“Economic diversification as a factor of sustainable development: A case of Azerbaijan”

AUTHORS
Arzuman Huseynov
Lala Hamidova
Elnara Samedova

ARTICLE INFO

DOI
http://dx.doi.org/10.21511/ppm.21(3).2023.12

RELEASED ON
Monday, 24 July 2023

RECEIVED ON
Saturday, 25 February 2023

ACCEPTED ON
Wednesday, 12 July 2023

LICENSE
This work is licensed under a Creative Commons Attribution 4.0 International License

JOURNAL
"Problems and Perspectives in Management"

ISSN PRINT
1727-7051

ISSN ONLINE
1810-5467

PUBLISHER
LLC “Consulting Publishing Company “Business Perspectives”

FOUNDER
LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES
36

NUMBER OF FIGURES
4

NUMBER OF TABLES
1

© The author(s) 2023. This publication is an open access article.
Abstract

In modern conditions, the one-sidedness in the economy of Azerbaijan makes it necessary to accelerate the diversification process of the country’s economy. From this point of view, the development of the non-oil sector in the country presents the main priority of the government’s economic policy in Azerbaijan. The purpose of the study is to investigate ways of ensuring the diversification of the national industries in Azerbaijan using the Herfindahl-Hirshman index. As a result of the analysis, the level of diversification in Azerbaijan’s economy and exports was found to be very low (in 2021, the Herfindahl-Hirshman index was 0.23 for the economy and 0.79 for exports). The findings indicate that cooperation between the state and business plays a significant role in increasing the diversification of the economy following the goals of sustainable development of Azerbaijan. On the other hand, it helps stimulate entrepreneurship development in the non-oil sector. One of the ways to solve existing problems in this area is to create Eximbanks to increase the country’s export capabilities of non-oil products. The study offers recommendations to speed up the process of diversification of the economy in Azerbaijan and increase its efficiency.

Keywords

- Azerbaijan
- diversification
- Eximbank
- export
- investment
- non-oil sector
- public-private partnership
- resource

JEL Classification

- O11
- O44
- P48

INTRODUCTION

In recent years, the Azerbaijani economy has been proliferating. The volume of the country’s gross domestic product (GDP) in 2003 was 7.1 billion manats, and in 2021 this figure increased by 13.1 times and reached 92.9 billion manats. As a result of strategic decisions, billions of dollars of foreign investments were attracted to the oil and gas sector, which led to a rapid increase in oil and gas production and exports, as well as large oil revenues for the country. An essential part of the country’s oil revenues was directed at improving the welfare of the population, revitalizing the economy through state investments, and building social and production infrastructure in the country. Thus, economic growth rates increased, and in a short time, Azerbaijan became one of the countries with a high economic growth rate. However, in this process, the dependence of the country’s economy on oil and gas revenues also increased. In 2021, approximately 36.5% of the country’s GDP fell to the oil sector’s share. At the same time, the level of dependence of the revenues of the state budget of Azerbaijan on oil revenues is still high. Thus, in 2021, 48% of the revenues of the state budget will be transferred from the State Oil Fund of Azerbaijan. Starting from the middle of 2014, the sharp decrease in the price of oil in the...
world market resulted in a decrease in oil and gas revenues to the country and a particular limitation of the state’s financial capabilities. In such circumstances, the government had to abandon the growth policy based on natural resource revenues, which it had implemented then.

From the long-term experiences of resource countries, one of the primary ways of reducing or eliminating the national economy’s dependence on resource income, and the most important, is to diversify the country’s economy. Diversification is one of the most important means of increasing sustainability, revitalization, and the dynamic development of the economy. Especially when the country’s economy is in crisis, it is used as one of the ways out of this situation. In addition, diversification leads to getting rid of the one-sided development of the economy, to the rapid development of industries in interaction, and, as a result, to increasing efficiency.

According to the reports of the State Statistical Committee of Azerbaijan, up to 70% of the industrial products consumed by the population in Azerbaijan are imported products. If at least half of the funds spent on the import of so many goods were directed to the production of those products in the country, and if domestically produced products replaced the imported goods, the population’s demand would be met mainly at the expense of domestically produced goods, providing diversification in the country’s economy. At the same time, the development of local production, on the one hand, could stimulate economic growth by increasing the creation of added value in the country; on the other hand, it could have prevented the devaluation of the national currency that occurred in 2015 by sharply reducing the flow of foreign currency from one country to another.

1. LITERATURE REVIEW

An ideal and constant economy provides the most significant total welfare with the least resources utilized, causing the most minor environmental damage. Ensuring constant economic development is vital in terms of the effectiveness of the state’s potentiality. From this point of view, there are several factors to ensure sustainable economic development. One of the important factors is the diversification of the economy. This factor enables states to intensify development rates by saving their resources. Generally, both in foreign literature and in many research works and reports made in Azerbaijan, diversification is shown as a necessary step in ensuring the stability of the economy in all resource-rich countries (Gelb, 2012; Jolo et al., 2022; Ahmadova et al., 2021; Muhamad et al., 2021).

Diversification of the economy means forming newly created added value (or GDP) in the country during the year, not in one or two areas but in a larger number of areas. Diversification of exports means the wide variety of products exported by the country to world markets, as well as the provision of the product (service), country, and regional diversity of export markets (Matezo et al., 2021; Makhlouf et al., 2015). Export diversification is a set of policies that involve changing the specific weight of individual goods in the existing export basket, offering new goods to the export basket, and gaining access to new geographic markets (Al-Marhubi, 2000; Bahar & Santos, 2017; Mau, 2016).

The UN Framework Convention on Climate Change explains economic diversification as producing a wide variety of products in the economy (UNFCCC, 2016). This concept also includes the diversification of export markets and the diversification of income sources apart from domestic economic activities.

Auty (1993), Barbier (2019), and Cavalcanti et al. (2019) research the problem of the influence of raw resources on the economic development of countries. Most of the studies show that during the last decades, countries with poor natural resources have developed faster than countries whose exports are dominated by raw materials (Ben-Salha et al., 2021; Soukar, 2019; Lashitew et al., 2021; Ross, 2017). Collier and Goderis (2007) established that in the conditions of the boom in oil prices, the industrial production of oil-producing countries increases rapidly only in the first few years. Further, a significant degradation occurs for a longer period, reducing all the obtained achieve-
ments to a minimum. The econometric model created by Melamed et al. (2010) shows that 25-30 years after the beginning of the oil boom, the industrial production of the oil-exporting country will be 25% less than if there was no boom.

However, there are many examples of countries that, despite rich natural resources, have high rates of economic development: the USA, Canada, Saudi Arabia, Australia, Indonesia, Norway, and Germany (Naude & Rossouw, 2011). Mehlum et al. (2006), Szalai (2018), and Hasanli and Ismayilova (2017) argue that if a country has strong institutions, then Auty’s (1993) theory of the “curse of natural resources” does not work in this case. Thus, rich natural resources are not a “curse” but a “good” for the country.

Developed countries with natural resources are mainly oil-gas and mining industry countries; their dependence on these resources is accompanied by an impressively large share of the mentioned industrial products in the GDP, as well as their sales occupying the main place in exports. According to the assessment of the International Monetary Fund (2022), 25% of the GDP, 25% of the income in the state budget due to the income from the sale of the products of the extractive industry, as well as 50% of the demand – the registration of these products gives grounds for classifying those countries as classic resource-rich countries. Recently, these criteria are not taken into consideration as a strict limit. Depending on their economic situation and political regimes, producing countries show dependence on resources differently, and even if they do not meet this criterion, they demonstrate that the dependence problem is relevant to them.

The classical theory states that several conditioning factors must be present for economic diversification to be successful. For this, it is crucial to have relevant institutions in the country first. These institutions must ensure the rule of law, especially the inviolability of property rights and the protection of the competitive environment. Examples of typical diversification institutions currently existing in individual resource countries include investment funds; funds for supporting applied innovations; funds related to infrastructure development; funds for supporting the development of high technologies; financial institutions that support the development of entrepreneurship; non-resource export promotion, lending, and insurance funds; non-resource industry and agricultural sector support funds; venture funds; technological parks, business incubators, industrial parks.

Cherif et al. (2022), analyzing world experience, show that economic diversification strategies do not always result in success, and one of the decisive factors for this is the improvement of development institutions.

Therefore, this study aims to analyze ways to ensure the diversification of national industries in Azerbaijan in the context of the transition to a new economic growth model.

2. METHODOLOGY

The level of diversification of the economy and export of Azerbaijan was calculated using the Herfindahl-Hirschman index (HHI). The main task is to determine the main directions of developing the non-oil sector in Azerbaijan. The approach by Ahmadova et al. (2021) was selected as a methodology. This study aimed to analyze factors influencing the process of diversification of the economy.

As Ahmadova et al. (2021) noted, the hypothetical model consists of nine variables influencing the real gross domestic product (RGDP) level. Based on the indicated indicators, two models were obtained with the help of correlation-regression analysis:

\[
RGDP = 2,4298 + 0,5459 \cdot G + \\
+1,0222 \cdot R + 1,00002 \cdot O + 1,0081 \cdot P + \\
+1,0414 \cdot U + 0,9999 \cdot Id + 1,00001 \cdot If + \\
+1,0016 \cdot L + 1,0000 \cdot E, \\
(1)
\]

\[
RGDP = 1,0999 + 1,00003 \cdot O + \\
+1,01 \cdot P + 0,9999 \cdot Id + 1,0021 \cdot L.
(2)
\]

When determining the level of diversification, the Herfindahl-Hirschman index (HHI) was calculated according to the formula:
where \( s_n \) is the share of the industry in the economy (or export).

The value of the Herfindahl-Hirschman index varies from 0 to 1. The index’s high value indicates a high concentration level and, therefore, a low level of diversification. The analysis covers the period from 2000 to 2021. The year 2000 is taken as the beginning of the analyzed period because, after the declaration of independence of the Republic of Azerbaijan, it was the first year when GDP growth in the country began. Economic indicators are presented in the national currency – Azerbaijani AZN. As of January 1, 2023, the exchange rate of the AZN to the dollar is 0.59 US dollars. Data from the State Committee on Statistics of the Azerbaijan Republic, World Bank reports, and the Economist Intelligence Unit reports were used for the analysis.

3. RESULTS

The economy of Azerbaijan, which regained its independence in 1991, was formed as a part of the unified national economic complex of the USSR. Azerbaijan had a growing industrial sector, dynamic agriculture, and services sector during the Soviet era. As all other republics were parts of the USSR, the economy of Azerbaijan was utterly connected to a single economic complex. When the unified economic system of the USSR collapsed, the activity of a critical part of the enterprises in the republic stopped, and the country faced severe economic and social problems. The prices were liberalized in the country, the national currency was circulated, and economic reforms were launched in 1992. The disruption of political stability and the Karabakh war led to the deepening of the economic crisis and recession.

Independent Azerbaijan signed the first international oil contract – the “Azeri-Chirag-Guneshli” Production Sharing Agreement (PSA). Over the next few years, international oil contracts exceeded in September 1994. These agreements, which envisage the development of new oil and gas fields from the Caspian Sea, primarily led to an increase in the interest of investors in the country’s oil sector, as well as in the country’s economy as a whole, and attracted large-scale foreign investments to the country (Figure 1).

The privatization of state property, which started in 1995, gained a large scale in 1997, and the private sector began to expand at the same time. As a result, it was possible to prevent recession processes in the economy in a short period and to achieve an increase in GDP, to stop price growth. From 1997 to 2000, an average annual growth of 8.6% in GDP was recorded, high inflationary processes occurred, and it was replaced by an average an-
The growth of GDP in Azerbaijan has been continuous since 2000: in 2000, the GDP of the country was 4.7 billion AZN, and in 2021 it reached the level of 92.9 billion AZN; in other words, it increased 19.8 times (Figure 2).

Such a rapid increase in the volume of GDP in Azerbaijan during the mentioned period is related to the increase in the volume of oil and gas production and export in the country and the rise in oil prices in the world oil market. A decrease in the dynamics of the real economic growth rate has been observed in the economy of Azerbaijan in the last few years. One of the important characteristics of resource-rich countries’ economies is that the economic growth rate slows down after a certain period. Such a tendency is highlighted as one of the main negative symptoms of the resource-curse concept. Three reasons can explain the decrease in growth rates:

1) a slight in the growth of the oil sector due to the decrease in the growth rates of oil production and prices;

2) the negative impact of the global financial crisis on aggregate demand and credit markets;

3) base effect (since GDP grows on a larger base each year, the same amount of growth results in lower interest rate growth).

Herfindahl-Hirshman Index (HHI) varied between 0.22 and 0.26 for 2005–2021. High HHI level, as a result, weak diversification is characteristic of Azerbaijan because its GDP structure is dominated by the extractive industry (Figure 3).

The central part of exports in Azerbaijan falls on the energy sector’s share. Hydrocarbons account for up to 90% of the total export volume. The prominent export countries are Italy, Turkey, Israel, India, and Germany. The main trade partners of Azerbaijan in the field of imports are Russia, Turkey, China, Switzerland, and the USA (World Bank, 2019). In 2020, exports decreased by 11.5% due to the turmoil in the world energy trade. As restrictions due to the COVID-19 pandemic were gradually lifted in the first half of 2021, foreign trade revived, and energy exports rebounded. Import volumes also increased by 34% in early 2021 as domestic demand increased due to the lifting of the COVID-19 lockdown measures (The Economist Intelligence Unit, 2021).

The main products exported by Azerbaijan are crude oil and natural gas. In 2002–2018, their...
share in exports amounted to approximately 90%. Due to high world oil prices, oil production and export volume increased, which continued until 2015. Despite the fall in oil prices, in 2018, the volume of exported oil increased and amounted to almost 92% of total exports. However, this figure has been declining in subsequent years, and in 2021, the indicated figure was 88.4% (Hamidova, 2021). As seen from the HHI calculations in Figure 4, Azerbaijan’s exports show a low level of diversification. Over the past five years, the level of export diversification in Azerbaijan amounted to 0.77-0.84.

Thus, an analysis of the country’s diversification level signals the risks of not achieving stable, sustainable long-term economic growth. Indicators such as volume of state investments, share in budget revenues, and ratio to GDP during 2000–2021 years are presented in Table 1.

If the volume of state investments was 26.5 million AZN in 2000, it was 159.9 million AZN in 2005, and 2835 million AZN in 2021 (Table 1). Compared to 2000, the volume of state investments in 2021 increased approximately 107 times, but the volume of state investments in 2021 decreased approximately 1.8 times compared to 2015. During this period, the ratio of state investments to GDP also increased from 0.56% to 3.05%. The indicator of the ratio of state investments to GDP continues to decrease after 2015. One of the main reasons for this is the continuous increase in the country’s GDP volume since 2015, and the other is the decrease in state investments in recent times.

Since 2006, the state budget’s investment expenses and its share in budget expenses have increased rapidly. Investment costs of the state budget are mainly directed to the reconstruction, restoration, and construction of new production and social facilities. Indicators such as volume of state investments, share in budget revenues, and ratio to GDP during 2000–2021 years are presented in Table 1.

**Table 1. The volume of state investments, share in budget revenues, and ratio to GDP in 2000–2021**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>State investments, million AZN</td>
<td>26.53</td>
<td>159.89</td>
<td>4132.37</td>
<td>4987.46</td>
<td>4909</td>
<td>2835</td>
</tr>
<tr>
<td>Share in the state budget,%</td>
<td>3.47</td>
<td>7.47</td>
<td>35.12</td>
<td>28.5</td>
<td>20.3</td>
<td>11.14</td>
</tr>
<tr>
<td>Ratio to GDP, %</td>
<td>0.56</td>
<td>1.28</td>
<td>9.73</td>
<td>9.17</td>
<td>6.76</td>
<td>3.05</td>
</tr>
</tbody>
</table>

**Figure 3. Industry concentration level in GDP (HHI)**

**Figure 4. HHI – Export diversification**

infrastructure in the country. According to the Accounts Chamber of the Republic of Azerbaijan on the draft Law of the Republic of Azerbaijan “On the implementation of the state budget of the Republic of Azerbaijan for 2021”, 2835 million AZN from the state budget directed to state investment 65% was directed to the financing of infrastructure projects, 27.2% to socially oriented projects, and 7.8% to defense and law enforcement agencies, as well as other projects.

The stability of the economy and the growth of its diversification are interconnected. Empirical evidence has shown that a country with a more developed economic structure is the most resilient to external shocks. Indeed, during the crisis of 2009, more diversified countries coped better with global economic shocks. In addition, economies with more complex structures tend to have lower output volatility. However, government revenue growth slows down as the economy changes and becomes more competitive. At the same time, the high growth rates of oil revenues observed in Azerbaijan from 2000 to 2021 can be explained by the less diversified economy and resource dependence.

4. DISCUSSION

Continuing the study of Ahmadova et al. (2021), the second model obtained by this study exposed the most significant factors influencing the level of real GDP in Azerbaijan: the volume of oil production, the price of oil, the volume of domestic investments, and the level of employment. The results of the model show the dependence of the economy of Azerbaijan on the level of oil production. As noted earlier, the development of the non-oil sector is necessary for the successful diversification of the economy. According to the results of the model, domestic investments will contribute to this.

From the experience of countries that have successfully implemented the policy of diversification in their national economy, the successful implementation of diversification in the country’s economy is directly dependent on investment costs in the country’s economy, especially state investment costs. The implementation of economic diversification in itself requires sufficient funds from the government. These funds are mainly used for reforms, structural change implementation, human capital investments, and necessary preferences. In other words, economic diversification is a significant cost item for the government at the first stage, and the government should be financially ready for its consistent and continuous implementation. It should build its macroeconomic policy in this context. Azerbaijan started its state investment experience in 1995. At that time, the volume of state investments was limited (15.8 million AZN), making up 5% of budget expenditures. Starting from 2005, the increase in oil production under the ACG contract and the increase in the price of crude oil in the world market led to a sharp increase in the state's income, which enabled the government to expand this practice.

Although the practice of state investments in Azerbaijan began to expand in 2005, the government only adopted a document called the State Investment Policy in 2008 and defined clear priorities in this area:

1) development of infrastructure areas and provision of continuous operation of their facilities;

2) ensuring balanced development of regions;

3) continuous development of human capital and strengthening of social security.

Successfully realizing diversification in the country's economy is directly dependent on investment costs in the country's economy. State-business cooperation can play an important role in solving this problem. By the decision of the Ministry of Economy of the Azerbaijan Republic (2019), the model charter on the Center for the Development of State-Entrepreneurial Partnership was approved.

Despite these, when looking at the ownership structure of the internal investments directed to the main capital in the country’s economy, it becomes clear that most of these investments fell into the state sector’s share. Bank lending accounts for a small share.

In order to develop state-business cooperation in the country’s economy, a law “On State-Business
Cooperation” should be prepared in Azerbaijan. The draft law should specify principles of implementation of state-business cooperation; the powers of state bodies that control and manage the processes of state-business cooperation; objects, signs, and conditions of implementation of state-business cooperation; forms and methods of implementation of state-business cooperation; procedure for starting and preparation of state-business cooperation projects; concluding, changing, and canceling the state-business cooperation agreement; providing guarantees, sharing risks; the procedure for the control of state-business cooperation.

It is clear from the experience of the countries that apply state-business cooperation models that these models can still be ineffective. Therefore, the priority areas where the state-business cooperation projects will be implemented should be determined.

The nature and structure of protection in foreign markets shape opportunities for export diversification in developing countries. In modern conditions, state aid, internal and external processing regimes, credit, insurance, and guarantee programs are provided by Eximbank during the promotion of exports in foreign countries. They use promotion methods such as export-oriented state aid. The primary purpose of state aid for export is to support export-oriented activities of exporting firms, mainly SMEs, in both the production and marketing stages, to help overcome the problems they face in international markets and to allow them to gain competitiveness. To achieve this goal, measures are implemented in the following directions: assistance to research and work of companies; support for the development of international cooperation; market research and market entry support; support for international domestic and foreign trade fairs; support for environmental costs; support for external division, branding and advertising activities; branding of the country’s products abroad, placing the image of the country’s products and supporting “Made in Azerbaijan.”

One of the most used methods of promoting exports in foreign countries is the establishment of Eximbanks. One such Eximbanks is Turk Eximbank, established in Turkey in 1980. In 2021, 10 935 economic entities were supported by Turk Eximbank in the amount of 46.1 billion US dollars, including credit support in the amount of 22.5 billion US dollars and insurance support in the amount of 23.6 billion US dollars (Export Credit Bank of Turkey, 2022).

Turk Eximbank aims to establish exports, diversify exported products, gain new markets for exported products, increase the share of exporters in international trade, and offer important assistance to business people. In addition, it strives to ensure the competitiveness and security of exporters, contractors, and traders working abroad in international markets, exporting from investments abroad, or assisting and promoting the manufacture and sale of products to receive foreign currency. In order to promote a balanced, healthy, and internationally competitive export policy, the main objectives of Turk Eximbank are to transfer credit assistance to meet needs and ensure competitiveness, expand the role of local and foreign financial institutions in financing activities, and ensure their functional role in financing these institutions (Export Credit Bank of Turkey, 2022).

The results of the analyses showed that some problems have a negative impact on the expansion of export opportunities in Azerbaijan:

1) failure to implement a proper diversification policy in the country’s economy and its sectors, especially in the industry;

2) failure to create a favorable investment environment in the country and, as a result, the volume of investment in non-oil fields is not at a satisfactory level;

3) failure to achieve high development of infrastructure (production, market, etc.) areas that will serve the development of non-oil areas;

4) insufficient development of the legal framework and infrastructure areas that will create conditions for the development of innovation activity in non-oil fields;

5) non-oil industrial enterprises are not inclined to produce competitive, innovation-oriented products.
Competition policy can also play a key role in improving the efficiency of domestic products that supply industries and support greater backward and forward integrations that promote diversification. Reforms that increase competition in input markets affect downstream firms. A favorable competitive environment creates conditions for efficient use of the resources available in the country. In the conditions of market relations, implementing measures aimed at protecting competition in the Republican market is one of the essential functions of the state, along with the stimulation of entrepreneurial activity. In order to further improve the competitive environment in the country, the government of Azerbaijan should first improve and adopt the Competition Act. Adopting the Competition Act in the country, improving the existing legislation in the field of antimonopoly, and adapting to European standards can lead to perfect antimonopoly legislation. Unfortunately, the biggest obstacles in the direction of diversification in Azerbaijan are precisely in this direction. Restrictions on access to the market and financial resources, the lack of complete establishment of the competitive environment, and severe difficulties in protecting property rights make it necessary to carry out institutional reforms first.

CONCLUSION

According to the aim of the study, an analysis was made of the level of dependence of the economy and exports of Azerbaijan on oil and gas resources using the Herfindahl-Hirsch Index for the period 2005–2021. The analysis showed a high concentration of the oil industry in GDP (HHI = 0.22-0.26), which means a low level of economic diversification. 88.4% of Azerbaijan’s exports in 2021 were due to the export of crude oil. These sectors are at the bottom of the value chain and cannot generate high-added value.

Successfully realizing diversification in the country’s economy is directly dependent on investment costs in the country’s economy. State-business cooperation can play an important role in solving this problem. In order to develop state-business cooperation in Azerbaijan, first of all, a legal framework must be created to regulate such relations. Considering this, the law “On State-Business Cooperation” should be adopted in Azerbaijan.

Emphasis on export diversification policies is linked to foreign trade liberalization to achieve economic development and growth. In order to increase the export opportunities of non-oil products in Azerbaijan, it is crucial to

1) create necessary diversification institutes in Azerbaijan and improve existing ones;
2) diversify the country’s economy and its sectors, especially industry, for increasing export opportunities in Azerbaijan;
3) implement export-oriented industrial policy in Azerbaijan;
4) stimulate investment flow in non-oil fields.

Thus, a comprehensive system of measures to attract foreign direct investments to the country’s non-oil sector should be developed and implemented, especially for export-oriented manufacturing industries. At the same time, during the development of the investment promotion policy, obstacles and problems of both demand and supply factors of the investment process should be revealed, investment risks should be assessed, and necessary steps should be developed to reduce and eliminate these obstacles and risks. Moreover, it is vital to promote entrepreneurship in non-oil fields in Azerbaijan and accelerate export promotion work in the state. Finally, strengthening and improving the work of the “Green Corridor” release system can play a paramount role in increasing the possibilities of export diversification in Azerbaijan.
AUTHOR CONTRIBUTIONS

Conceptualization: Elnara Samedova.
Data curation: Arzuman Huseynov.
Formal analysis: Lala Hamidova, Elnara Samedova.
Funding acquisition: Arzuman Huseynov, Lala Hamidova, Elnara Samedova.
Investigation: Elnara Samedova.
Methodology: Lala Hamidova.
Project administration: Elnara Samedova.
Resources: Arzuman Huseynov, Lala Hamidova, Elnara Samedova.
Software: Arzuman Huseynov, Elnara Samedova.
Supervision: Arzuman Huseynov.
Validation: Lala Hamidova, Elnara Samedova.
Visualization: Arzuman Huseynov, Lala Hamidova.
Writing – original draft: Arzuman Huseynov, Lala Hamidova.
Writing – review & editing: Arzuman Huseynov, Lala Hamidova.

REFERENCES


