Original Article: Role of Oil and Gas Industry in **International Security**

²Department of Psychology, University of Bangladesh University (BU), Bangladesh



Citation F. Mohammadkhani Orouji*, Z. Saeid, Role of Oil and Gas Industry in International Security. J. Eng. Ind. Res. 2022; 3(1):8-16.



https://doi.org/10.22034/jeires.2021.1.2



Article info:

Received: 13 August 2021 Accepted: 06 September 2021 **Available Online: 17 September**

ID: JEIRES-2108-1047

Checked for Plagiarism: Yes Peer Reviewers Approved by: Dr. Behrouz Jamalvandi **Editor who Approved Publication:**

Professor Dr. Mohammad Haghighi

Keywords:

Oil, Energy, Security. Iran. **International Relations**

<u>ABSTRACT</u>

Oil and natural gas are the most important sources of human energy supply. Crude oil provides 45% and natural gas 25% of the world's energy. Therefore, oil and gas are of strategic importance in the economic and political equations of the world and can play an important role in the process of international relations. Among the basic policies of consuming countries is the secure supply of energy and security of supply. Security of supply requires a stable and secure market that provides energy at a reasonable price to consumers. It is a decrease. The present article discusses the role of the oil and gas industry in international security from different angles.

Introduction

aving and not having energy reserves divides the countries of the world into two groups. The first group, which consumes the most energy in the world, has a small share of the world's oil and gas reserves. For example, the OECD group of industrialized nations, which burn about 62 percent of the world's oil, has only 7 percent of its oil reserves. These countries supply 34% of their needs from oil-rich countries and are in dire need of second-tier countries or countries with oil and gas reserves to supply their energy [1-4]. In this category, Middle Eastern countries with more than 65% of the world's

¹Department of Psychology, Abarkouh Branch, Islamic Azad University, Abarkouh, Iran

^{*}Corresponding Author: Farideh Mohammadkhani Orouji (f.mohammadkhani.or1983@gmail.com)

oil resources consume only 8.4% of this energy [5-7].

Among the basic policies of consuming countries is the secure supply of energy and security of supply. Supply security requires a stable and secure market that provides energy at a reasonable price to consumers [8-10]. The outlook for the future of oil and gas reserves in the world shows that these reserves have a dark future in large industrialized countries and the amount of energy reserves in these countries is declining sharply. Their oil has not been deducted [11-13]. With this in mind, the dark future of energy reserves is becoming clearer, especially in countries with low reserves. Gas reserves in the main consuming countries are facing the same situation. For example, US gas reserves will last only 10 years. The life expectancy of Canada and the United Kingdom is less than 10 years. In contrast, the energy reserves of the Middle East have a brighter future. Iran's oil reserves will last 67 years and Saudi Arabia 85 years. Iran's and Qatar's gas reserves also have a very bright future. Iran will have gas for 217 years and Qatar for another 495 years. Therefore, Iran's oil and gas reserves in the political and economic geography give our country a strategic role [14-16].

Of course, the possibility of discovering huge energy reserves and changing these equations in the future cannot be denied; however, according to studies and discoveries, a general change in this trend is unlikely in the future. On the other hand, new energy does not seem to be a serious competitor to fossil fuels for the next twenty or thirty years [17-20]. The strong dependence of developed countries on the energy contained in the countries with these reserves creates strategic opportunities and threats for these countries, including Iran [21-25]. Experience shows that countries without energy resources use any means, including colonialism, coups, and the formation of dictatorial governments in oil-rich countries, to securely supply their energy needs. Although some of these methods seem outdated today, the use of force and violence to provide this vital substance still continues.

Many political analysts attribute the US military presence in the region and the occupation of Iraq to the dark energy landscape in the United States and the attempt to control the region's oil and gas resources. In other words, the security of supply has led the United States to mobilize in the region and try to build a strong military base in it. From there, he passed through health threats [26-29]. These opportunities can be divided as follows:

- a) Economic opportunities;
- b) industrial and technological opportunities; and
- c) political and security opportunities.

Revenues from the sale of oil and gas create economic opportunities. The need of the countries of the world for the energy resources of the country causes the expansion of political relations and the increase of the security coefficient in the international arena. Attracting the attention of countries with capital and technology to invest in the country's oil and gas industry is another opportunity that arises due to the existence of these valuable reserves [30-33]. Other countries have shown their willingness to invest in these investments, despite the specific political conditions in the region and especially in Iran, in order to ensure their energy security and profit. **Japanese** investment in the Azadegan or Total oil field in South Pars is an example of this tendency. As the scope of our country's industrial dialogue with developed countries increases, so does Iran's security factor and political position in the world [34-37].

The concept of national security

Pursuing and achieving national security for social and political cohesion, which is considered as one of the goals and security policies of any country, takes the necessary sensible strategies and policies [38-40]. Regarding the definition of the concepts of

national security, it should be said that a small number of political thinkers equate the concept of national security with the concept of government in the sense [41-44]. But many other political thinkers see the concept of national security as a Western American commodity, a product of the founding of the National Security Council under the National Security Act of 1947 [45-48]. What needs to be mentioned here is that the truth and the need for security in a society and among a nation are twinned and in line with the formation of society and government, and the need to establish it is felt in all societies, so that Islam also creates and realizes it in society. But what is meant in this society is national security as a term in the culture of political science. In general, it should be said that accelerating and carrying out the processes of nation-building and state-building as a complementary part of defining the concept of national security that can be applied to third-world countries is necessary [49-52].

Energy policy at the heart of the national security strategy

International relations experts, citing theories, acknowledge that one of the fundamental indicators of a hegemonic power in any age is the control of resources, lines, and routes of energy transfer. This fact has turned energy today into both a tool of power and a goal of power [53-55]. In this context, the study of the geographical distribution of world oil reserves clearly indicates the concentration of these resources in the Middle East and especially the Persian Gulf. Statistics on world oil reserves show that currently 62% of the world's proven oil reserves are concentrated in the Persian Gulf region. Global oil consumption is expected to increase by 50 percent over the next two decades, from 85 million barrels per day in 2005 to 118 million barrels per day in 2025, according to the US Energy Information Administration. During the same period, US oil consumption will increase from 20 million barrels per day to 29 million barrels and the net share of US oil imports will increase from 53% to 70%. The US Energy Information Administration

predicts that by 2025, energy consumption in developing countries will double. According to this forecast, Asia's share in increasing energy consumption in developing countries will reach 69%. In such a situation where the world is facing increasing demand and consumption of oil, the oil market's unprecedented compaction has been faced [56-59]. In such a market, no consumer, regardless of his degree of independence, can separate himself from oil price shocks. Since the oil market is mushroomed intertwined, it has involved banks, investment funds, and other financial institutions along with industries and legal and real investors, so any change in this market will not be limited to industries and end consumers [60-63]. For example, for the United States, energy security, in one hand, means protecting the domestic economy in terms of price and inflation changes, economic growth, and wealth transfer, and, on the other hand, means taking care of international economic and financial systems [64-67].

Foreign investment methods

There are several ways to use foreign capital and resources. One of these methods is foreign direct investment, known as Federation Distributor Institute (FDI). In this method of management, ownership and main benefits are directed to the foreign investor, and part of it is directed to the host country in the form of taxes, duties, and other aspects [68-70]. Finance is another method of financing. In this method of financing, what is important is the rate of interest and interest that is accrued to it. Also, the conditions set out in finance are very important. Therefore, first of all, the financing should be examined in terms of terms and amount of interest in order to comment on it [71-74].

Another method that is one of the weak methods in foreign investment is the Buy-Back method, which is accepted in some countries, especially Iran, as an accepted and common practice of foreign investment, and in many sectors, including oil and gas. And industry and mining are the first proposal. In the

definition of thermology, this method states that the foreign party has inputs such as machinery and equipment, etc. to be used in undertakes its sale, and gives a part or a percentage of the profit to the domestic side. In this method, first, the equipment and supplies are provided by the foreign party itself, and since the book value and pricing are with the foreign party, in the beginning, an initial and unconventional profit is given to the foreign investor. In the case of industries such as petrochemicals, where sales are also monopolized by foreign parties, the question of whether the necessary marketing activities are carried out in the field of sales or sold at market prices is also raised. It can be said that in this method, due to the efforts of foreign investors to maximize their profits, the use of resources and facilities becomes less important. If a contract is long-term, the foreign party is obliged to maintain resources. Oil and gas contracts in the country will not be considered due to the short duration of the contract, so in extraction or production, methods are used that drastically reduce the life of a reservoir or well and will deprive us of resources. Therefore, the use of reciprocity is justified, but as a method of exploitation and investment, it is not only incorrect, but also jeopardizes national interests.

The method that is more considered in industrial relations in the world today is the joint venture method, which has external input such as technology and equipment, and internal input also includes resources, reservoirs, land, and modernities. After calculating the book value of these items, management is given to the party that owns 51% or more of the capital. In this method, each of the companies entering the investment tries to have preferred shares to take over the management. This is a normal method, especially when the management is with the host. This investment creates requirements for the external party to meet certain obligations to the extent of technology transfer and bringing the forces to a high level of technical and human skills and knowledge in development. In this investment, a kind of risk and risk sharing takes place and both

the production process. In the field of petrochemicals, it also produces the product,

parties make great efforts to be able to increase their benefits in a suitable environment. addition, In areas of participation to enter and take possession of domestic and foreign markets can considered. Experimental studies historical studies show that the process of technology transfer is more done in this way [75-77].

Take advantage of the opportunities of the global economy

Exploiting the opportunities of globalization often requires new skills, resources and infrastructure, structural changes, and the transfer of factors of production from the old to the new. To take advantage of the globalization process, national governments must adopt appropriate policies to pave the way for structural changes and provide the right conditions for exploiting the opportunities of globalization by creating new economic capacities [78-80].

The position and performance of countries in the global economy and the extent to which they benefit from the process of globalization. in addition to the structure of the global economy, will depend significantly on the policy of their governments. Work, regulation of competition, management of companies, development domestic of industries. development of technology, education, health, social services, etc [81-83]. have a significant impact on the performance of countries in the global economy. For example, inappropriate trade laws can lead to the economic and political isolation of the country. Take advantage of the opportunities of the globalization process. Inadequate laws in the field of regulation and control of foreign investment will make it difficult to attract foreign investment. Improper policies and laws in the field of the labor market, corporate activities, attracting transnational companies, technology transfer difficult temperament. Improper banking systems,

incorrect monetary and exchange rate policies, and unbalanced tax systems will also make it difficult to take advantage of globalization.

In addition, attracting foreign investment and transnational corporations requires a stable economic environment. Also, foreign investment and transnational corporations are often attracted to countries that have the prospect of rapid and sustainable economic growth. Improper economic policies will make it difficult to take advantage of globalization by creating obstacles to the country's economic development and creating economic and political instability [84].

Adjust the negative consequences of globalization

Globalization is causing profound structural changes in all of the world's economies. This trend can change the location of the production base from one country to another, bring economic prosperity to one country, and face another country with deep economic and social crises. On the other hand, structural changes can take place within the country, between economic sectors, or between different regions of the country. This will lead to the transfer of resources and factors of production from one sector to another or from one region to another. This process can lead to deep economic, social, and political crises and endanger the balance and stability of society. To take advantage of the globalization process, national governments must manage and regulate this process in cooperation with other social institutions and control and regulate its negative consequences. Doing so requires the support of vulnerable groups, so that the relevant support does not prevent the necessary structural changes. Joining the global economy is often accompanied by extensive programs to liberalize trade and financial markets and privatization. The implementation of these programs often imposes heavy economic and social costs on society, especially the low-income groups. Optimal management of this process and protection of vulnerable groups is mainly the

responsibility of the government. Russia's experience of economic reform shows the heavy costs that improper management of reforms can impose on society. Overall, the globalization of the national economy poses greater risks, such as the risks of trade and financial market liberalization, technological developments, and intensified international competition. This strengthens government's role in economic management, not weakens it. People and countries dependent on industries and activities that are unable to compete globally are severely vulnerable to globalization. Industries backed by tariff barriers and government subsidies are small and medium-sized industries with limited capacity to meet trade requirements. Producers of agricultural products and goods competing with imported goods, unskilled workers, and all countries and social strata relying on traditional methods of production and economic and social relations are particularly vulnerable to globalization. On the other hand, the lack of appropriate laws and institutions to regulate the labor market will make the labor force, especially the lowincome and low-skilled groups, susceptible to global market developments. Social insurance and income regulation and distribution policies are other dimensions of good management of the globalization process [85].

Conclusion

One of the important factors affecting the national security of countries producing and consuming energy is oil and gas. After the exploration of oil in Iran, this raw material has gradually played a role as the most important component affecting Iran's economy, politics, security in general. It received international attention. With the evolution of geostrategic discourse to geoeconomic discourse in the last decade and the leading role of the economy in global relations, oil as the blood of modern industry has a higher position compared with other factors of power. In this period, energy, especially oil, has played a greater role in determining security and creating regional international conflicts. Energy security is a key

issue for the industrialized and consumer countries. If there is no oil, production, and development in the industrial world will stop.

dependence of these countries is also unbelievable. They need large companies in the first place to provide the necessary capital and technology in production. To buy weapons, they have developed the basic necessities of life for their people, such as medicine, food, and industrial equipment that the world needs. The interdependence of the industrialized world and the oil-exporting countries could have worked out in the interests of both parties if it had started from a rational point of view and followed a logical path, but unfortunately, this is not the case. Relationships do not start from the point where both sides are in balance. The conditions of the game have been imposed from one side to the other, and the stronger side has thought only of strength and power.

In classical geopolitical analysis, domination of the most important natural resources is considered domination of the world, and in the present era, the transmission lines of energy that can have different routes. In fact, building a pipeline for a transit country has some economic and political benefits: a) Access to oil and gas for domestic needs in the direction of energy security; b) foreign investment and job creation; and c) a means of influencing the flow of oil and gas.

Iran's unique geopolitical position allows it to become the center of trade and distribution in the region. The north and south axis of Iran is the axis of oil and gas production and the east and west axis is the axis of consumption, the center of which, i.e. Iran, can be the center of trade. Crossing the Caspian Sea oil and gas pipelines through a route other than Iran, in the long run, can reduce the effective role in the energy and economic equations of the region and the world and thus vulnerability, and not the impact of the equation process. Therefore, the world will be strengthened. The geopolitical security implications of the passage of oil and gas pipelines through Iran itself can improve Iran's political trade relations with Europe and Asia, reducing Iran's isolation, easing US political pressure, increasing bargaining power in Of course, the dependence of the producing countries should not be overlooked. The

international relations, and increasing Iran's role in decisions.

Orcid:

Farideh Mohammadkhani Orouji:

https://orcid.org/0000-0003-4944-9477

References

- [1] E. Amouzad Mahdiraji, M. Sedghi Amiri, Journal of Engineering in Industrial Research, 2020, 1, 111-122. [crossref], [Google Scholar], [Publisher]
- [2] E. Amouzad Mahdiraji, *Signal Processing and Renewable Energy*, **2020**, *4*, 67-80. [Google Scholar], [Publisher]
- [3] A. Bozorgian, *Journal of Engineering in Industrial Research*, **2020**, 1, 1-19. [crossref], [Google Scholar], [Publisher]
- [4] E.A. Mahdiraji, N. Ramezani, International Journal of Science and Engineering Investigations (IJSEI), 2020, 9, 24-28. [Google Scholar], [Publisher]
- [5] E. Amouzad Mahdiraji, N. Ramezani, *Signal Processing and Renewable Energy*, **2020**, *4*, 37-50. [Google Scholar], [Publisher]
- [6] E.A. Mahdiraji, N. Ramezani, International Journal of Science and Engineering Investigations (IJSEI), 2020, 9, 35-42. [Google Scholar], [Publisher]
- [7] E. Amouzad Mahdiraji, M. Sedghi Amiri, Journal of Engineering in Industrial Research, 2021, 2, 7-16. [crossref], [Google Scholar], [Publisher]
- [8] E. Amouzad Mahdiraji, CRPASE: Transactions of Electrical, Electronic and Computer Engineering, 2020, 6, 245–250. [Google Scholar], [Publisher]
- [9] E. Amouzad Mahdiraji, A. Yousefi Talouki, Journal of Chemical Reviews, **2021**, 3, 40-49. [crossref], [Google Scholar], [Publisher]
- [10] E. Amouzad Mahdiraji, *CRPASE:* Transactions of Electrical, Electronic and Computer Engineering, **2020**, 6, 238–244. [Google Scholar], [Publisher]

- [11] E.A. Mahdiraji, *Gazi Mühendislik Bilimleri*Dergisi (GMBD), 6, 138-144. [Google
 Scholar], [Publisher]
- [12] E. Amouzad Mahdiraji, *Journal of Chemical Reviews*, **2021**, *3*, 147-159. [crossref], [Google Scholar], [Publisher]
- [13] E.A. Mahdiraji, M. Amiri, Journal of Engineering Technology and Applied Sciences. **2020**, 5, 133-147. [crossref], [Google Scholar], [Publisher]
- [14] E.A. Mahdiraji, Journal of Scientific Perspectives, **2020**, 4, 245-254. [crossref], [Google Scholar], [Publisher]
- [15] E. Amouzad Mahdiraji, M. Sedghi Amiri.

 International Journal of Smart Electrical

 Engineering, 2020, 9, 13-21. [Google
 Scholar], [Publisher]
- [16] E.A. Mahdiraji, S.M. Shariatmadar, Advanced Journal of Science and Engineering, 2020, 1, 27-31. [crossref], [Google Scholar], [Publisher]
- [17] E. Amouzad Mahdiraji, S. Shariatmadar, International Journal of Smart Electrical Engineering, 2019, 8, 143-148. [Google Scholar], [Publisher]
- [18] E.A. Mahdiraji, A. Yousefi Talouki, Journal of Chemical Reviews, **2020**, 2, 284-291. [crossref], [Google Scholar], [Publisher]
- [19] E. Amouzad Mahdiraji, S. Shariatmadar, International Journal of Smart Electrical Engineering, 2019, 8, 51-58. [Google Scholar], [Publisher]
- [20] E. A. Mahdiraji, N. Ramezani, In 2015 2nd International Conference on Knowledge-Based Engineering and Innovation (KBEI), 2015, 405-411. [crossref], [Google Scholar], [Publisher]
- [21] E. Amouzad Mahdiraji, S. Shariatmadar, International Journal of Smart Electrical Engineering, 2019, 8, 99-104. [Google Scholar], [Publisher]
- [22] E. Amouzad Mahdiraji, M. Sedghi Amiri, Quantum Journal of Engineering, Science and Technology, **2021**, 2, 1–15. [Google Scholar], [Publisher]
- [23] E.A. Mahdiraji, N. Ramezani, International Journal of Mechatronics, Electrical and Computer Technology (IJMEC), 2015, 5, 2585-2600. [Google Scholar], [Publisher]

- [24] E. Amouzad Mahdiraji, S. Mohammadi Shah Kilah, A.S. Hosseini, *ÖRGÜTSEL* DAVRANIŞ ARAŞTIRMALARI DERGİSİ, **2018**, 3, 2528-9705. [Google Scholar], [Publisher]
- [25] E. Amouzad Mahdiraji, M. Sedghi Amiri, Advanced Journal of Science and Engineering, 2021, 2, 42–50. [crossref], [Google Scholar], [Publisher]
- [26] E.A. Mahdiraji, Journal of Engineering in Industrial Research, **2021**, 2, 178-193. [crossref], [Google Scholar], [Publisher]
- [27] M. Sedghi Amiri, E. Amouzad Mahdiraji, Journal of Science and Technology Research, 2021, 1, 11-19. [crossref], [Google Scholar], [Publisher]
- [28] E. Amouzad Mahdiraji, Journal of Science and Technology Research, 2021, 1, 40-47. [crossref], [Google Scholar], [Publisher]
- [29] R. Kolbadinezhad, E. Amouzad Mahdiraji. *Journal of Science and Technology Research*, **2021**, 1, 75-82. [crossref], [Google Scholar], [Publisher]
- [30] E.A. Mahdiraji, M. Sedghi Amiri. *Journal of Science and Technology Research*, **2021**, *1*, 89-103. [crossref], [Google Scholar], [Publisher]
- [31] R. Kolbadinezhad, E. Amouzad Mahdiraji. *Journal of Science and Technology Research*, **2021**, *1*, 131-141. [crossref], [Google Scholar], [Publisher]
- [32] E.A. Mahdiraji, R. Kolbadinezhad. *Journal of Science and Technology Research*, **2021**, *1*, 142-149. [crossref], [Google Scholar], [Publisher]
- [33] E.A. Mahdiraji. *Journal of Engineering in Industrial Research*, **2021**, *2*, 202-209. [crossref], [Google Scholar], [Publisher]
- [34] S.M. Shariatmadar, E.A. Mahdiraji. Journal of Engineering in Industrial Research, 2021, 2, 210-217. [crossref], [Google Scholar], [Publisher]
- [35] K.A. Mahdiraji, E.A. Mahdiraji. *Journal of Engineering in Industrial Research*, **2021**, *2*, 228-233. [crossref], [Google Scholar], [Publisher]
- [36] E.A. Mahdiraji, *Journal of Engineering in Industrial Research*, **2021**, 2, 234-251. [crossref], [Google Scholar], [Publisher]

- [37] E.A. Mahdiraji. *Journal of Science and Technology Research*, **2021**, **1**, 234-241. [crossref], [Google Scholar], [Publisher]
- [38] A. Amini, H. Shahpoori Arani, M. Milani Fard, *Eurasian Journal of Science and Technology*, **2021**, *1*, 421-424. [crossref], [Google Scholar], [Publisher]
- [39] A.M.M. Fard, M.M. Fard, Eurasian Journal of Science and Technology, **2021**, 1, 384-398. [crossref], [Google Scholar], [Publisher]
- [40] A. Samimi, *International Science and Investigation journal*, **2014**, *3*, 57-64. [crossref], [Google Scholar], [Publisher]
- [41] A. Samimi, Journal of Engineering in Industrial Research, **2021**, 2, 71-76. [crossref], [Google Scholar], [Publisher]
- [42] A. Susanabadi, M.S. Sadri, H. Taleby, S. Etemadi, B. Mahmoodiyeh, M.M. Fard, *Annals of the Roma-nian Society for Cell Biology*, **2021**, *25*, 2703-2716. [Google Scholar], [Publisher]
- [43] A. Susanabadi, S. Etemadi, M.S. Sadri, B. Mahmoodiyeh, H. Taleby, M.M. Fard, *Annals of the Romanian Society for Cell Biology*, **2021**, *25*, 2875–2887. [Google Scholar], [Publisher]
- [44] A. Yarahmadi, K. Kamrava, A. Shafee, M.M. Fard, M. Aghajanpour, A. Mohebbi, *Journal of Pharmaceutical Research International*, **2020**, *31*, 1-6. [crossref], [Google Scholar], [Publisher]
- [45] A. Bozorgian, S. Zarinabadi, A. Samimi, Journal of Chemical Reviews, 2020, 2, 122-129. [crossref], [Google Scholar], [Publisher]
- [46] A.M.M. Fard, M.M. Fard, Journal of Science and Technology Research, 2021, 1, 284-301. [crossref], [Google Scholar], [Publisher]
- [47] A.M.M. Fard, M.M. Fard, *Eurasian Journal of Science and Technology*, **2021**, *1*, 384-398. [crossref], [Google Scholar], [Publisher]
- [48] A.M.M. Fard, M.M. Fard, Eurasian Journal of Science and Technology, **2021**, 1, 284-301. [crossref], [Google Scholar], [Publisher]
- [49] A.O. Shirazi, H. Jahandideh, A. Yarahmadi, M.M. Fard, M.M. Delarestaghi, Medical Science, 2020, 24, 2467-2474 [crossref], [Google Scholar], [Publisher]
- [50] B. Mahmoodiyeh, S. Etemadi, A. Kamali, S. Rajabi, M.M. Fard, *Annals of the Romanian*

- Society for Cell Biology, **2021**, 25, 2559–2572. [Google Scholar], [Publisher]
- [51] Barmasi, Journal of Engineering in Industrial Research, **2020**, 1, 161-169. [crossref], [Google Scholar], [Publisher]
- [52] A. Bozorgian, *Journal of Engineering in Industrial Research*, **2020**, 1, 1-18. [crossref], [Google Scholar], [Publisher]
- [53] E.S. Motaharian, B. Mahmoodiyeh, S. Lorestani, M.S. Sadri, M.M. Fard, A.M.M. Fard, A. Amini, *Journal of Chemical Reviews*, 2021, 3, 171-180. [crossref], [Google Scholar], [Publisher]
- [54] E.A. Mahdiraji, M. Sedghi Amiri, *Journal of Engineering in Industrial Research*, **2020**, 1, 111-122. [crossref], [Google Scholar], [Publisher]
- [55] A. Bozorgian, A. Samimi, *International Journal of New Chemistry*, **2021**, *8*, 41-58. [crossref], [Google Scholar], [Publisher]
- [56] F. Zabihi, M.A. Abbasi, R. Alimoradzadeh, Annals of the Romanian Society for Cell Biology, **2021**, 25, 2573–2579. [Google Scholar], [Publisher]
- [57] F. Gharekhani Kasa, Journal of Engineering in Industrial Research, 2020, 1, 51-74. [crossref], [Google Scholar], [Publisher]
- [58] F. Rebout, *Journal of Engineering in Industrial Research*, **2020**, 1, 19-37. [crossref], [Google Scholar], [Publisher]
- [59] F. Zare Kazemabadi, A. Heydarinasab, A. Akbarzadeh, M. Ardjmand, *Artificial cells, nanomedicine, and biotechnology*, **2019**, *47*, 3222-3230. [crossref], [Google Scholar], [Publisher]
- [60] F. Zare Kazemabadi, A. Heydarinasab, A. Akbarzadehkhiyavi, M. Ardjmand, Chemical Methodologies, 2021, 5, 135-152.
 [crossref], [Google Scholar], [Publisher]
- [61] M. Bagheri sadr, A. Bozorgian, International Journal of Advanced Studies in Humanities and Social Science, 2020, 9, 252-261. [crossref], [Google Scholar], [Publisher]
- [62] H. Jahandideh, A. Yarahmadi, S. Rajaieh, A. Ostvar Shirazi, M.M. Fard, A. Yarahmadi, *Journal of Pharmaceutical Research International*, **2019**, 1-7. [crossref], [Google Scholar], [Publisher]

- [63] A. Bozorgian, Chemical Review and Letters, 2020, 3, 79-85. [crossref], [Google Scholar], [Publisher]
- [64] M.M. Fard, A. Amini, M. Shafie Aghol, Eurasian Journal of Science and Technology, 2021, 1, 399-411. [crossref], [Google Scholar], [Publisher]
- [65] M.M. Fard, A.M.M. Fard, Eurasian Journal of Science and Technology, **2021**, 1, 365-383. [crossref], [Google Scholar], [Publisher]
- [66] M.M. Fard, A.M.M. Fard, Eurasian Journal of Science and Technology, **2021**, 1, 271-283. [crossref], [Google Scholar], [Publisher]
- [67] M. Mokhtare, R. Alimoradzadeh, S. Agah, H. Mirmiranpour, N. Khodabandehloo, Middle East journal of digestive diseases, 2017, 9, 228. [crossref], [Google Scholar], [Publisher]
- [68] M. Rohani, H.R.B. Baradaran, A. Sanagoo, M. Sarani, S. Yazdani, H.R. Alizadeh, *Razi journal of medical sciences*, **2016**, *23*, 115-124. [crossref], [Google Scholar], [Publisher]
- [69] M. Zbuzant, Journal of Engineering in Industrial Research, **2020**, 1, 75-81. [crossref], [Google Scholar], [Publisher]
- [70] M.M. Fard, A.M.M. Fard, Journal of Science and Technology Research, 2021, 1, 365-383. [crossref], [Google Scholar], [Publisher]
- [71] R. Alimoradzadeh, H. Mirmiranpour, P. Hashemi, S. Pezeshki, S.S. Salehi, *Journal of Neurology & Neurophysiology*, **2019**, *10*, 1-5. [crossref], [Google Scholar], [Publisher]
- [72] R Alimoradzadeh, M Mokhtare, S Agah, *Iranian Journal of Ageing*, **2017**, *12*, 78-89. [crossref], [Google Scholar], [Publisher]
- [73] R. Alimoradzadeh, M.A. Abbasi, F. Zabihi, H. Mirmiranpour, *Iranian Journal of Ageing*, **2021**, *15*, 524-533. [crossref], [Google Scholar], [Publisher]
- [74] S Etemadi, B Mahmoodiyeh, S Rajabi, A Kamali, M Milanifard, *Annals of the*

- Romanian Society for Cell Biology, **2021**, 25, 2417-2426. [crossref], [Google Scholar], [Publisher]
- [75] S. Zarinabadi, A. Esfandiyari, S.A. Khoddami, A. Samimi, Journal of Fundamental and Applied Sciences, 2016, 8, 1133-1149. [crossref], [Google Scholar], [Publisher]
- [76] S. Zarinabadi, A. Samimi, Journal of Fundamental and Applied Sciences, 2016, 8, 1160-1172. [crossref], [Google Scholar], [Publisher]
- [77] S.A. Mirmalek, F. Tirgari, H.R. Alizadeh, *Iranian Journal of Surgery*, **2005**, *13*, 48-54. [crossref], [Google Scholar], [Publisher]
- [78] S.M.S. Mirnezami, F. Zare Kazemabadi, A. Heydarinasab, *Progress in Chemical and Biochemical Research*, **2021**, *4*, 191-206. [crossref], [Google Scholar], [Publisher]
- [79] M. Bagheri Sadr, A. Bozorgian, Journal of Chemical Reviews, 2021, 3, 66-82. [crossref], [Google Scholar], [Publisher]
- [80] M. Bagheri Sadr, A. Bozorgian, *Journal of Chemical Reviews*, **2021**, 3, 66-82. [crossref], [Google Scholar], [Publisher]
- [81] A. Bozorgian, *Journal of Chemical Reviews*, **2021**, 3, 50-65. [crossref], [Google Scholar], [Publisher]
- [82] N. Kayedi, A. Samimi, M. Asgari Bajgirani, A. Bozorgian, *South African Journal of Chemical Engineering*, **2021**, *35*, 153-158. [crossref], [Google Scholar], [Publisher]
- [83] S.V. Mousavi, A. Bozorgian, N. Mokhtari, M.A. Gabris, H.R. Nodeh, *Microchemical Journal*, **2019**, *145*, 914-920. [crossref], [Google Scholar], [Publisher]
- [84] A. Bozorgian, Advanced Journal of Chemistry, Section B: Natural Products and Medical Chemistry, 2021, 3, 54-61.

 [crossref], [Google Scholar], [Publisher]
- [85] A. Haghighi Asl, A. Ahmadpour, N. Fallah, *Applied Chemistry*, **2017**, *12*, 253-286. [crossref], [Google Scholar], [Publisher]

Copyright © 2021 by SPC (<u>Sami Publishing Company</u>) + is an open access article distributed under the Creative Commons Attribution License(CC BY) license (https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.