

The Strategic Planning of Industrial Complex Companies Under the Conditions of Digital Technologies Development

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ABSTRACT

The companies that can be considered the leaders of the RF industrial complex are actively seeking the opportunities to improve the efficiency of their business processes and business segments through the implementation of digital technologies. The first objective of the study was to test the existing industrial companies' strategies for adequacy of digitalization-related global processes. The second objective was to elaborate recommendations for setting company's strategic development trends with a glance to digital technologies. In the course of the study 10 companies, which are the leaders of the industrial complex of Russia were identified. The strategic purposes of the companies were analyzed and grouped. The approach to forming the strategic development trends of the industrial companies with account of digital technologies development has been suggested as a result of the study. It takes into account the transformations in the company's external and internal environment, as well as those of the strategic planning system.

Keywords: industrial company, digitalization, digital technologies, strategic planning, strategic development trend

1. INTRODUCTION

The complicated global political and economic situation [1], changes of technological order, the onset of another industrial revolution [2] force companies to think about the business models and business processes efficiency for longer term. The development of digital technologies and associated transformations are forcing key market players to review existing development strategies, both in the short term and in the longer term.

Strategic planning of companies, especially national leaders, provides for taking into consideration strategic benchmarks of economic development adopted at the governmental level. “Digital Economy of the Russian Federation” Federal program involves digital technologies: big data, neuro-technologies and artificial intelligence, distributed registry systems, quantum technologies, new manufacturing technologies, industrial Internet of Things (IIoT), robotics and sensor components, wireless communication technologies, virtual, and augmented reality technologies.

Digital technologies are the backbone of the coming technological revolution. The countries and companies that will “lead” the industrial revolution are likely to become the leaders in terms of economic growth rate, owing to higher labor efficiency of both existing and new production processes.

Experts of NRU HSE and RVC [3-5] position the success of companies in technology markets as a key global leadership factor.

The purpose of this research consists in analyzing availability of strategies designed by the companies that are leaders of industrial complex of Russia to meet digitalization challenges, as well as in developing recommendations for strategic development trends with a glance to digital development.

2. RESEARCH METHODOLOGY

Strategic planning is one of the basic management functions. It becomes especially relevant during transition and crisis periods, when companies face new opportunities for growth and, alongside with that, the business loss threats are looming.

The studies by I. Ansoff, R. Grant, G. Gamble, A.D. Strickland III, M. Peteref, A.A. Thompson, M. Porter, G. Hamel, I. Kirzner, A. Chandler, V. Golikova, A. Govorin, and K.R. Gonchar [6-11] are devoted to the strategic planning issues dealing with attaining competitive advantages of the companies under uncertainty conditions. The works by I.M. Stepnov, Yu. Kovalchuk, O.F. Alekhina, V.S. Litvinenko, I.B. Sergeev, S.Yu. Glazyev, E.A. Shevchenko, S.A. Koroleva, and A.E. Cherepovitsyna [15-

22] rather focus on the issues of innovative strategy elaboration.

Within the framework of this study, industrial companies that make the greatest contribution to the economy of the Russian Federation are selected as objects of analysis, and are the development leaders. In order to determine the major companies of the industrial complex, the issues of enterprise classification were examined. We also examined an issue of their attribution to major companies.

A number of Russian researchers, such as L.D. Revutsky, A.V. Shubin, G.V. Sharov, N.A. Safronov, E.S. Yudinikova, N. Shagay focused on classification of enterprises and highlighting major industrial enterprises. The main criterion for classifying companies as major companies is the annual amount of revenue and the number of employees at its enterprises. Significant work on systematizing indicators for attributing companies to major ones has been performed by V.V. Kogotov [23]. His study demonstrates that every researcher is inclined to expanding the list of main criteria, adding his own ones, such as significant market share in the industry (A.V. Shubin), the size of assets and assignment to system- or city-forming enterprises (G.V. Sharov), the corporate capital value (N.A. Safronov, A.Yu. Yudinov) [24], added value (E.S. Yudinikova). At the same time, contemporary researchers emphasize the need to take into consideration that the quantitative values of different criteria are divergent depending on the chosen industry (N. Shagay). Contemporary Russian ratings (RBC Rating, Forbes, RIA rating, RAEX, Expert) are based on quantitative indicators that are freely accessible and take into account from 1 to 3 criteria.

Integration into a world labor division system is indispensable for strategic planning of major companies of the industrial complex.

Formation of post-industrial society in the developed countries in the second half of the XX century has led to revisiting the role of industry in the countries' socioeconomic development, to emerging information society and the knowledge-based economy concepts. The works by D. Bell "The coming of post-industrial society" [25], F. Webster "Theories of the Information Society" [26], and M. Castells' "The Information Age: Economy, Society and Culture" [27] could be considered as key studies in the field of information society.

Despite the great interest in the development of the digital technologies in the world and Russian academic communities [28-31], the Russian companies were rather inclined to streamline this trend into the following two. The first (1) identifying individual digital development strategies; while the second (2) highlighted integration of technological growth in individual activity clusters or segments within the framework of certain projects.

The research studies conducted by the Higher School of Economics (Moscow) ushered in entry of the Russian research business into the digital race. However, it still faces barriers related to the lack of investment, skilled personnel, and underdeveloped infrastructure. For example, "digitalization strategy is available at merely 10% of Russian manufacturing industries" (HSE project "Digital Race").

At present, external and internal environment entails radical transformations on the Russian industrial enterprises due to changes in natural conditions, as well as in productivity and competitiveness growth drivers. However, approved ideas and methodological tools do not allow Russian companies to form development strategies that could match both the Russian realities and international trends.

This study encompasses (1) identifying RF major industrial complex companies; (2) research in the strategic objectives of selected companies in terms of digital technologies development level; (3) developing recommendations on setting the strategic development trends of industrial companies with a glance to digital technologies.

3. RESULTS OF STUDIES

At the first stage of the study, we identified the industrial companies that make the main contribution to the RF economy nowadays.

The following principles were used as the basic selection criteria: (1) the company should belong to the industrial complex by type of main activity; (2) its economic contribution is determined through the company activity volumes, namely through the annual volume of revenue; (3) the company should be on the list of the main Russian ratings (Expert 400, RBC 500 and RAEX-600); (4) the company is not a state corporation, but may have a government participatory share.

Table 1 shows the selected 10 companies, the companies are listed in descending order of the "revenue for 2019" indicator. Average rank is defined as arithmetic average by places in ratings.

Conventionally, the selected companies could be divided into three groups: (1) the first three companies, which significantly exceed others by revenue position and are included in the TOP-3 by all ratings; (2) Surgutneftegaz Co. (No. 3) that is significantly inferior to Top 3 companies by revenue position, but has good economic indicators and is included in the TOP-10 ratings; (3) companies from No5 to No10, that have comparable revenue position and are in the second 10 by principal ratings.

The analysis showed that the "digitalization strategy" is not used by Russian industrial companies as an independent development trend. At the same time, digital technologies development in almost all companies involved in the analysis has been indicated in Section 1. Improving the efficiency of core activities". In fact, Russian industrial companies consider digitalization and introduction of digital technologies as merely a component of technological development projects and programs.

Digital technologies are attributed by the researchers to the fifth and sixth technological waves (S.Yu. Glazyev) [32]. From the point of view of the theory of industrial revolution (K. Schwab) [33] they are considered as the basis of the fourth industrial revolution that is oncoming now.

Table 1 Ten companies — leaders of the industrial complex of the Russian Federation (2019) *

№	Company	Sector	Revenue, a billion rubles	Profit, a billion rubles	Expert 400	RBC 500	RAEX-600	Average rank
1	Gazprom	Oil & Gas	8 224	1 456	2	1	1	1.33
2	Lukoil	Oil & Gas	7 479	619	3	2	2	2.33
3	Rosneft	Oil & Gas	6 850	549	1	3	3	2.33
4	Surgutneftgaz	Oil & Gas	1 573	860	6	6	7	6.33
5	Russian networks	Electric power engineering	1 022	91	10	11	12	11.00
7	Transneft	Oil & Gas	932	224	11	13	13	12.33
6	Inter RAO	Electric power engineering	963	71	12	12	14	12.67
8	Tatneft	Oil & Gas	911	212	13	14	15	14.00
9	NOVATEK	Oil & Gas	832	164	14	15	16	15.00
10	Euraz	Metals and mining	813	156	15	16	17	16.00

*Compiled by authors based on Russian ratings Expert 400. RBC 500 and RAEX-60

It is noteworthy that all the analyzed companies are currently applying technologies of the third and fourth technological waves. Oil and gas were the basis of the energy complex of the previous technological revolution. In the context of the coming technological revolution (J. Riffkin) [34] the bet is made on renewable energy sources and distributed energy production.

Among the world's successful companies in recent years, more and more companies have relied on digital technologies: Microsoft. Apple. Google. Facebook. Among the industry leaders, ExxonMobil should be noted as one of the most successful oil companies worldwide. Unlike Russian oil and gas companies, ExxonMobil relies on oil refining and the development of sales networks.

Taking into account the impact of digital technologies on the world economy and society, we propose revisiting approaches of industrial companies to development strategy making and strategic planning. Figure 2 presents the approach advanced by the authors to forming industrial companies' strategic development trends taking into account development of digital technologies

The development of digital technologies causes transformation processes, both in the external and internal environment of the industrial company. These transformation processes are recommended to be taken into account while forming the appropriate strategic development trends. The system of strategic planning, strategy development and implementation under the influence of digital technologies is transformed, and strategic planning capabilities are expanded through the use of digital technologies.

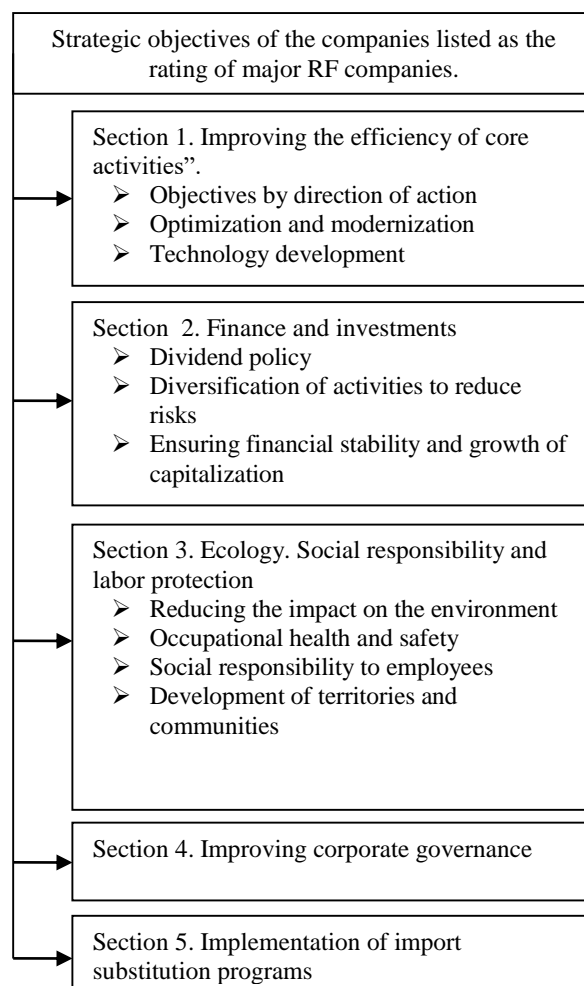


Figure 1 Tree of Strategic Directions for Industrial Leaders*

*Compiled by authors on the basis of analyzing the development strategies of 10 major Russian companies

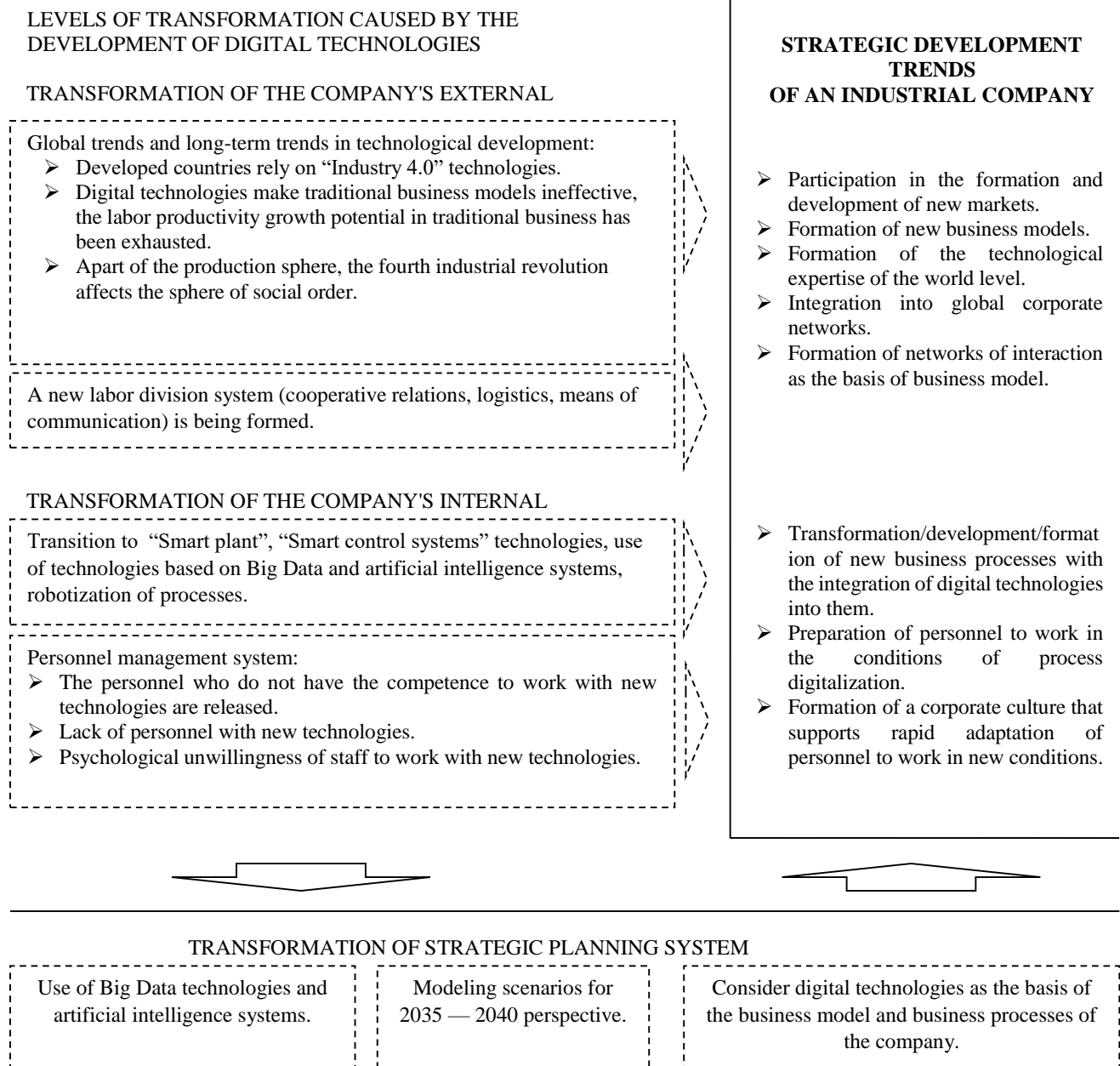


Figure 2 The framework of forming industrial companies' strategic development trends with a glance to digital technologies development*

*Has been developed by authors

Strategic plans of the leading Russian industrial complex companies include the development and use of Big Data technologies, artificial intelligence, "Smart Plant", "digital twins", etc. Russian industrial companies perceive the development of digital technologies as one of their technological development trends. On the one hand, Russian companies focus on global trends in their strategies. However, on the other hand,

digitalization practically does not affect the business model of companies. The unwillingness of companies' staff to work in the new environment is not taken into account, either. The situation with the digital technologies development is getting more complicated due to lack of technological developments and their developers on the Russian market.

4. DISCUSSION OF RESULTS

Development and active introduction of digital technologies is declared as a key technological development trend of industrial companies. The digital technologies development poses a serious challenge for the companies that are leaders of RF industrial complex. and is associated with threats, rather than opportunities.

The study has revealed that industrial companies consider the introduction of digital technologies as a basis for increasing performance in the current business model in their strategic plans. The companies rely on using digital technologies in existing production and management processes as a technology of improving and enhancing the efficiency of their technological processes. However, if we consider digital technologies as a global trend underlying the fourth industrial revolution, the company can maintain its technological leadership only with the transformation of business model and integration of the company into a new global labor division system.

Digital technologies shape the development trends of strategic planning system as such: the ability (1) to take into account world trends and build development scenarios for the long term; (2) to use Big Data analysis and artificial intelligence capabilities to develop and test new business models and business processes.

5. CONCLUSIONS

Today, the leaders in the Russian industrial complex are companies operating in the oil and gas, and energy sectors. The study has shown that Russian industrial companies consider digital technologies in their development programs as an opportunity to increase productivity within the existing business model. Despite digital technologies are being mentioned in the strategic plans of all considered companies, the leaders of the Russian industrial complex clearly underestimate the impact of digitalization on the economy and society. The digital technologies development makes traditional business models ineffective, requires integrating the companies into global networks.

The authors have suggested the approach to forming the strategic development trends of industrial companies be applied taking into consideration digital technologies development. The latter takes into account the transformations in external and internal environment of a company, as well as those in strategic planning system. Digital technologies open new promising prospects of analysis, modeling, testing of strategic development capabilities for the industrial companies. If the companies avail of such prospects, they can choose development trends, and in this way respond adequately to digitalization challenges, achieve and maintain technological leadership.

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