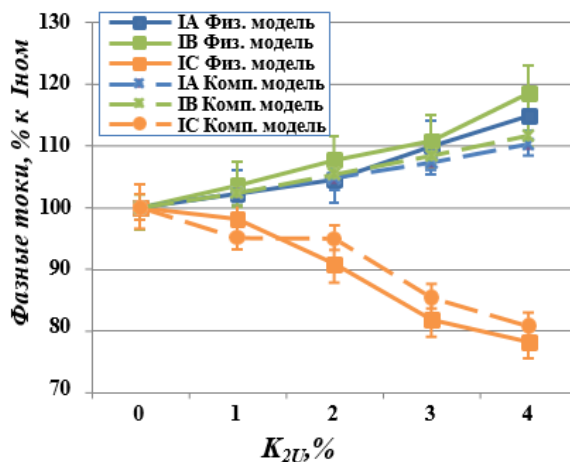
Компьютерная имитация режимов работы АД, с применением разработанной модели (рис.1), позволяет для каждой фазы АД проводить измерения следующих величин: фазных и линейных напряжений, фазных токов. Выполнив моделирование режимов работы АД, снимаем с блоков цифровых

дисплеев значения токов и напряжений электродвигателя.

Следует отметить, что разработанная модель исследования универсальна, изменяя исходные (входные) параметры моделирования, отслеживаем изменения основных параметров АД различных типоразмеров.



Эксперимент «Холостой ход» АД



Эксперимент «Полная нагрузка» АД

Рис.2. - Графическая интерпретация сравнения значений токов в фазах АД от параметра  $K_{2U}$

С целью экспериментального исследования режимов работы АД, вместе с тем, в рамках верификации разработанной компьютерной модели реализована экспериментальная установка.

Эксперименты выполнены на основе компьютерной и физической моделях исследования при режиме «Холостой ход» и «Полная нагрузка» электродвигателя.

Проведение эксперимента позволило подтвердить достоверность и обоснованность сформированной компьютерной модели. Результат сравнения данных экспериментального исследования работы АД, полученных с использованием компьютерного и физического моделирования (рис.2), показал высокую корреляцию между данными компьютерной и физической моделями.

Оценка RMSE соответствует значению 3,15 % при эксперименте «Холостой ход» и 3% при эксперименте «Полной нагрузки» АД. Оценка MAE при эксперименте «Холостой ход» составила 2,39 %, при эксперименте «Полной нагрузки» АД 2,27 %.

### Выводы

Разработана комплексная система методов исследования, направленная на оценку и увеличение срока службы АД, основана на использовании вероятностно-статистических методов исследования, так как они дают количественную оценку причин отказов, помимо этого, использование метода экспертных оценок, позволяет осуществить анализ причин и масштабов отказов АД с участием специалистов, количественное оценивание допустимых значений эксплуатационных параметров АД. Применение физико-статистических и математических методов исследования, необходимо для реализации математического аппарата, позволяющего выявить закономерности влияния воздействующих факторов на эксплуатацию АД, вместе с тем, разработку технических решений по ликвидации факторов,

негативно влияющих на АД ЭТК промышленных предприятий[8].

Таким образом, разработанный метод оценки воздействия эксплуатационных факторов ( $K_{2U}$ ,  $K_3$ ) на АД способствует решению задач экспериментального исследования физических процессов, протекающих в электродвигателях. В первую очередь, позволяет проводить анализ качества функционирования и работоспособности электродвигателей в различных режимах работы.

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## ADVANTAGES AND FEATURES OF TRANSPORTATION OF OVERSIZE CARGO BY RAILWAY TRANSPORT

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## ПРЕИМУЩЕСТВА И ОСОБЕННОСТИ ПЕРЕВОЗКИ НЕГАБАРИТНЫХ ГРУЗОВ ЖЕЛЕЗНОДОРОЖНЫМ ТРАНСПОРТОМ

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<https://doi.org/10.5281/zenodo.10581945>

### Abstract

This article discusses the features of the preparation and process of transporting oversized cargo, the choice of route, the rules for transporting cargo by rail, the main zones and degrees of oversized cargo, as well as the documentation of cargo transportation.

### Аннотация

В данной статье рассматриваются особенности подготовки и процесса транспортировки негабаритного груза, выбор маршрута следования, правила перевозки груза железнодорожным транспортом, основные зоны и степени негабаритности, а также документальное оформление грузоперевозок.

**Keywords:** oversized cargo, zones and degrees of oversized cargo, transporters, large cargo, long cargo, cargo transportation route, technical characteristics, oversized cargo.

**Ключевые слова:** негабаритный груз, зоны и степени негабаритности грузов, транспортеры, крупногабаритный груз, длиномерный груз, маршрут транспортировки груза, технические характеристики, сверхнегабаритный груз.

На сегодняшний день одним из самых востребованных способов транспортировки негабаритных грузов является железная дорога. Популярность железнодорожного транспорта объясняется сочетанием особых географических, исторических и экономических факторов: отсутствием зависимости от погодных условий, сравнительно невысокой стоимостью перевозки, безопасностью, и высокой грузоподъемностью транспортных средств.

С перевозкой стандартных грузов (тарноштучных, угля, щебня), как правило, сложности возникают крайне редко, так как её организация достаточно проста. Однако если требуется перевезти груз, имеющий нестандартные геометрические размеры и массу, то в этом случае дело обстоит гораздо сложнее. Эта задача требует более тщательной подготовки и серьёзного подхода к организации процесса. К тому же необходимо определить, по каким параметрам определяется негабарит, как

выбрать подходящий подвижной состав, и правильно разместить и закрепить на нем груз, чтобы доставить его к месту назначения без повреждений.

Согласно международным торговым правилам, негабаритными принято называть грузы, размер или вес которых значительно превышают общепринятые нормы. На железнодорожном транспорте существует более широкое определение негабарита. Груз, включая упаковку и крепление, считается негабаритным, если он при размещении на открытом подвижном составе, находящемся на прямом горизонтальном пути, превышает очертания основного габарита погрузки или его геометрические выносы в кривых за пределы основного габарита погрузки превышают геометрические выносы в соответствующих кривых расчетного вагона. К таким грузам обычно относят такие товары, как дорожно-строительная, военная и сельскохозяйственная техника, грузовые автомобили,

различные технические конструкции (трубы, балки), громоздкие установки для нефтедобывающей промышленности, медицинское оборудование и т.д.

Поскольку негабаритных грузов очень много, они делятся на несколько видов:

- тяжеловесный груз – это груз, который, будучи погружен в транспортное средство, вызывает превышение хотя бы одного из параметров по разрешенной максимальной массе подвижного состава или осевым нагрузкам, определенных в нормативных документах.

- крупногабаритный груз – это груз, который, будучи погружен в транспортное средство, вызывает превышение хотя бы одного из параметров по предельным габаритным размерам подвижного состава, определенных в нормативных документах. (1).

- длинномерный груз – это груз, который, будучи погружен в транспортное средство, выступает за задний борт более чем на 2 метра.

В зависимости от величины выхода негабаритного груза за очертания основного габарита погрузки в основных зонах установлены следующие степени негабаритности:

- в нижней зоне – 6 степени;
- в боковой зоне – 6 степени;
- в верхней зоне – 3 степени.

В зависимости от высоты (от уровня головки рельса - УГР), на которой груз выходит за габарит погрузки, устанавливаются три основные зоны негабаритности груза:

- зона нижней негабаритности – на высоте от 480 до 1400 мм при расстоянии от оси пути 1626-1760 мм и на высоте 1230-1400 мм при расстоянии от оси пути 1761-2240 мм;
- зона боковой негабаритности – на высоте от 1400 до 4000 мм;
- зона верхней негабаритности – на высоте от 4000 до 5300 мм. (рис.1).

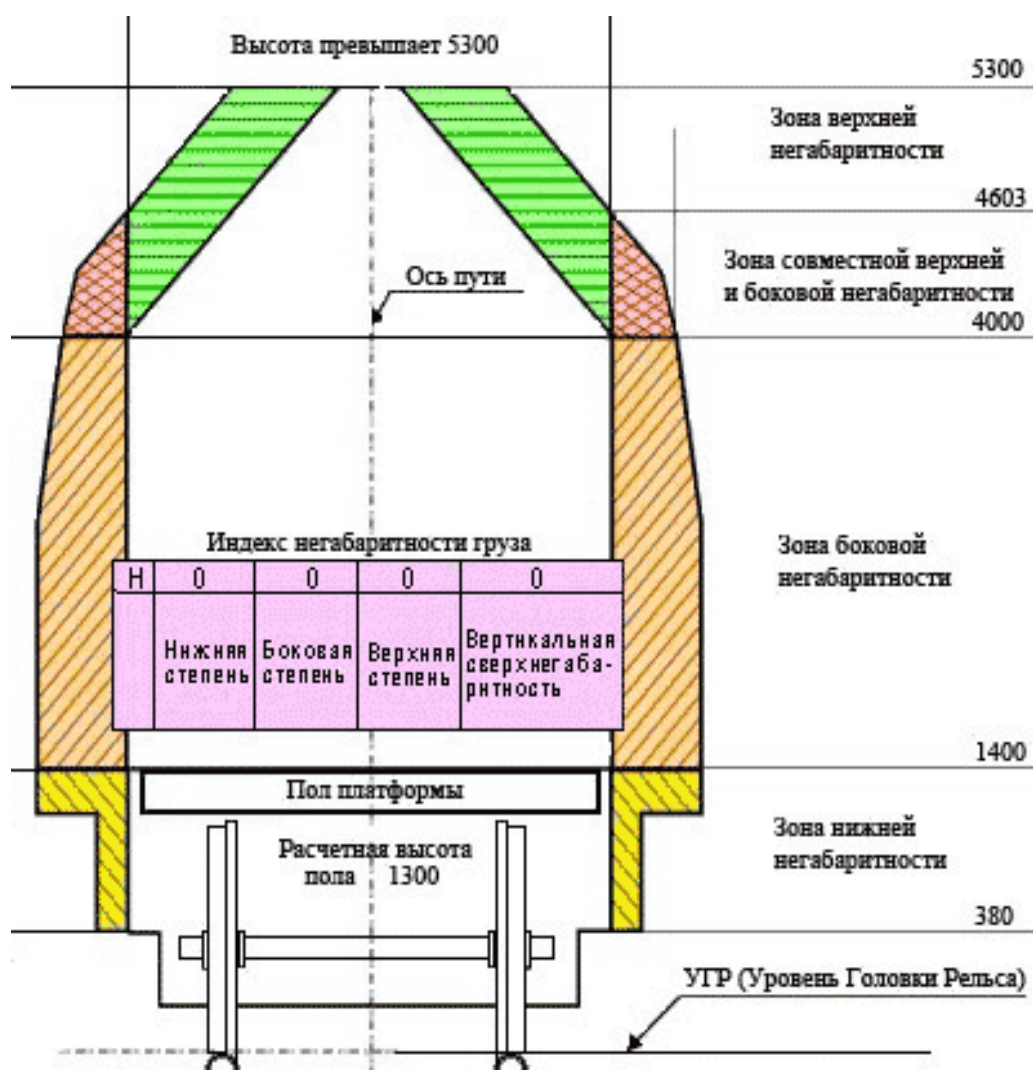


Рисунок 1. Зоны негабаритности грузов.

Для каждой степени негабаритности определены специальные условия, в соответствии с которыми грузы принимаются к перевозке по железным дорогам, а именно: усиленный контроль за следованием негабаритного груза, информация причастных работников, ограничение скорости движения, ограничение или запрет движения по соседним путям, пропуск по заранее подготовленным маршрутам на станциях.

Грузы, размеры которого превышают предельные размеры зон негабаритности, а также габарита погрузки в нижней зоне (ниже 480 мм от УГР) и верхней (выше 5300 мм от УГР), называются сверхнегабаритными.

При железнодорожной перевозке негабаритных грузов очень важно обеспечение безопасности не только самого груза, но и окружающей среды, а также подвижного состава и объектов инфраструктуры железнодорожного транспорта. Как было сказано ранее, транспортировка негабарита требует особо тщательной подготовки и учёта множества факторов: технические возможности железнодорожных средств, железных дорог, возможности транспортных компаний, получение всех требуемых согласований.

В зависимости от типа перевозимого товара и его размеров, необходимо правильно подобрать соответствующий тип вагона, в котором груз будет транспортироваться. Обычно для негабаритных перевозок выбираются такие типы подвижного состава, как четырехосный вагон, железнодорожная платформа, вагон с повышенной грузоподъемностью, транспортер или полувагон. (2).

Одним из самых важных этапов является планирование маршрута доставки. Маршрут определяется исходя из принципа, по которому затрачиваемое на транспортировку время должно быть минимальным. При этом важно учесть количество железнодорожных путей, время года, погодные условия. Если маршрутом предусмотрена мультимодальная транспортировка, то осуществляется полный контроль над сохранностью и целостностью негабарита в местах перевалки. Подвижной состав для железнодорожной доставки негабаритных грузов обычно включает вагоны открытого типа. Мощные транспортеры идеально подходят для перевозки тяжеловесных грузовых мест, а длинномерные доставляются специальными открытыми платформами. (рис.2).



*Рисунок 2. Мощные транспортеры для перевозки тяжеловесных грузов.*

Проверяется осуществление качественных и безопасных работ по погрузке и креплению. При производстве маневров или резких торможений поезда, отдельные вагоны могут ударяться между собой, что приводит в лучшем случае к смещению негабаритных грузов, которые плохо прикреплены к основе, а в худшем - к их повреждению. Чтобы

обеспечить безопасность негабаритных грузов, требуется их качественная упаковка в транспортную тару, закрепление и увязывание. (3).

Автокраны, гусеничный транспорт, станки и др. в вагоне или на платформе располагаются согласно погрузочной схеме, которая составляется на основе требований Технических условий по размещению и креплению грузов. (рис.3).



*Рисунок 3. Расположение гусеничного транспорта на платформе*

К схеме также прилагаются пояснения с проведенными расчетами (при стандартной скорости движения состава 100 км/ч) продольных и поперечных инерционных сил, препятствующих движению поезда, влияния ветровой силы, а также массы груза, стойкости внутри вагона, центра тяжести и его смещения, усилий в растяжках, которые не дают грузу перевернуться.

Для обеспечения безопасности негабаритного груза от деформации на железнодорожном транспорте используются такие виды креплений, как щиты из дерева, растяжки из проволоки, упорные брусья и различные обвязки. (4).

После выбора и согласования маршрута, сбора документов, организации погрузки и крепления

наступает последний этап - непосредственно доставка груза. Негабаритный груз по железной дороге доставляется почти в любую точку страны в короткие сроки и с минимальными затратами. Практически на каждой станции фиксируется время прибытия груженого поезда, а также сохранность груза. Для доставки негабаритного груза непосредственно к заказчику может применяться несколько видов грузового транспорта, и такая перевозка называется смешанной.

На станции, которая находится максимально близко к пункту назначения, негабаритный груз переносят на автомобильную платформу с помощью специального подъемного оборудования. Автоперевозка также прорабатывается заранее и санкционирована. (рис.4).



*Рисунок 4. Переноска негабаритного груза на автомобильную платформу.*

В процессе погрузки и выгрузки негабаритных грузов важно вовремя выявить технические и коммерческие неисправности вагонов, а также быстро определить степень негабаритности. Для этого на станциях в настоящее время внедряется автоматизированная система коммерческого осмотра поездов и вагонов (АСКО-ПВ). Система АСКО-ПВ представляет собой электронные габаритные ворота, оснащённые системой телевизионного контроля (видеокамерами). Система обеспечивает выполнение задач по осмотру вагонов и контейнеров на предмет правильности загрузки и сохранности грузов, а также выявляет отдельные неисправности вагонов. В процессе осмотра вагона (поезда) он проходит через электронные ворота на скорости до 40 километров в час. (5).

При осмотре могут быть выявлены технические неисправности, проверяются правильность размещения и крепления груза на открытом подвижном составе, исправность крыш вагонов и цистерн, наличие остатков грузов и реквизитов крепления. При обнаружении неисправностей или негабаритности вагон отцепляют.

Одной из важных подсистем АСКО-ПВ является система электронных габаритных ворот. Она обеспечивает автоматический контроль зонального габарита погрузки по девяти зонам, основного габарита погрузки по двум зонам. При прохождении поезда в створе габаритных ворот выполняется:

- вывод на экран монитора видеоизображений проходящего поезда в режиме «полиэкранный» с четырёх телекамер (для контроля правого и левого борта вагона, крыши вагона и люков цистерн), с возможностью выбора телекамеры для полноэкранного просмотра;
- цифровая регистрация видеоизображений с четырёх телекамер на жесткие диски;
- автоматическое измерение скорости движения поезда в створе ворот;
- счет вагонов начиная с головы поезда (рисунк 3).

Данная система позволяет значительно сократить трудозатраты работников железнодорожных станций и увеличить производительность и безопасность труда при работе с негабаритными грузами.

Исходя из описанного выше, можно выделить неоспоримые преимущества железнодорожного транспорта при перевозке негабаритных грузов:

- высокий уровень развития железнодорожной сети страны;
- возможность использования мультимодальных перевозок;
- высокие технические характеристики подвижного состава железных дорог (грузоподъемность, универсальность, размеры) и возможность перевозить любые объекты;
- железнодорожными путями можно перевозить военную и сельскохозяйственную технику, промышленное оборудование, металлоконструкции, цистерны и прочее;
- перевозка товаров партиями. За один раз можно перевезти груз весом в 500 тонн;
- ускорение доставки из-за отсутствия деления перевозки на несколько частей;
- сравнительно низкая стоимость доставки в сравнении с перевозкой на грузовых автомобилях;
- наличие на станциях специальных автоматизированных систем по выявлению неисправностей подвижного состава, а также определения негабаритности грузов. (6).

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## IMPACT OF AN INFORMATION ENVIRONMENT TO SOCIETY

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<https://doi.org/10.5281/zenodo.10581956>**Abstract**

The article includes the essence and part of the development of the Data Society in the early XXI century and marked that the method of organizing the Data Society covers financially established states. Azerbaijan also hosted the organization of "Data Society" and the Republic has won a great victory in this matter. The article says that in the XXI century and the open need for its trade is an invaluable part of the progress of the leading society today.

**Keywords:** information, communities, internet, integration, information area

In the early 1960s, the concept of "Information Society" in Japan has been the fore and has been the subject of theoretical and scientific research for more than fifty years. The main philosophical objectives of the information society are generally to meet the needs of information and knowledge and strengthen their social communication between them, spreading their ideas and knowledge to the general public. The main purpose of this method is to then solve social problems and create rich information that can be used to promote human progress.

In other word, the information society is a society that the vast majority of people use modern information technology for creating, transfer, processing and storage of information, and above all, in the purest form of information. The main priority of the state is an information society. One of the main goals of the state policy of the independent Republic of Azerbaijan is the creation of an information society. In recent years, information technologies in society are observed significantly due to the sustainable and thoughtful initiatives implemented in this area.

Many important achievements that have prosecuted all areas of human activity in the modern information society have been possible through the rapid development of new "computer and information" technologies, digital and telecommunications technologies and other factors. The establishment of a successful industrial technological revolution and the latest computer technologies in the third decade of the XXI century is the result of the global integration process, which covers the whole world today. With its amnesty, he hopes to build the first high-speed Synchronous information technology in the world.

The foundation of the work carried out in the direction of building an "information society" in Azerbaijan was laid by the "National Strategy on Information and Communication Technologies for the Development of the Republic of Azerbaijan" approved by the Decree of the great leader Heydar Aliyev dated February 17, 2003, and the main goal of this Strategy is "the development of information and communication technologies is to help the democratic development of the country and ensure the transition to the information society by using it widely.

Overall, increased efficiency, lower costs, electronic document exchange in government agencies, e-

commerce systems, and high-quality goods and services are the benefits of the country's increasing digitization. A society devoted mainly to the creation, storage, processing and use of information is called an information society. In the information society, people and groups must collect, process and analyze certain information before making decisions. The amount of information has increased so much that one person cannot process it by himself. For this, special technical means are required for this work.

The process of computerization of society ensures the transition from industrial society to information society. The process of computerization of the society gives every member of the society the opportunity to receive information according to his needs. Until recently, people used the word "information" instead of "computerization". However, the word "computerization" refers to the development and application of computer technology. Social computerization is a broader concept than computerization. Therefore, today, not the technical means, but the goals and essence of the socio-technical process are more important. Computerization is a component of the computerization process, its technical basis.

In modern age, it is difficult to give a precise definition of the concept of "information". In encyclopedic publications, it is said that the concept of "information" comes from the Latin word "informati". From the point of view of materialist philosophy, information is perceived and evaluated as a description of the real world using information. Information can be audio, text, images, digital indicators, graphs, tables, etc. In modern times, information is considered one of the main driving forces of human society as a very important resource. It exists independently of our perception and is reflected in our perception as a result of reading, receiving in the form of signals, interaction of stimuli.

In the case of multiform information, all material exists in one object and becomes something else through the process of movement. In studying the process of computerization that occurs in the physical world living nature and human life, scientific resources can be obtained and obtained. In addition, information is conceptually given in "informatics" science.

Informatics, which separated from cybernetics and became an independent scientific field in the middle of the last century, is characterized by the methods of cre-

ating, receiving, processing and transmitting information. Although information in the general scientific sense reflects the exchange of information between people, as well as between people and devices, and signals of animate and inanimate nature, there are still different definitions.

The share of the mass media in conveying the information and events happening in the country and around the world to the society is checked. By playing the role of witness and member in complex forms, the mass media guarantee the delivery of information to the society. The mass media's ability to advise, educate, engage is enough to prove its role in the progress of society. Mass media speak their case by informing the society. In advanced times, mass media means radio, television, conventional media (daily newspapers, magazines) and the Internet. Mass media reflect open life and ICT becomes a means of communication between individuals, government agencies and society in general. Mass media, as a "reflection" of society, play an important role in issues of public power, political forms, character, as well as public and social issues. In the most advanced world, the mass media, in addition to being a means of propaganda and instruction, occupy an imperative place in the management of social-political and socio-economic forms.

Currently, the improvement of all its areas is related to the development of the mental abilities of information assets and the extensive use of information assets. In extension, individuals should be familiar with the current state of personal computers and the Internet, the possible outcomes and application ranges of advanced information and communication advances, and the science and information industry field of information innovation. Innovation use area, information innovation level to government members, primarily to science and instruction. It is considered one of the most important imperatives before the system.

Data is one of the most important system-shaping variables in an advanced society. Another reason why data corruption is so high is related to the professionalism of its use. It lacks a clear understanding of how to control large areas of data and how to control any area of social governance.

We conclude that, regardless of geography, the modern "information society" involves satisfying everyone's need for all kinds of knowledge and comprehensive information, developing an interpersonal communication environment, and rapidly providing the public with the latest information.

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№125/2024

**Norwegian Journal of development of the International Science**

ISSN 3453-9875

It was established in November 2016 with support from the Norwegian Academy of Science.

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