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ABSTRACT

An efficient allocation of financial resources is an inspirational factor to each business in order to continue its activities. The sources of financial resources are divided into own funds, borrowed funds equal to own funds, as well as funds raised. Advancement of measures aimed at improving the efficiency of the financial resource's management and the rational distribution of income, which, in the end, contribute to the increase the value the company as a whole is based on the results of the efficiency's evaluation of the usage the financial resources. The researcher presents the results of the analysis of changes that happened in 2020 due to the coronavirus restrictions in Russia and in the whole world economy. Undoubtedly, the pandemic that happened in 2020 caused the negative effect on every economic sector, but the oil and gas industry is one of the most affected due to the significant decrease in demand. Restrictions introduced in majority countries caused the drop of oil and gas price, the consequence of which was the significant decrease of incomes and market capitalization of companies from this sphere. However, the international trend towards green energy is seen as a way to reduce budget dependence on oil and gas by increasing budget incomes from the export of pure hydrogen - the «green alternative» of oil and gas. The introduction of digital technologies in the energy sector, as a way of improving the mechanisms and tools of proceeds generation, can be beheld as a way to move away from hydrocarbons and towards clean energy.

Keywords: oil sector, pandemic, income of the company, developing countries, OPEC+.

INTRODUCTION

In order to effectively manage the formation and use of the company's financial resources, the following measures must be implemented: establishment of a clear business plan, control of the financial situation, monitoring the timeliness of customer payments, control of daily expenses, using a good accounting system, strict compliance with tax deadlines, improving efficiency and controlling overhead costs, controlling misappropriation of property, using the right type of financing (Arellano, 1991; Ahmadi, 2017; Gong, 2018; Gabdulkhakov et al., 2021; Dudukalov et al., 2022). Nowadays, the petroleum industry is one of the largest and the most significant industries in the world economy (Alchian, 1972; Persson, 2014). We can say that this sector of economy is essential for industrial civilization since petroleum serves as the raw material for many chemical products. That is why the healthiness of this industry is so important, as it can cause a positive or negative effect on the other connected industries (Mora, 2008; Byarneto, 2014). At the same time, the petroleum industry is quite sensitive to political or economic actions of different countries (Karthikeyan, 2011; Akny, 2020; Bakharev et al., 2020; Golovina et al., 2022). So, the pandemic of the COVID-19 and subsequent lockdown caused a significant influence on the whole industry. Coronavirus led to the largest crisis in the oil and gas industry since the Second World War. Also, it is the third huge drop for oil prices in the past 12 years along with the declines

in 2008 and 2014. Before March 2020 the worldwide crude oil production was staying on almost the same level during 5 recent years with some insignificant fluctuations (fig. 1).

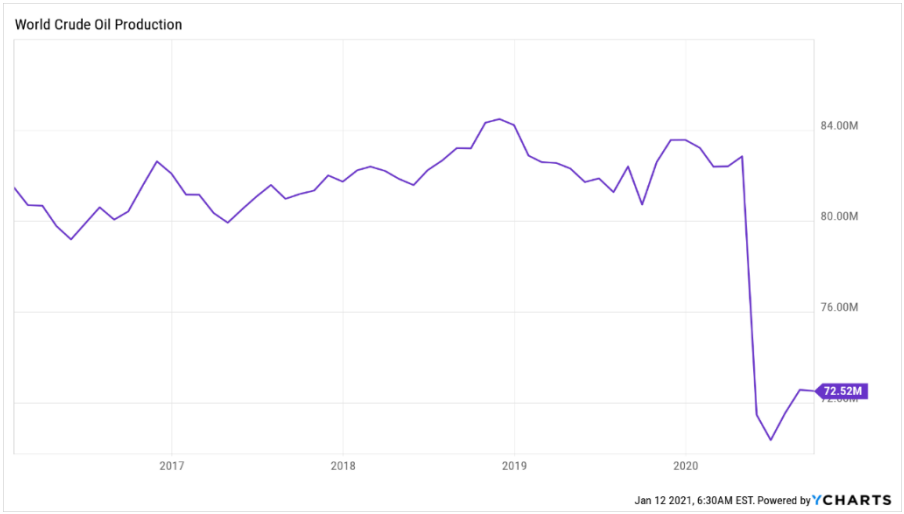

Figure 1:World Crude Oil Production dynamics

Global Oil & Gas Sector Outlook Improving; Majors Cut Emissions // FitchRatings URL: https://www.fitchratings.com/research/corporate-finance/global-oil-gas-sector-outlook-improving-majors-cut-emissions-01-12-2020

Research question

The turning point for the industry was April of 2020, when the huge decline began. The key factor that caused such a drop was the reduction of demand for petroleum products, first of all from the transport sector since the number of flights and car trips is much lower during the lockdown. According to the Rystad Energy demand for the oil in the world decreased by 27% at the April of 2020. In July the production volume was just a little bit more than 70 million barrels of oil that is the lowest indicator in 2020. Also, considering the historical data we can see that the crude oil production at July 2020 was the lowest since 2003 according to studies McKinsey Institute for Black Economic Mobility (Egosson, 2019; Kosov, 2019).

Let us also more closely overview the situation in Russian petroleum industry during the pandemic in figures. In 2019, Russia increased oil production by 0.8%, to 560.2 million tons, thereby setting a record for the post-Soviet period (during the Soviet era, the record for oil and gas condensate production was set in 1987 - 569.5 million tons). The results of 2020 are strikingly different - the volume of production became the minimum in 10 years (in 2010, Russia produced 512.3 million tons of oil and gas condensate). Oil production in Russia in 2020 decreased by almost 9% in comparison with the previous year, gas - by more than 6%. (Len, 2017; Egorova, 2020). Initially, the Ministry of Energy of the Russian Federation predicted that the volume of oil production in 2020 will remain almost at the level of 2019, amounting to 558-560 million tons (Golubtsova, 2019). However, the drop in oil demand due to the COVID-19 coronavirus pandemic, and then restrictions under the new OPEC + agreement, forced the forecast to be sharply revised downward.In July 2020, a forecast was announced of a decrease in production in 2020 by 10%, to 510 million tons, but towards the end of the year, expectations became a little more optimistic - a decrease by 8.4%, to 514 million tons (fig. 2).

Figure 2:Brent Price dynamics

Global Oil & Gas Sector Outlook Improving; Majors Cut Emissions // FitchRatings URL: https://www.fitchratings.com/research/corporate-finance/global-oil-gas-sector-outlook-improving-majors-cut-emissions-01-12-2020

In general, in 2020, Russia reduced oil exports by 12.7% compared to 2019, to 232.5 million tons. Oil exports to the far abroad decreased by 11.8%, to 219.16 million tons, to the near abroad - by 24%, to 13.35 million tons. Oil transit decreased by 0.7% and amounted to 19.7 million tons. At the same time, the volume of supplies to the domestic market decreased by 5.2%, to 274.9 million tons, incl. in December 2020 - by 6.9%, to 23.4 million tons. Gas production in Russia in 2020 decreased by 6.2% compared to 2019, to 692.33 bcm. At the same time, in December 2020, the lag from the previous year's indicators was only 1.6%; 66.28 billion m3 of gas was produced in a month. Of course, oil prices in 2020 were quite unstable. First of all, the collapse in oil prices in the spring was caused by the global economic downturn as the consequence of the pandemic and the quarantine measures introduced, as well as the price war between Saudi Arabia and Russia. The market was flooded with oil, and in the absence of sufficient storage capacity, the value of WTI fell to negative levels (Zvereva, 2020; Ternovykh, 2020; Chuvashlova et al., 2021).
Let us consider how the prices were changing for the most important benchmark crudes. Brent Crude is used as a price benchmark in Europe and in Asia. It represents a blend of 4 field groups (BFOE - Brent, Forties, Oseberg and Ekofisk) located in the British and Norwegian sectors of the North Sea. Brent dropped down by 21.5% in 2020, which was the most significant decrease in price since 2015. The next one is The West Texas Intermediate (WTI) that is a benchmark for US crude. It is the world's most actively traded commodity. Of course, the price for this brand was also affected by lockdown, so WTI fell by 20.5% during the first quarter of 2020. The price for WTI crude oil for the first time was at negative values. WTI was sold for -40 dollars. This price means that producers are willing to pay for a buyer to take oil, as storage facilities are full. McKinsey Institute research shows for Black Economic Mobility Brent was traded at $ 25.7 as WTI was less than dollar (fig. 3).

Figure 3:WTI Price dynamics

Exxon Mobil Corporation // Yahoo finance URL https://finance.yahoo.com/quote

However, we can see that after a huge sharp drop the prices for both crudes began to rise. The oil market returned to growth when oil demand began to rise following the lifting of restrictive measures. Also, the rise of prices for oil in December is connected with the news about the production of COVID-19 vaccines and the beginning of vaccination in some countries, so that in some countries oil quotations have increased by 30% since the end of October.
The other factor that caused price rise was that in December 2020 the United States reduced oil reserves by 3.1 million barrels and there was also decrease in oil production in the country by 100 thousand barrels per day. At the end of 2020 Brent price reached the figure of 51$ per barrel. In 2021 oil prices continue to rise due to the agreement of the OPEC + countries in the terms of oil production for February and March.
It provides that two countries, including Russia and Kazakhstan, will increase oil production, while Saudi Arabia will reduce. So, in January 2020 the prices for those crudes almost reached the pre-pandemic figures. For

example, at the beginning of January of 2020 the price of Brent crude futures for March at the London ICE exchange were traded at $ 54 per barrel, that is the price level of February 2020. At the same time, according to Forbes survey WTI crude futures traded at $53 per barrel at 12.01.2021, their highest level since February 2020. The restrictions that were introduced in many countries led to the significant decrease of the demand for oil and gas products and consequently to the extremely low prices for these commodities. In these conditions, almost all oil and gas companies faced losses. The situation at the oil and gas sector influenced the incomes and financials of oil companies. So, let us overview the examples of companies from the petroleum sector and how they survived the coronavirus pandemic. According to the amount of oil production b/d in 2019 the first three oil-producing countries in the world were the United States, Saudi Arabia and Russia.

Table 1:Top oil producing countries in 2019

Country	Oil production 2019 (bbl./day)
United States	15,043,000
Saudi Arabia	12,000,000
Russia	10,800,000

U.S.EnergyInformationAdministrationURL:https://www.eia.gov/international/data/world#/?pa=0000000000000000000000000000000002&c=ruvvvvvfvtvnvv1vrvvvvfvvvvvvfvvvou20evvvvvvvvvvvvvuvo&ct=0&tl_id=5-A&vs=INTL.57-1-AFG-TBPD.A&vo=0&v=H&start=2019&end=2019

That is why we decided to choose the companies from those countries to see how the pandemic situation influenced their financial position. For Saudi Arabia let's consider the largest oil production in this country "Saudi Aramco". In fact, it is the world's largest integrated oil and gas company (Lehoux, 2019; Morozova, 2020). This manages the Kingdom's unique hydrocarbon reserve base, optimizing production and maximizing its value. It also has a strategically integrated global downstream business, which is in various states. The assets have increased at 2020, as it is 501,411 mill USD (it was 398,434 mill USD at 2019). Total assets increased by 26% in 2020 in comparison with 2019. There was a decrease in current assets by 5,5%, as it is 102,952 mill USD at 2020. The non-current assets have increased. So, it allowed the total assets to be higher than it was before. The liabilities have increased from 2020 to 2019. Total liabilities have increased at 2020, as current liabilities have increased by 6%, as it is 60,916 mill USD (it was 57,486 mill USD at 2019). The non-current liabilities have increased by 131% at 2020, it is 143,498 mill USD.
The liquidity assessment for the enterprise is important to determine a debtor's ability to pay the current liabilities. Current ratio at 2020 is 1.69, it has decreased, as it was 1.9 at 2019. The acid-test ratio at 2020 is 1.46, it has decreased, as it was 1,69. The liquidity ratios are higher than 1. The current assets are higher than the current liabilities. The enterprise is able to pay the liabilities with current assets (Lehoux, 2018; Tsilikova, 2020; Pogosyan, 2021). The acid-test ratio is higher 1. The enterprise is able to pay liabilities with liquid current assets. Revenue for the first 9 months in 2020 decreased by 33.2% compared to the first 9 months in 2019. Gross Profit has decreased by 45.7% in 2020. The gross profit is effective for investors as it helps to assess the financial performance for revenue for production, as the management's ability to manage the costs. Net income is 35,015 mill USD for the first nine months of 2020 due to lower crude oil prices and volumes sold, compared to net income 68,190 mill USD for the same period in 2019. This was offset by the lower crude oil production royalties and higher other income to sales for gas products. Saudi Aramco was among the top 100 companies in the world by market capitalization for the first time in 2019 after the IPO in December 2019. The market capitalization of the company is estimated at $ 1,602 billion in 2020. Trading in December, Saudi Aramco shares were $ 10.3, which brought the company's capitalization to the $ 2 trillion. Since January, Saudi Aramco shares have been gradually declining. Saudi Arabia has not agreed with Russia to extend the deal to decrease oil production in March. These brought down oil by almost 10%, to $ 45 per barrel. Saudi Aramco's market value has fallen 5.5% this year due to the COVID-19. As an example of Russia company, let us take Rosneft. It is a vertically integrated oil and gas company. The enterprise activities and assets are located in Russia. The enterprise is engaged in the development and production of oil, gas at the Russian Federation. The enterprise is the leader in the oil sector in Russia. It is the global public oil and gas corporation. Rosneft is focused at the exploration and appraisal of hydrocarbon fields, oil, gas, sales of oil, gas products in Russia and abroad.

DISCUSSION

The assets have increased in 2020, as it is 13,224 bill rubles (it was 12,950 bill rubles in 2019). Total assets increased by 2% in 2020 to 2019. There was a decrease at current assets by 16%, as it is 2,020 bill rubles at 2020 (it was 2,396 bill rubles in 2019), however liquid current assets have increased. The non-current assets have increased. So, it allowed the total assets to be higher than it was before. The liabilities have increased by 11% in 2020 to 2019. Total liabilities have increased at 2020, as current liabilities have increased by 2%, as it is 2,820 bill rubles (it was 2,755 bill rubles at 2019). The non-current liabilities have increased by 16% at 2020, it is 5,842 bill rubles. The liabilities have increased, as the borrowings have increased in 2020.

The liquidity assessment for the enterprise is important to determine a debtor's ability to pay the current liabilities. Current ratio at 2020 is 0.72, it has decreased, as it was 0.87 at 2019 and 1.05 before 2019. The acid-test ratio at 2020 is 0.51, it has decreased, as it was 0.54, 0.74 at financial years before. The liquidity ratios are lower than 1. The current ratio is 0.72, so the current assets are lower than the current liabilities. The enterprise is not able to pay the liabilities with current assets. The acid-test ratio is less 1. The enterprise is not able to pay liabilities with liquid current assets, as it is not able to do it with current assets.

Revenue for the first 9 months in 2020 decreased by 34% compared to the first 9 months in 2019. Gross Profit has decreased by 34% in 2020. The gross profit is effective for investors as it helps to assess the financial performance for revenue for production, as the management's ability to manage the costs. The net loss was 177 billion rubles for 9 months in 2020. The net income decrease compared to the same time at 2019 is due to the market fluctuations associated with the COVID-19, as well as the non-monetary factors negative effect. The net income was 805 billion rubles (708 billion rubles attributable to Rosneft shareholders) at the 2019. Rosneft capitalization was amounted at 4,756,000,000,000 rubles for December 2020. The enterprise value at September 2020 had increased. It was 3,650,000,000,000 rubles compared with the value at March 2020 3,450,000,000,000 rubles. The capitalization has increased due to the increased oil and gas.

Exxon Mobil Corporation is an American company, and it is one of the largest oil companies in the world. In the second quarter of 2020 the company had to deal with the largest net loss in its modern history - 1,1 billion dollars. As the result of the first half of 2020 the company had a net loss of $ 1.69 billion against a profit of $ 5.48 billion in January-June 2019. As for the result of the third quarter of 2020, a net loss of $ 680 million was recognised in comparison with a net income of $ 3.17 billion in Q3 2019.

ExxonMobil's revenue in Q3 2020 was $ 46.199 billion, down 29% from Q3 2019. At the same time, the company's revenue for 9 months of 2020 decreased by 31.8% down to the 134.962 billion dollars. uch huge losses led to the extraction of Exxon Mobil Corporation from the Dow Jones Industrial Average in August 2020, where the company was since 1928. Also, on October 8, 2020, ExxonMobil lost its status as the largest US oil company by market value. So, now Chevron is the oil company with the largest capitalization. In 2020 the company had to reduce its personnel. Only in Europe it was planned to cut the 1/10 of employees before 2021. Of course, all those negative factors caused the drop of share prices of American companies, that led to the decrease of market capitalization (fig. 4).

Figure 4:Exxonmobil Market Capitalization

Exxon Mobil Corporation // Yahoo finance URL https://finance.yahoo.com/quote

At the same time, when assessing the impact of world hydrocarbon price quotations on the level of Russian budget revenues, their composition and structure, it was possible to conclude that the following are the following main problems of income generation in the budget under study:

a. The susceptibility of federal incomes to changes in the external environment, their dependence on world oil prices and the situation in the oil market (Glubokova, 2019). The importance of this problem is confirmed by the calculation of the federal budget revenue shortfall for 2020, which showed that the amount of oil and gas budget income shortfall will amount to 2782.8 billion rubles (Avvakumova, 2020; Makushkin 2020);
b. problems in the field of foreign economic activity of the country caused by the complex relations of Russia with other countries in the international arena (Korableva, 2017; Zaporozhtseva, 2020), in particular, in the context of sanctions and the COVID-19 pandemic;
c. The decline in investment activity; the deterioration in the standard of living of the population, resulting in lower consumer demand (Kalacheva, 2019; Morozova, 2019). Reduction of the budget replenishment due to value-added tax, etc. These problems are confirmed by the calculation of federal budget revenue losses for 2020, which showed significant amounts of federal budget revenue losses from sources such as internal VAT, excise taxes (Egorova, 2019; Akhmadeev, 2019; Bykanova, 2019);
d. Extensive isolation measures to prevent the COVID-19 pandemic, which exacerbate both the above-mentioned problems and determine the recessionary development of the economy as a whole (Zvang, 2020; Zvereva, 2020).

Companies are trying to improve the financial for 2020. There are various ways to do it. Some companies increase dividends distributed to investors, some improve its liquidity, income. We would see the enterprises activities to improve financials. Liquidity is the important factor that affects the amount of investments in the enterprise (Alayi, 2021). The market assumes a value for enterprise assets, which are liquid (Kalacheva, 2020; Bykanova, 2020).

The value of stocks for liquid enterprises is usually higher than for illiquid enterprises. It is important for oil companies to increase liquidity today. The liquidity increase would increase the investment for enterprises. So, as investors would invest higher amounts to the enterprise, the company's value would be higher. The liquidity is able to be increased by the decreased current liabilities (Maltseva, 2020; Akhmadeev, 2021). Decreased debt, as current liabilities are decreased will be increased by non-current liabilities. Rosneft managers have not influenced its financials yet. So, there is the ability to improve it by increasing liquidity. The Rosneft liquidity is low at 2020, it decreased due to the sector decrease (Akhmadeev, 2019).

To get the min value for liquidity ratios for Rosneft (it is 1.2 for current liquidity, 0.9 for liquid assets), enterprises have to decrease the current liabilities by 1,233 bill rubles. The current liabilities will be 1,587 bill rubles. The enterprise would be able to get the credits back with liquid assets. The current liabilities would be decreased, so the non-current liabilities would be increased for 1,233 bill rubles (Sarkisian-Artamonova, 2020; Elveny, 2021).

The stocks have decreased for every oil company. It is useful to think about the ways to increase it. The stock price increased when the enterprise increased the dividends distributed to the stockholders. To increase the invest to the Saudi Aramco, the company reported a higher dividend payment in the third quarter of 2020 ($ 18.75 billion) compared to 2019. This was useful for increasing stocks as the company’s value. Rosneft has a total amount for dividends at 2019 is 354.1 bill rubles or 33.41 rubles for stock. The dividend payout ratio for 2019 is 89.3%, while the dividends / net income under IFRS is 50%. The approved dividend amount equals 50% for Rosneft’s IFRS net profit. Rosneft’s Board of Directors recommended the General Shareholders Meeting to approve the high dividends distributed to shareholders as it is used for stock prices increase (Bazi Alahri, 2021; Senina, 2020).

CONCLUSION

It is important to have lower production than it was before COVID-19, as it would help to increase the sale price for products due to the increased demand for the products. OPEC + countries will voluntarily reduce oil production in February-March 2021 by 425 thousand b/d.

These activities would be useful for companies’ financials, as for the future sector stability.

To sum up, the oil and gas sector was one of the first to feel the influence of a newly appeared virus. Investors forecasted the sector decrease at the 2020 beginning. The stock market for the sector began to decrease before there were limits for individual transfers. Incomes for these sector companies had significantly decreased at 2020. There were successful companies that had income losses for 2020. The company's value decreased due to the stock market fall. This was the highest decrease for the sector. We assessed the sector for January 2021. The stock market has increased as there were done right activities for the sector stability.

The supply was decreased to balance demand. There were increased dividends distributed to fulfill the liabilities. There are various ways to get to the companies' values that were before the COVID-19. Various companies have got stability at the December 2020, however there are these companies that are able to do it today. So, there is the ability to have increased income after the COVID-19, as the sector is valued below its true value. Investors increase the invested money to this sector. There is the ability to get incomes higher that it was before due to the increased demand. With the international trend towards green energy is seen as a serious threat to the Russian economy, the Government intends to make the export of the world's most abundant gas a significant part of its energy sector.

The implementation of these measures will help to reduce the dependence of the budget on oil and gas by increasing the budget's revenues from the export of pure hydrogen - the «green alternative» of oil and gas. It is also noted that Russia's share of income from the high-tech sector is increasing. For example, against the backdrop of a pandemic and the new challenges facing the country, Russian science had demonstrated brilliant results on a global scale. The introduction of digital technologies in the energy sector, as a way of improving the mechanisms and tools for generating federal budget's income, can be considered from the point of view of the way to phase out hydrocarbons and move to clean energy.

REFERENCES

1. Ahmadi, M., Dadashi, A., Ebrahimi, R. (2017). Modelling the heating and cooling degree-days in Iran. Earth Knowledge Research, 8, pp. 127–140.
2. Akhmadeev, R. G., Bykanova, O.A. (2021) Taxation Instruments for the Support of Research and Advanced Development Expenses in the Manufacturing Sector of the Economy. IOP Conference Series: Earth and Environmental Science. 666 (062140) pp. 1-6. doi:10.1088/1755-1315/666/6/062140
3. Akhmadeev, R., Redkin, A., Glubokova, N., Bykanova, O., Malakhova, L., Rogov, A. (2019) Agro-industrial cluster: Supporting the food security of the developing market economy. Entrepreneurship and Sustainability Issues, 7 (2), pp. 1149-1170
4. Akhmadeev, R.G., Bykanova, O.A., Salomadina, P.S. (2019) The effect of the VAT change on the final consumer. Proceedings of the 33rd International Business Information Management Association Conference, IBIMA 2019: Education Excellence and Innovation Management through Vision 2020, pp. 765-770.
5. Akny, K., Long, C., Sui, Y., Qing, Y. (2020) Large-scale preparation of superhydrophobic cerium dioxide nanocomposite coating with UV resistance, mechanical robustness, and anti-corrosion properties. Surface and Coatings Technology, 384, pp. 125-132.
6. Alayi, R., Jahangiri, M., Guerrero, J.W.G., Akhmadeev, R., Shichiyakh, R.A., Zanghaneh, S.A. (2021) Modelling and reviewing the reliability and multi-objective optimization of wind-turbine system and photovoltaic panel with intelligent algorithms. Clean Energy, 5 (4), pp. 713-730.
7. Alchian, A.A., Demsetz, H. (1972) Production, information costs and economic organizations. American Economic Review**,** 62(5), pp.777–795
8. Arellano, M., Stephen, B. (1991) Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. Review of Economic Studies, 58(2), pp. 277–297
9. Avvakumova, I.V., Bykanova, O.A., Akhmadeev, R.G. (2020). Improvement of small business owners taxation. 7th International conference on education and social sciences (INTCESS 2020), pp. 532-537. Dubai: JAN 20-22
10. Bakharev, V. V., Kapustina, I. V., Mityashin, G. Y., & Katrashova, Y. V. (2020). Ecologization of retail: An analysis of strategies. Siberian Journal of Life Sciences and Agriculture, 12(5), 79-96. doi:10.12731/2658-6649-2020-12-5-79-96
11. Bazi Alahri, M., Arshadizadeh, R., Raeisi, M., Khatami, M., Sadat Sajadi, M., Abdelbasset, W.K., Akhmadeev, R., Iravani, S. (2021) Theranostic applications of metal–organic frameworks (MOFs)-based materials in brain disorders: Recent advances and challenges. Inorganic Chemistry Communications, 134, 108997
12. Bogomolova I., Krivenko E., Vasilenko I., Malitskaya V., Shatokhina N. (2020) Russian Food Industry Innovative Development Needs. International Transaction Journal of Engineering, Management & Applied Sciences $ Technologies, 11 (13).
13. Byarneto, A.G., Moltó, J., Ariza, J., Conesa, J.A. (2014) Thermogravimetric monitoring of oil refinery sludge. Journal of Analytical and Applied Pyrolysis, 105, pp. 8–13

14. Bykanova, O., Avvakumova, I., Akhmadeev, R., Morozova, T., Protasov, M. (2020) Application of tutoring in a project and research activity under basic professional education. International Conference on Advances in Education (ADVED 2020), pp. 170-175. Turkey: 5-6 October.
15. Bykanova, O.A., Akhmadeev, R.G. (2019) Universal VAT Loyalty Policy for B2B E-Commerce. Proceedings of the 34th IBIMA 2019, Vision 2025: Education Excellence and Management of Innovations Through Sustainable Economic Competitive Advantage (pp. 3046-3051). Madrid, SPAIN: NOV 13-14, 2019
16. Chuvashlova, M., Vasyaeva, A., Gorlovskaya, E., & Pochinova, M. (2021). The Role of Financial Security in the System of Economic Security of an Economic Entity. Krasnoyarsk Science, 10(2), 70-83. https://doi.org/10.12731/2070-7568-2021-10-2-70-83
17. Dudukalov, E. V., Zolochevskaya, E. Y., Sorokina, M. Y., & Mangusheva, L. S. (2022). Structuring the economic space for small business in the agro-industrial complex. Siberian Journal of Life Sciences and Agriculture, 14(2), 176-215. doi:10.12731/2658-6649-2022-14-2-176-215
18. Egorova, L.I., Glubokova, N.Y. (2020) Instruments of Financial Support for Exports. Proceedings of the 35th International Business Information Management Association Conference, Education Excellence and Innovation Management: A 2025 Vision to Sustain Economic Development during Global Challenges (IBIMA). pp. 5776-5781. Seville, Spain: 1-2 April
19. Egorova, L.I., Glubokova, N.Y., Lvova, M.V. (2019) Problems of Formation of the Initial Price in Public Procurement. Proceedings of the 34th IBIMA 2019, Vision 2025: Education Excellence and Management of Innovations Through Sustainable Economic Competitive Advantage (pp. 1460-1465). Madrid, SPAIN: NOV 13-14.
20. Egosson, M., Lof, O. (2019) Mining's contribution to national economies between 1996 and 2016. Mineral Economics, 32, pp. 223–250
21. Elveny, M., Akhmadeev, R., Dinari, M., Abdelbasset, W.K., Bokov, D.O., Jafari, M.M.M. (2021) Implementing PSO-ELM Model to Approximate Trolox Equivalent Antioxidant Capacity as One of the Most Important Biological Properties of Food. BioMed Research International, № 3805748
22. Gabdulkhakov, R. B., Poltarykhin, A. L., Tsukanova, O. M., & Avdeev, Y. M. (2021). Regional competitiveness assessment: prospects for the agro-industrial complex of the region. Siberian Journal of Life Sciences and Agriculture, 13(6), 339-361. doi:10.12731/2658-6649-2021-13-6-339-361
23. Glubokova, N.Y., Egorova, L.I., Sokur, V.S. (2019) Tax control of small enterprises: Russian and foreign experience. Proceedings of the 33rd International Business Information Management Association Conference, IBIMA 2019: Education Excellence and Innovation Management through Vision 2020, pp. 3354-3358.
24. Golovina, S. G., Poltarykhin, A. L., Zhuravlev, P. V., & Mikolaychik, I. V. (2022). Income of the rural population is a condition for the formation of human capital in rural areas. Siberian Journal of Life Sciences and Agriculture, 14(1), 83-102. doi:10.12731/2658-6649-2022-14-1-83-102
25. Golubtsova, E.V., Zvereva, A.O. (2019) Development of Tax Attractiveness of Russia's Special Administrative Areas with Fair Tax Competition. Proceedings of the 34th IBIMA 2019, Vision 2025: Education Excellence and Management of Innovations Through Sustainable Economic Competitive Advantage. pp. 2023-2028.
26. Golubtsova, E.V., Zvereva, A.O. (2019) Expediency of parallel import legalization in Russian Federation. Proceedings of the 33rd International Business Information Management Association Conference, IBIMA 2019: Education Excellence and Innovation Management through Vision 2020, pp. 782-787.
27. Gong, B. (2018) The shale technical revolution – cheer or fear? Impact analysis on efficiency in the global oilfield service market. Energy Policy, 112, pp.162–172
28. Kalacheva, O.N. (2019) A Survey of Modern EU Approaches towards Amortization Policies. Proceedings of the 34th IBIMA 2019, Vision 2025: Education Excellence and Management of Innovations Through Sustainable Economic Competitive Advantage (pp. 4515-4522). Madrid, SPAIN: NOV 13-14.
29. Kalacheva, O.N. (2020) Comparative characteristic of conditions and results of SME operations in the Russian and European economies. Proceedings of the 35th International Business Information Management Association Conference, Education Excellence and Innovation Management: A 2025 Vision to Sustain Economic Development during Global Challenges (IBIMA). (pp. 5534 -5541). Seville, Spain: 1-2 April.

30. Karthikeyan, S., Titus, A., Gnanamani, A. (2011) Treatment of textile wastewater by homogeneous and heterogeneous Fenton oxidation processes. Desalination, 281, pp.438–445
31. Korableva, O. N., Razumova, I. A., Kalimullina, O. V. (2017). Research of innovation cycles and the peculiarities associated with the innovations life cycle stages. Paper presented at the Proceedings of the 29th International Business Information Management Association Conference - Education Excellence and Innovation Management through Vision 2020: From Regional Development Sustainability to Global Economic Growth, 1853-1862.
32. Kosov, M.E., Akhmadeev, R.G., Smirnov, V.M., Popkov, S.Y., Shmigo, N. S., Chernov, A.Y. (2019) Choosing the Investment Business Model for The Energy Industry. Amazonia Investiga. 8 (20). pp. 544-558.
33. Lehoux, L., Morozova, T.V., Safonova, E.G., Balashova, A.D., Protasov, M.V. (2019) Practical Aspects in Calculating of Impairment of Financial Assets According to IFRS 9 "Financial Instruments". Proceedings of the 33rd International Business Information Management Association Conference, IBIMA 2019: Education Excellence and Innovation Management through Vision 2020, pp. 6624-6632.
34. Lehoux, L., Morozova, T.V., Safonova, E.G., Kalacheva, O.N. (2018) Adaptation of individual taxonomy in financial statements prepared in line with IFRS to XBRL format. Proceedings of the 32nd International Business Information Management Association Conference, IBIMA 2018 - Vision 2020: Sustainable Economic Development and Application of Innovation Management from Regional expansion to Global Growth, pp. 2048-2055.
35. Len, B., Wang, J., Huang, Q. (2017) Effects of potassium hydroxide on the catalytic pyrolysis of oily sludge for high-quality oil product. Fuel, 2 (10), pp.124–133
36. Makushkin G.E., Avvakumova, I.V., Logvina, E.V., Kirillova O.V., Nikitina N.N. (2020) The Financial and Economic Strategy Formation at an Enterprise: Its Impact on a Managerial Decision-Making Process. Proceedings of the 35th International Business Information Management Association Conference, Education Excellence and Innovation Management: A 2025 Vision to Sustain Economic Development during Global Challenges (IBIMA). (pp. 2476-2484). Seville, Spain: 1-2 April, 2020
37. Maltseva, A., Shnyreva, E., Evreinova, E., Avvakumova, I. (2020). The native language learning in the General education system of the Russian Federation. Amazonia Investiga. 9 (29) pp. 347-358
38. Mora, V., Dey, A. (2008) Biological treatment of tannery wastewater for sulfide removal. International Journal of Chemical Sciences, 6(2), pp.472–486
39. Morozova, T., Akhmadeev, R., Lehoux, L., Yumashev, A., Meshkova, G., Lukiyanova, M. (2020) Crypto asset assessment models in financial reporting content typologies. Entrepreneurship and Sustainability Issues, 7 (3), pp. 2196-2212.
40. Morozova, T., Lehoux, L. (2019) Practical Aspects of Useful Life Calculation for Fixed Assets in IFRS Reports. Proceedings of the 34th IBIMA 2019, Vision 2025: Education Excellence and Management of Innovations Through Sustainable Economic Competitive Advantage. pp. 4722-4729. Madrid, SPAIN: NOV 13-14
41. Persson, U., Möller, B., Werner, S. (2014). Heat Roadmap Europe: Identifying strategic heat synergy regions. Energy Policy, 74, pp. 663–681.
42. Pogosyan, V. G. (2021). Problem of innovations diffusion: A historical retrospective. Voprosy Istorii, 2021(5-2), 24-32. doi:10.31166/VoprosyIstorii202105Statyi30
43. Sarkisian-Artamonova A.A., Kalacheva, O.N. (2020) Impact of the COVID-19 pandemic on the small and mediumsized business economy in Russia as an educational tool. International Conference on Advances in Education (ADVED 2020), pp. 414-421. Turkey: 5-6 October.
44. Senina, K.V., Kalacheva, O.N. (2020) Study of the impact of the COVID-19 pandemic on rental relations in Russia in order to improve the quality of accounting education. International Conference on Advances in Education (ADVED 2020), pp. 422-428. Turkey: 5-6 October 2020
45. Ternovykh K., Leonova N., Malitskaya V., Chirkova M., Markova A. (2020) State and effectiveness of the Russian enterprise of horticulture production. International Transaction Journal of Engineering, Management & Applied Sciences $ Technologies, 11 (6).
46. Tsilikova, M.S., Golubtsova, E.V., Scherbakova T.S. (2020) The impact of the tax burden on the economic growth of BRICS countries. Proceedings of the 35th International Business Information Management Association Conference, Education Excellence and Innovation Management: A 2025

Vision to Sustain Economic Development during Global Challenges (IBIMA). (pp. 2990-2998). Seville, Spain: 1-2 April.

47. Zaporozhtseva L., Chirkova M., Malitskaya V., Tkacheva Y., Kuznetsova I. (2020) Financial mechanism for commercial organization development: vector approach. International Transaction Journal of Engineering, Management & Applied Sciences $ Technologies, 11 (7)
48. Zvang, N. Q., Ye, C. L., Yan, H. (2020) Single-atom site catalysts for environmental catalysis. Nano Research. 13, pp. 3165–3182.
49. Zvereva, A., Akhmadeev, R., Morozova, T., Bykanova, O., Avvakumova, I. (2020) Improving access to environmental information for the subjects of tax relations. International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management (SGEM 2020), pp. 279-284. Bulgaria: August (5.2)
50. Zvereva, O.A., Belyakova, M.Y. (2020) Some aspects of the transformation educational services into a ditital environment. 6th International Conference on Advances in Education (ADVED 2020), pp. 156-161. Turkey: 5-6 October.