



---

# OUTSOURCING VS VERTICAL INTEGRATION IN OIL & GAS INDUSTRY IN RUSSIA: A CASE OF VIRTUAL ORGANIZATION?

**Dmitry Stapran**

Russian Presidential Academy of National Economy and Public Administration (RANEPA),  
82/5, Prospect Vernadskogo, Moscow 119571, Russian Federation

## ABSTRACT

*In theory, when we look at any oil and gas company, most elements of its value chain can be outsourced. Ultimately, such an imaginary oil and gas company may look like a virtual organization having retained only oil or gas reserves and finances. In practice, this never happens. On the contrary, in oil-producing countries the majority of oil and gas companies strive for vertical integration and a wide reach across various businesses. This is especially true for Russia. This article explores the history of outsourcing in the Russian oil and gas industry since the demise of the Soviet Union to present date. We have conducted the analysis using the “five forces of outsourcing” methodology. It is a blend of five existing and new theoretical approaches to outsource analysis, namely: transaction costs, competitive advantage, trust and social exchange, level of economic development and the sourcing cycle. The state of outsourcing in the industry has evolved greatly for the past 20 years from level “zero” to quite a mature state with upstream segments, especially oilfield services and logistics, being widely outsourced. At the same time, midstream and downstream businesses are heavily concentrated within oil and gas companies and include chemistry, utilities and even shipbuilding facilities. This happens because companies are not truly public and are controlled either by the state or by a single person. The state and oligarchs distrust market forces and competition, which prevents outsourcing taking deeper root within the industry. At the same time, elements of the value chain will surely continue to be outsourced and size of the outsourcing market will grow to 2.5 trillion rubles in the near future. The analysis of the evolution of outsourcing in the Russian oil and gas industry can help in drawing parallels to outsourcing processes in other oil-producing countries worldwide.*

**Keywords:** Outsourcing, oil and gas industry, Russia, sourcing, “five forces” model

**Cite this Article:** Dmitry Stapran, Outsourcing Vs Vertical Integration in Oil & Gas Industry in Russia: A Case of Virtual Organization?, International Journal of Mechanical Engineering and Technology, 9(5), 2018, pp. 993–1002.

<http://www.iaeme.com/IJMET/issues.asp?JType=IJMET&VType=9&IType=5>

---

## 1. INTRODUCTION

It is impossible to imagine the Russian oil and gas industry today without outsourcing. If oil and gas companies continued to perform all of their business processes on their own, they would neither be able to increase the current scope of their activities nor achieve successful growth. The size of the outsourcing market in this industry already exceeds 1.7 trillion rubles and in the near future could well grow to 2.5 trillion rubles.

Traditionally, the value chain of oil and gas companies is divided into upstream, midstream and downstream segments. In the upstream segment, outsourcing is most common in the form of engaging oilfield service companies in exploration, field development and oil production. Outsourcing providers are also involved in transportation to the point of consumption or processing of raw materials, extracted in remote regions of Russia (primarily in Western Siberia), by pipelines, rail, road, sea (in tankers) and rivers in the midstream sector. In the upstream sector, outsourcing exists in the form of processing raw materials into commodities, as well as in the form of trading, oil refinery (Ors), filling station (FS) networks, fueling complexes (FCs) and others.

Therefore, in principle, oil and gas companies can outsource all the elements of the value chain, while only retaining ownership of production licenses, customer and financial center functions. However, in practice this does not happen. Russian vertically integrated oil companies (VIOCs) aim to integrate almost all the elements of the value chain within their organisations. Certain factors can explain the relatively low adoption of outsourcing practices in the Russian oil and gas industry.

## 2. MATERIALS AND METHODS

These factors are from the “five forces of outsourcing” methodology model developed by the author.

The model analyzes the outsourcing processes in the economy of the country, industry or an individual firm in terms of **transaction costs, competitive advantage, trust and social exchange, and the level of economic development**. These factors influence whether the "sourcing cycle", which is the basis of the author's methodology model is moving toward outsourcing or toward doing work using own efforts (see Figure 1).



**Figure 1** The five forces of outsourcing methodology model (developed by the author).

Undoubtedly, transaction costs play a crucial role when it comes to outsourcing, and in this case the simple methodology, proposed by R. Coase [1], and later developed by K. Arrow [2] and O. Williamson [3], is still relevant, i.e. if an outsourcing partner can provide product manufacturing or services at a cheaper rate, then outsourcing should be chosen. Similarly, if a business process in question is not among those that give a firm a competitive advantage, it becomes a "candidate" for outsourcing [4]. However, all the obvious advantages of outsourcing can be discounted by lack of trust, the influence of which was well studied by R. Morgan and S. Hunt [5]. It should be noted that issues of trust play a relatively crucial role in the Russian economy, compared to the more developed countries. In general, the level of economic development and that of individual markets, including oil and gas services, plays a corrective role on the impact of the above-mentioned factors. Russia's inclusion in one of the high-income groups (high income non-OECD members) or in the upper-middle income group (upper-middle income group, World Bank) together with Argentina, Brazil, Turkey, Mexico, Kazakhstan, China and other countries explains the weakness in some factors and the strength in others.

All the five elements of the "five forces" model clearly manifested themselves in the outsourcing evolution of the Russian oil and gas sector.

### **3. RESULTS AND DISCUSSION**

Oilfield services are the basis of the outsourcing market in the oil and gas industry.

After the privatization stage and the emergence of major oil and gas companies during the post-Soviet period until the mid-2000s, the majority of oilfield services were performed by the companies themselves or on the basis of an insourcing model. This was a natural trend for the youthful (in terms of the level of economic development factor of the "five forces" model) Russian capitalism with the first owners' firm desire to control everything personally. In addition, there was no outsourcing market for oilfield services at that time in Russia. In the meantime, increasing transaction costs, greater understanding of the competitive advantages in the oil and gas business, and the "maturing" of the oil and gas sector have led to gradual outsourcing of oilfield services.

Initially, companies began to establish subsidiary service companies, for example, TNK-BP, Lukoil, Sibneft, Gazprom, YUKOS in the early 2000s, and Rosneft, Gazpromneft, Tatneft, Slavneft and others in 2006-2010. Evidently, the appearance of such companies was affected by cyclical crises and falling oil prices, and, consequently, the companies' desire to reduce their transaction costs.

Lukoil was the first company to begin to establish an independent outsourcing market in the oil and gas industry in Russia. In 2006, Lukoil sold its oilfield service companies that served as a basis for the formation of the first independent company in the industry, Eurasia Drilling Company (EDC - Eurasia Company). Following Lukoil, Gazpromneft sold part of its oilfield service assets (Gazpromneft Oilfield Services) that formed another independent contractor – RU Energy Group.

After the sale, Gazpromneft signed outsourcing contracts with independent oilfield service companies, such as Halliburton, C.A.T. Oil, Schlumberger, EDC, Gazprom Drilling, and others. This may have led to the bankruptcy of the main contractor, RU Energy Group, which failed to diversify its business (as, for instance, EDC did). This undermined Gazpromneft's confidence in outsourcing and forced them to consider the idea of returning the oilfield service business under their wing in late 2014. Thus we see how trust, a "five forces" model factor, influenced the turn of the "sourcing cycle" towards insourcing.

In 2009, TNK BP sold its oilfield service assets to an international company Weatherford in exchange for 3.5% of its shares. In 2011, Gazprom sold its subsidiary, Gazprom Drilling, founded back in 1997, to one of the Russian entrepreneurs.

Bashneft also retained its oilfield services within the company until 2013, when its shareholder, AFK Sistema, moved them out to a separate company Targin. After that, Bashneft and Targin formally had one shareholder. However, even such quasi-outsourcing helped Bashneft to reduce its dependence on Targin from 90% to 54% in 2016.

The history of establishing oilfield services by Rosneft, Russia's largest oil company today, is also important when analyzing oilfield services. The key service subsidiary of Rosneft, RN-Burenie, was established back in 2007, on the basis of service assets bought from YUKOS. Rosneft decided to sell off oilfield services in 2012. However, after Igor Sechin became the head of Rosneft the same year, it canceled all outsourcing plans and instead focused on developing its own services. First, Rosneft acquired service companies of Weatherford and integrated them into RN-Burenie. This happened after Rosneft acquired TNK BP in 2013. In 2014-2015, Rosneft bought oilfield service assets from VTB Bank and the Canadian service, Trican. After the purchase of Bashneft, Rosneft returned ownership of its prior asset, Targin, in 2016, having bought them back from AFK Sistema.

As a result of successive actions, the share of Rosneft's insourcing reached 60% in drilling and 40% in well workover, the number of working teams increased from 51 to almost 300, and the number of drilling rigs rose from 81 to more than 250 [6].

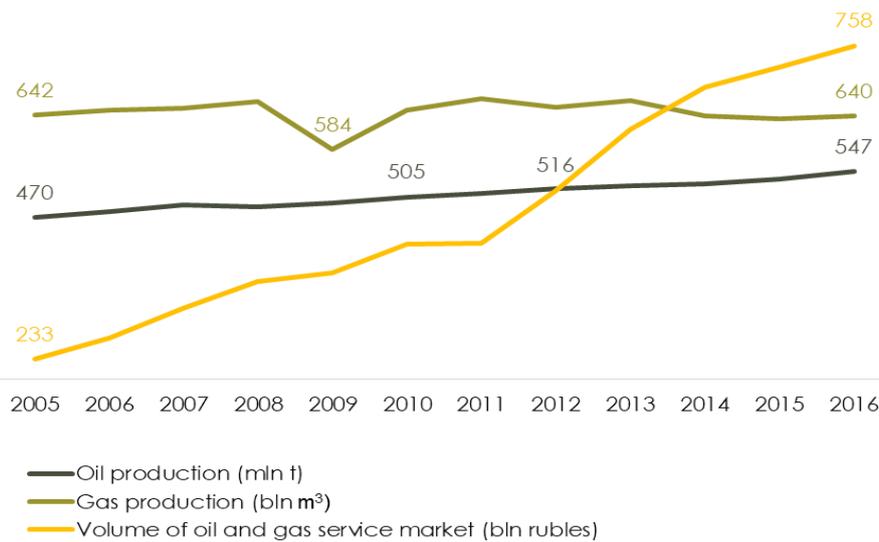
According to media reports, transaction costs were the main driver for expanding Rosneft's own services. The company tried to reduce the cost of outsourcing services, traditionally provided to it by EDC, but, having failed in its endeavour, it decided not to cooperate with the outsourcer and to develop its insourcing business. As a result of these actions, EDC completely lost a client or a quarter of its order portfolio by 2015. In addition, Rosneft's new leadership's lack of trust in the outsourcing market (first and foremost foreign players' participation in it) played a role.

Surgutneftegaz is an example of a complete absence of outsourcing, the company did not even transfer its oilfield service business out (insourcing). According to industry reports, Surgutneftegaz's internal divisions accounted for 21% of all drilling in Russia [7] in 2014. The company structure also includes 5 construction trusts and 13 transport companies. Only geophysics has been transferred to a separate company (Surgutneftegeofizika). All of Surgutneftegaz's wells are designed by its own company SurgutNIPIneft [8].

The analysis of the dynamics of establishing oilfield services in Russia over the past two decades indicates the desire to reduce transaction costs. Undoubtedly, this and the crises in 1998, 2008 and 2014 are the catalysts of both insourcing and outsourcing activities. However, transaction costs were not the only catalyst. Almost all the decisions dealing with the creation of separate insourcing subsidiaries and their subsequent sale were made by oil and gas companies in order to focus on spheres that give them a competitive advantage. As the independent outsourcing market (the level of economic development factor of the "five forces" model) developed, and the number of independent players due to the entry of foreign companies (Weatherford, Schlumberger, BakerHughes, etc.) increased, trust in it grew, prompting companies to outsource their oilfield services. In cases of lack of such trust, for instance by Rosneft, the oil and gas services were brought into the fold of the company. Undoubtedly, the management's desire for personal control of assets, characteristic of economies of countries in a transition period, played its role.

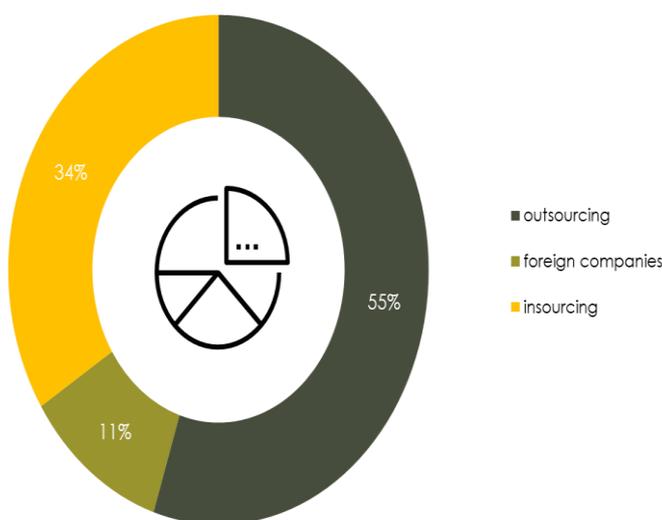
Analysis of the events that occurred in the service market once again confirms the importance of one of the components in the theory, developed by the author, the "sourcing cycle".

Despite the different dynamics in the development of oil and gas service outsourcing during the last decade, its stable, even rapid growth can be observed. With a slight increase in oil production from 2005 to 2016 by 16% and the absence of growth in gas production, the oilfield service market (including companies' internal drilling divisions) grew more than threefold (see **Error! Reference source not found.**).



**Figure 2** Dynamics of the oil and gas service market and the volume of oil and gas production in Russia (prepared by the author).

Simultaneously, the outsourcing service market grew 1.6 times during only the last five years while the amount of work performed by insourcing or internal company divisions increased twofold. In general, today outsourcing in the oil and gas services accounts for 2/3 of the market and more than 500 billion rubles (see Figure 3).



**Figure 3** Share of insourcing and outsourcing in the oil and gas services

A vital element in the organization of the oil and gas production process is the provision of fields with **electric power**. In this area, VIOCs also often avoid outsourcing (centralized power supply) and prefer insourcing for a number of reasons. Firstly, oil and gas production is an energy-intensive industry, which accounts for 5.5% of all electric power consumption in Russia, and electric power costs as part of production costs can reach 30-35%. VIOCs try to integrate all the important costs into the value chain. Secondly, in addition to providing electric power to extraction infrastructure, a significant driver for building their own distributed power plants in fields are penalties for burning off gas. To avoid penalties for environmental pollution, oil companies build gas turbine power plants, the raw material for which is the burned off gas. Here we see that the transactional cost factor of the "five forces" model has an important influence on oil and gas companies.

Lukoil, Gazprom and Rosneft have also integrated whole power plants into the structures of their holdings. In case of Gazprom, it is Gazprom Energoholding, and Lukoil, TGC-8. Rosneft practically controls Inter RAO Group through Rosneftegaz. These are the largest Russian power utility companies. They can hardly be called insourcing subsidiaries but rather the final parts of the upstream sector in the value chain of oil and gas companies. On the one hand, this is a non-core business and attention is diverted from the company's focus on its competitive advantage. On the other hand, this is an opportunity to convert raw materials (natural gas) into goods with higher added value - electric power. The cost of fuel in the electric power industry reaches 50-70%, and the industry annually burns 500 billion rubles worth of natural gas. Here, the synergy inside the value chain is obvious. Hence, for example, Gazprom accounts for 67% of the slightly less than 40 billion cubic meters of gas consumed by Gazprom Energoholding's plants (while, in 2013, this share was 77%).

The next important element of the value chain in the oil and gas business, and therefore in our research of outsourcing, is **logistics (midstream)**. In transport by pipelines, two different approaches are used. On the one hand, there is an example of Gazprom, which did not turn the pipeline business into a separate structure. On the other hand, there is the experience of oil companies, which engage the services of a global oil outsourcer, Transneft pipelines. 85% of the oil produced in Russia is transported via Transneft pipelines [9] (see Figure 4).



**Figure 4** Network of oil and gas pipelines in Russia (prepared by the author)

However, sometimes oil companies have to establish joint ventures with Transneft to transport their own oil. For this purpose, the Caspian Pipeline Consortium (CPC) was

established. Its shareholders are Transneft and oil companies, Rosneft, Lukoil, Chevron, Shell, ENI, and others.

Sometimes oil companies have to build pipelines on their own. This is what Lukoil did by building a pipeline and a number of oil terminals. In 2013, the independent gas producer Novatek together with SIBUR, a chemical company (both are part of the same group), built terminals in the port near St Petersburg for transshipment of stable gas condensate. The oil loading terminal in the Far East is owned by Rosneft. In addition, many oil companies own field oil pipelines that supply oil from fields to the pipeline system of Transneft. Their characteristics are identical in many respects to Transneft pipelines, with hardly any noticeable differences.

The rest of oil and liquefied gas is transported by rail. Today, the ratio of VIOCs' insourcing companies to outsourcing railway operators is 45% to 55%, in favor of the latter ones. At the same time, the outsourcing share has been steadily growing in recent years, and the growth rate in outsourcing companies' revenues from oil product transportation averages 18%, which is almost two times higher than that of insourcing operators' revenue (about 10% in 2011-2015). Such growth rates testify to the gradual movement by VIOCs in the direction of outsourcing, and the growing realization that transportation is not their key advantage (the competitive advantage factor of the "five forces" model).

Gradual market narrowing in terms of declining volumes of oil and LPG being transported can additionally contribute to this (Liquefied petroleum gas). It is happening due to the launch of both new oil (Eastern Siberia – Pacific Ocean (ESPO)) and gas pipelines (Power of Siberia) as well as the large write offs of old rail cars by carriers. The highly competitive nature of the market, as a rule, makes it unattractive for insourcing companies, which in turn opens doors to outsourcers, whose main competitive advantage is transportation.

In the liquefied gas sector, only 2 LNG plants were built in Russia, as part of the Sakhalin-1 and Sakhalin-2 projects owned by Gazprom (capacity of 9.6 million tons per year), and Yamal-LNG, built by the second largest Russian gas producer Novatek (capacity of 17.7 million tons per year). Thus, all the LNG plants in Russia are VIOCs' insourcing subsidiaries. However, international experience shows that liquefaction can also operate using the outsourcing model, for example the LNG plant in Sabine Pass in the USA.

**Oil and gas processing** increases the added value in comparison with the sale of oil and gas in raw form. Therefore, it is natural that many VIOCs have long turned to processing (downstream) in order to increase product margins. This was further facilitated by governmental policy designed to stimulate oil processing within Russia. VIOCs certainly dominate oil processing markets, and there is practically no outsourcing market for oil processing. Thus, the share of VIOCs is 86% in oil processing by volume at refineries. Only 16% of refineries are operated using the outsourcing model.

The situation is about the same for high-in-value-added oil and gas processing (for example, production of polymers). About 4.5 million tons of polymers are produced annually in Russia. If we look at the share of the most mass produced polymers, which together amount to 78%, we see that the share occupied by processing outsourcers is somewhat significant in cases of polyethylene and polyvinyl chloride production only. The remaining share is divided among VIOCs, Rosneft, Lukoil, Gazpromneft and Gazprom. SIBUR, the largest producer of industrial gases and polymers, is considered to be a VIOC, because just as the gas producer, Novatek, it is part of the same holding group associated with a Russian businessman – Leonid Mikhelson.

VIOCs' product **distribution channels** are also integrated into their business structures in the form of insourcing subsidiaries. However, the share of business transferred to outsourcers independent from VIOCs is much larger. For example, only 28% of 29,000 existing filling stations in Russia are owned by VIOCs (slightly over 8000). In addition, VIOCs do not have title to all these filling stations. For example, Lukoil directly owns only one thousand filling stations out of 2,500 FSs, and the remaining ones are operated under a franchise, which, in fact, is also outsourcing. Bashneft has 178 such outsourced filling stations out of 744. At the same time, taking into account the consolidation of refineries within VIOCs, the VIOCs actually control the FS market by fuel control through ownership of refineries. In addition, VIOCs own high-margin businesses involved in aircraft fueling and aviation kerosene sales. Rosneft has a leading position here with a share of 32%. Lukoil also supplies aviation kerosene at wingtip in 29 airports. Gazpromneft-Aero and Shell Russia are not far behind the competition.

Half of the oil produced in Russia is exported. Independent traders feel much more confident than Russian VIOCs in international markets. This explains the fact that 190 out of 244 million tons of oil, exported in 2015 (or 72%), were supplied via contracts with major international traders (outsourcing companies). In the meantime, 53 out of 190 million tons (28%) were sold by VIOCs' trading subsidiaries.

Such a significant share of outsourcing in oil trading is explained by two factors. Firstly, international oil traders, such as Glencore, Vitol, Gunvor and many others, have been working with suppliers and consumers of oil and other raw materials throughout the world for dozens of years and do it better than VIOCs, as they specialization is based on their competitive advantage. Their transaction costs for finding oil buyers, managing contracts and other processes are also incomparably lower than those of oil and gas companies. Secondly, selling through traders is a great way to finance long-term projects. In 2008, Rosneft and Transneft used a prepayment, from a long-term contract with Chinese CNCP, to finance the investment program for and construction of the ESPO pipeline. Glencore was part of the consortium, which bought Rosneft shares in 2016. However, the examples cited above are ones of state-owned companies with a rather aggressive merger and acquisition policy.

Lukoil, for instance, has been managing its own oil trading company for many years, which sells almost 36 million tons of Russian oil for export, not only its own, but also from Rosneft and Surgutneftegaz, and it is an absolute leader in this respect. However, recently Lukoil has started talking about a possible phased sale of their oil trading subsidiary. The main reason for this is seen as the factor of competitive advantage of the "five forces of outsourcing" model. Thus, according to the Russian entrepreneur and the primary owner of Lukoil, Vagit Alekperov "The business of trading requires a large working capital and diverts the company's funds from investment in production" [10].

Gazprom practically does not use outsourcing services in trading. It operates via the subsidiary, Gazprom Marketing and Trading, and prefers direct contracts with foreign buyers.

Oil and gas companies also retain completely non-core assets such as **financial institutions** within their structures. Gazprom de facto controls the third largest bank in Russia, Gazprombank, while Rosneft has fully integrated RRDB into its organization. Surgutneftegaz controls Surgutneftegazbank, while Tatneft controls Zenit Bank. Lukoil also previously owned Petrocommerce Bank, but recently sold it to a financial holding, having thus outsourced this non-core business. Nevertheless, captive banks of oil and gas companies currently have assets exceeding 6 trillion rubles, which is approximately 10% of all the assets

in the Russian banking system. We can observe the same situation in the insurance business, and in the pension fund sector, where VIOCs' share is also about 10%.

#### 4. CONCLUSIONS

Outsourcing volumes in the oil and gas industry already exceed 1.7 trillion rubles. The turnover from the Russian oil and gas service alone accounts for almost 10% of the turnover from the world's oilfield service market, which is worth approximately USD 160 billion. Outsourcing in the oil and gas industry will surely continue to grow, especially in the area of logistics. Oilfield services and financial operations may also become a driver of growth for outsourcing.

In addition to increasing volumes, outsourcing can grow in other ways. For example, Russian companies in Western Siberia, the main oil and gas producing region in Russia, may follow in the footsteps of the oil companies in the North Sea, which agreed to launch a joint electronic trading platform to exchange surplus inventory. In general, outsourcing, aptly used as a tool to increase the operational effectiveness of oil and gas companies, can and should become more wide-spread.

Outsourcing trends in the oil and gas industry analyzed in this article confirm the validity of the "five forces of outsourcing" model that we formulated, with all of its factors proven to be true. Transaction costs have become the main driver for outsourcing various activities, which is especially evident during periods of structural raw material crises. The desire to find a competitive advantage and focus on it also move both VIOCs and their contractors (outsourcers) forward. The level of economic development factor allowed for greater trust in the outsourcing market and the transfer of more operations to it, especially in the case of oilfield service, exploration and transport companies. At the same time, the market's distrust, primarily towards foreign companies, resulted in some VIOCs' shift to insourcing.

What is more important is that the case of the oil and gas industry proves the sourcing cycle theory formulated by the author. The industry has come a long way in terms of development, with observable trends in the growth of outsourcing as well as the refusal to use it. This process is unlikely to end, as companies constantly use the sourcing tool in order to tweek the value chain.

#### REFERENCES

- [1] Coase, R. The Nature of the firm. *Economica*, **4**, 1937, pp. 386-405.
- [2] Arrow, K.J. The Organization of Economic Activity: Issues Pertinent to the Choice of Market Versus Nonmarket Allocation. Washington: Joint Economic Committee of Congress, 1969.
- [3] Williamson, O.E. Transaction Cost Economics. B R. S. Willig, Handbook of Industrial Organization (pp. 135-182). Amsterdam, New York, Oxford, Tokyo: North Holland, 1990.
- [4] Porter, M. E. The Competitive Advantage. New-York: The Free Press, 1985.
- [5] Morgan, R., & Hunt, S. The Commitment-Trust Theory of Relationship Marketing. *Journal of Marketing*, **58(3)**, 1994, pp. 20-38.
- [6] Rosneft closed the deal on the purchase of the oil service company, Targin. <https://www.rosneft.ru/press/releases/item/185269/>
- [7] Russian market of well drilling: current status and development prospects up to 2020: Report, RPI. Moscow: RPI, 2015, 70 p.

- [8] Russian market of oilfield services. Analytical review. 5th edition. Moscow: RBC Research, 2014, 214 p.
- [9] Transneft [E-source] Transneft: official website. <https://www.transneft.ru/about/>
- [10] Mordyushenko, O. Lukoil will test Litasco price. The company may trade trader's shares. *Kommersant*, October 11, 2017.
- [11] Dr. G. Sivanesan and S. Vivekanantha . A Study on Organization Commitment and Job Satisfaction in Selected Business Process Outsourcing (BPO) Organizations in Tiruchirappalli . *International Journal of Management* , 7(2), 2016, pp. 721 - 729
- [12] Dr. Dattatry Ramchandra Mane, "To Study The Impa ct of Multi-Vendor Outsourcing on The Performance of The Suppliers and Rejection Levels" *International Journal of Management (IJM)*, Volume 4, Issue 2, 2013, pp. 273 - 284,
- [13] Dr.V.Antony Joe Raja, "Emerging Trends in Human Resource Management with Special Focus on Outsourcing in Various Sectors", *International Journal of Management (IJM)*, Volume 3, Issue 1, 2012, pp. 197 - 204
- [14] Prof. Kadambini Kumari, "Outsourcing Vs Insourcing: Best for your Organization?", *International Journal of Management (IJM)*, Volume 4 , Issue 4, 2013, pp. 65 - 74