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SPECIFICS OF STRATEGIC MANAGERIAL DECISIONS-MAKING IN RUSSIAN OIL COMPANIES

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Abstract. The article considers methodological tools for developing and adopting strategic management decisions at oil and gas companies. For this purpose, the authors set and successively solved the following tasks: the most significant features of management decisions were classified regarding the operation of large vertically integrated oil companies (VIOC); the study presents a model of the full cycle of strategic management at industrial enterprises; the authors propose an original algorithm for the development of strategic decisions at VIOC and review the existing general theoretical tools used for selecting strategic alternatives regarding their applicability at various levels of the company's management hierarchy; a mechanism for devising and taking strategic decisions has been developed on the example of the oil production department; the authors determined the significance of strategic managerial decisions that are currently transforming from traditionally functional into the corporate ones. The revealed positive dynamics in the costs of research and development (R&D), the increase in the number of applications for patents, and the findings of a survey conducted among top management of oil and gas companies have proven the importance of innovation and taking accurate managerial decisions on its implementation. In addition to this, the paper provides evidence that all oil and gas companies are currently using modeling as a key tool when making managerial decisions.

Keywords: management, strategy, managerial decisions, oil companies, innovation

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JEL Classifications: L21, L71, D7, M19, O32

1. Introduction

At present moment, the level of the economic development of a country still depends on the development level of the fuel and energy industry and oil companies. According to A. Novak, despite the sanctions and drop in prices for the main energy resources, in 2016 all fuel and energy industries worked steadily and improved their performance. The total inflow of investments into the fuel and energy sector amounted to 3.7 trillion rubles, with a growth of about 6%. In general the energy industry was developing at a faster pace than Russian economy. For the first time in many years the country put some new fields into production (RusCable.Ru. Energy Utilities. Electrical Engineering. Communication, 2017).

To date, the fuel and energy industry is one of the most stably operating production industries of Russian economy. It accounts for about 30% of Russia's GDP, 50% of the country's tax revenues, and 30% of its exports (Plenkina & Osinovskaya, 2017).

Considering the scale of their operation and a wide range of production processes that vary from geological prospecting to processing and marketing, the effective performance of oil companies directly depends on the quality of the company management and the management decisions taken, particularly strategic ones. The stable operation at present and the progressive development in the future can be achieved only by taking timely and accurate strategic managerial decisions that should be devised and selected using the approaches that ensure high scientific validity of decisions (Lenkova et al., 2011; Kleyner et al., 1997). This can be achieved both via deep theoretical elaboration of options and by studying Russian and international experience and its practical application.

The relevance of the research stems from the fact that there have been no comprehensive or systematic methodological papers that familiarize managers at different levels with the tools that can be used to justify the choice of a strategic managerial decision. At the same time, they should comply with the specifics of the operation of large oil and gas producing companies.

2. Materials and methods

2.1. Main characteristics of strategic decisions

Having analyzed the fragmented theoretical and methodological aspects of strategic management (David, 2015; Johnson et al., 2008; Mintzberg, 1994; Bowman, 1997; Vikhansky, 2006; Zub, 2002; Moiseeva & Kostina, 2010; Rummyantsev, 2012; Ansoff, 1999), we could create a model for making managerial decisions (Fig. 1).

The main characteristics of strategic decisions have been considered in detail in the works of Russian and international authors (Hickson et al., 1986; Belyaeva et al., 2014; Vorobiev et al., 2003; Lafta, 2002; Eddous & Stensfield, 1997; Saati, 1993; Zub, 2002). Regarding the specifics of the operation of large vertically integrated oil companies, these papers allowed us to identify that strategic decisions at the company level:

- 1) represent the opinion of the top management in which direction each business segment should be developed and at what speed innovation and ambitious plans should be implemented;
- 2) should facilitate the company's interaction with the external environment both within the country and outside it;
- 3) take into account the potential of the company, the resources available and promote the business activities;
- 4) develop the overall vision of the necessary changes in the system of company's work activities;
- 5) are extremely complex as they are to represent the interests of virtually all company's production segments in the whole value chain in a highly risky and uncertain environment;
- 6) require an integrated approach to the company's management;
- 7) have a sufficiently long lead time during which long-term goals and objectives are developed;
- 8) should comply with the expectations of key members within the company;
- 9) have an influence on the resources and operation of the company;
- 10) influence the company's reserves and initiate a variety of organizational solutions at a lower level;
- 11) require in-depth knowledge of industry trends, laws and patterns that are characteristic of both Russian energy market and the global one. The outcome, as a rule, depends more on the quality of the decision than on the speed or timeliness of its adoption, and has no rigid time limit;
- 12) are subjective and cannot, as a rule, be objectively and thoroughly evaluated.

Therefore, making the full cycle of managerial decisions in oil companies, the managers of all departments should take into account the industry specifics of their development (Plenkina, 2017; Ermilov & Milovidov, 1998; Trakhtengerts et al., 2005; Omelicheva & Pranovich, 2002; Osinovskaya, 2015).

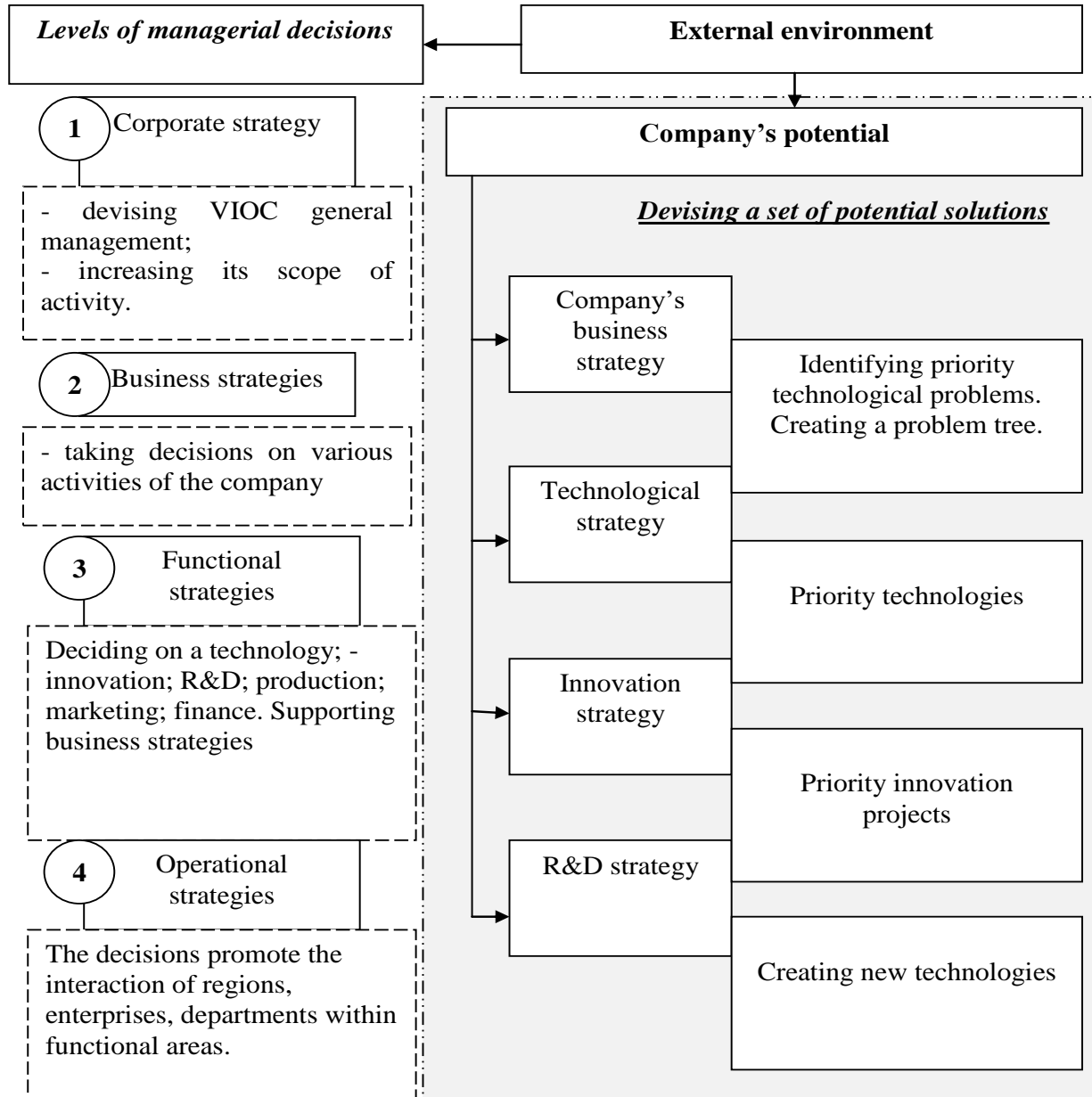


Fig. 1. Strategic management of oil companies and making managerial decisions

Source: compiled by the authors basing on the following works: David, 2015; Johnson et al., 2008; Mintzberg, 1994; Bowman, 1997; Vikhansky, 2006; Zub, 2002; Moiseeva & Kostina, 2010; Romyantsev, 2012; Ansoff, 1999

2.2. Algorithm for identifying priority strategic managerial decisions in oil companies

Having systematized certain theoretical aspects of strategic decision-making, we could present a generalized sequence of procedures that might be used to devise a development strategy in a vertically integrated oil and gas company (VIOC) (Fig. 2). As can be seen from the algorithm for making strategic decisions presented in Fig. 2, the goals and direction of the company development depend on its type.

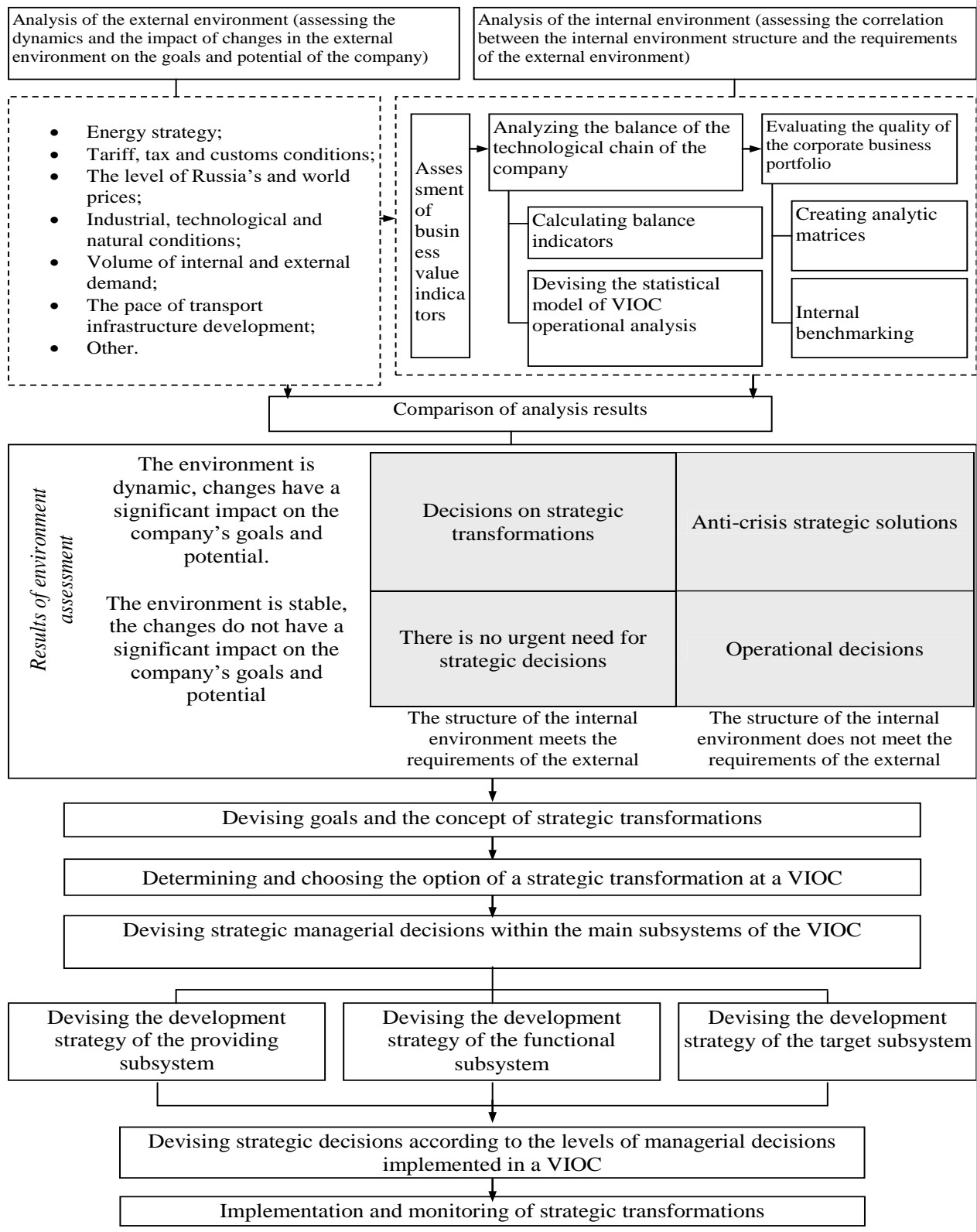


Fig. 2. The sequence of procedures for developing strategic decisions in the VIOC

Source: compiled by the authors basing on the following works: Plenkina, 2017; Ermilov & Milovidov, 1998; Trakhtengerts et al., 2005; Omelicheva & Pranovich, 2002; Osinovskaya, 2015

In this case, one should actively apply tools of strategic, anti-crisis and production management that are adapted to the operating conditions of a particular subject researched. Combination of certain ideas obtained from the data on the application of management approaches makes it possible to develop a theoretical and methodological tool for carrying out strategic transformations at any enterprise. For instance, it seems possible and viable to develop a general algorithm for making strategic decisions at an enterprise, which is achieved through systematization of fragmented theoretical propositions.

At the same time, since there is no universally accepted algorithm, it is necessary to justify the selection and adaptation of existing methodological approaches to the specifics of the work of business entities in the industry. In the algorithm presented in the figure, when considering the internal environment of an oil company, three components are identified during the implementation of analytical procedures: assessing how balanced the operation of the VIOC is, portfolio analysis of business entities and calculation of business value indicators.

At the same time, some experts believe that the analysis should be carried out as thoroughly as possible so that one can comprehensively assess the current situation. Others, on the contrary, claim that it is sufficient to conduct an express analysis to save the time and money spent on diagnosing and developing decisions for the further development of the business that is initially unviable. Following the author's reasoning, it is recommended to consolidate existing opinions and carry out rapid analysis consistently to provide the overall description of the enterprise's situation and a detailed analysis of the emerging conditions in which the company operates as this will allow identifying opportunities for resolving conflict situations and successful business development.

At the same time, when analyzing the environment, it is often necessary to transform the theoretical and methodological propositions that allow adapting existing provisions to the operating conditions of a certain economic entity. Thus, it is necessary to formulate comprehensive resultant criteria for the company's activities, developed on the assessment of its financial situation, the potential of the enterprise, its position in the market, management and control. In addition, it is necessary to methodologically devise a set of indicators which would allow determining the type of company, and, consequently, the goals and main directions of further strategic transformation by integrating the results of the analysis of the external and internal environment.

Further scientific research within the outlined problem can involve specifying and adapting the theory of managerial decisions-making regarding the specifics of the operation of economic entities in a particular industry, and especially regarding the specifics of oil and gas enterprises' functioning. At the same time, the essence of development and selection of managerial decisions depends more on their nature: operational or strategic ones.

At the same time, the oil company is a complex structure, and its strategy acts as the basis for the development of strategies of its separate subsystems. Devising strategies for the operation of each of these subsystems is a fairly complicated procedure, the implementation of which requires considering a number of specific factors.

2.3. Methodological tools for selecting priority areas for oil companies' development

The most frequently used methods, models, schemes, and approaches applied for determining a strategy, and, consequently, strategic decision making, can be summarized according to the stages of strategic analysis (Table 1). In this case, the applicability of particular methods at the level of business units (enterprises that are part of joint-stock companies) is fairly hypothetical and is possible only after a significant transformation of traditional approaches.

Table 1. Methods of strategic decision making in the VIOC

Stage	Method, approach, technology	Level of managerial decisions adoption		
		Enterpris es as part of joint- stock compani es	Joint-stock companies, business group, production units as part of an oil company	Oil company (holding company)
1	2	3	4	5
Analysis of the mission and objectives - identifying mission and objectives	- analysis of the goal setting, the company's goals and strategies for achieving them;		+	+
	- a business system model;	++	+	+
	- a "goal tree";	+	++	+++
	- a development scenario;	+	++	+++
	- analysis of time series, extrapolation of trends;	+	+	+
	- simulation models;	+	+	+
	- methods of expert assessments, Delphi method, brainstorming.	+	++	+++
Analysis of the internal environment - assessing the strategic potential	- product life cycle;		+	++
	- technology life cycle;		++	+++
	- the life cycle of the company;		+	+++
	- comparative analysis of "goals – plan – current situation – optimization – deviation";	+	+	+
	- SBC – identification of strategic business centers of business units (Analytic hierarchy process can be applied);		++	+++
	- SWOT-analysis;	+	++	+++
	- analysis of the value chain (analysis and comparison of costs of the company and its competitors throughout the chain – from the purchase of raw materials up to the prices paid for the goods by end users);	+	+	+
	- functions analysis (marketing, finance, production, staff, corporate culture);	+	++	+++
	- analysis of the competence level;		+	++
	- analysis of the staff loyalty;		+	++
	- compliance of power and responsibility;	+	++	+++
	- sociometry;	+	++	+++
	- workflow analysis;	+	++	+++
	- analysis of incentive schemes;		++	+++
	- studying corporate culture;		++	+++
- analysis of the organizational structure;		+	++	
- analysis of the information structure.		++	+++	
Analysis of the external environment - assessment of the strategic climate	- the industry life cycle;		++	+++
	- Ansoff's "force field" analysis;		++	+++
	- STEP-analysis (analysis of the macro-environment: social, technical, economic, political);		++	+++
	- reviews, information messages, reports, systematic monitoring, analysis and statistical evaluation, scenarios development;		++	+++
	- the concept of driving forces;			+++
	- Porter's five competitive forces;		+	++
	- a map of strategic groups – displaying competitive positions of rival companies in the industry;		+	++
	- Key Success Factors (KSF);		+	++

	- building a values chain regarding other companies;		+	++
	- position analysis.		++	+++
Analysis of the environment as a whole - evaluating the strategic position; - evaluating the competitive advantage of a diversified company	- Ansoff's matrix "product/market";			++
	- comparison of growth rates and market share – the BCG matrix;		++	+++
	- comparison of market attractiveness and competitiveness – the GE-McKinsey model;			+++
	- comparison of industry attractiveness – Shell-DPM model;			+++
	- analysis of market evolution – the Hofer-Schendel model;			+++
	- analysis of the life cycle of the industry – competitive advantages – the ADL-LC model;			+++
	- "BCG outsourcing matrix";		+	++
	- Universal Process BCG Model	++	+	

Let us give an example, presenting an algorithm for choosing the area of strategic development of a joint-stock company working in the field of the oil and gas extraction and being part of a large VIOC (Fig. 3). However, due to numerous specific factors that determine the functioning of the enterprise, the complexity of making operational managerial decisions is often almost comparable to the complexity of strategic management. Here, the critical factors are the structure of assets and various vertical and horizontal financial and material relationships within the complex integrated structure (an oil company).

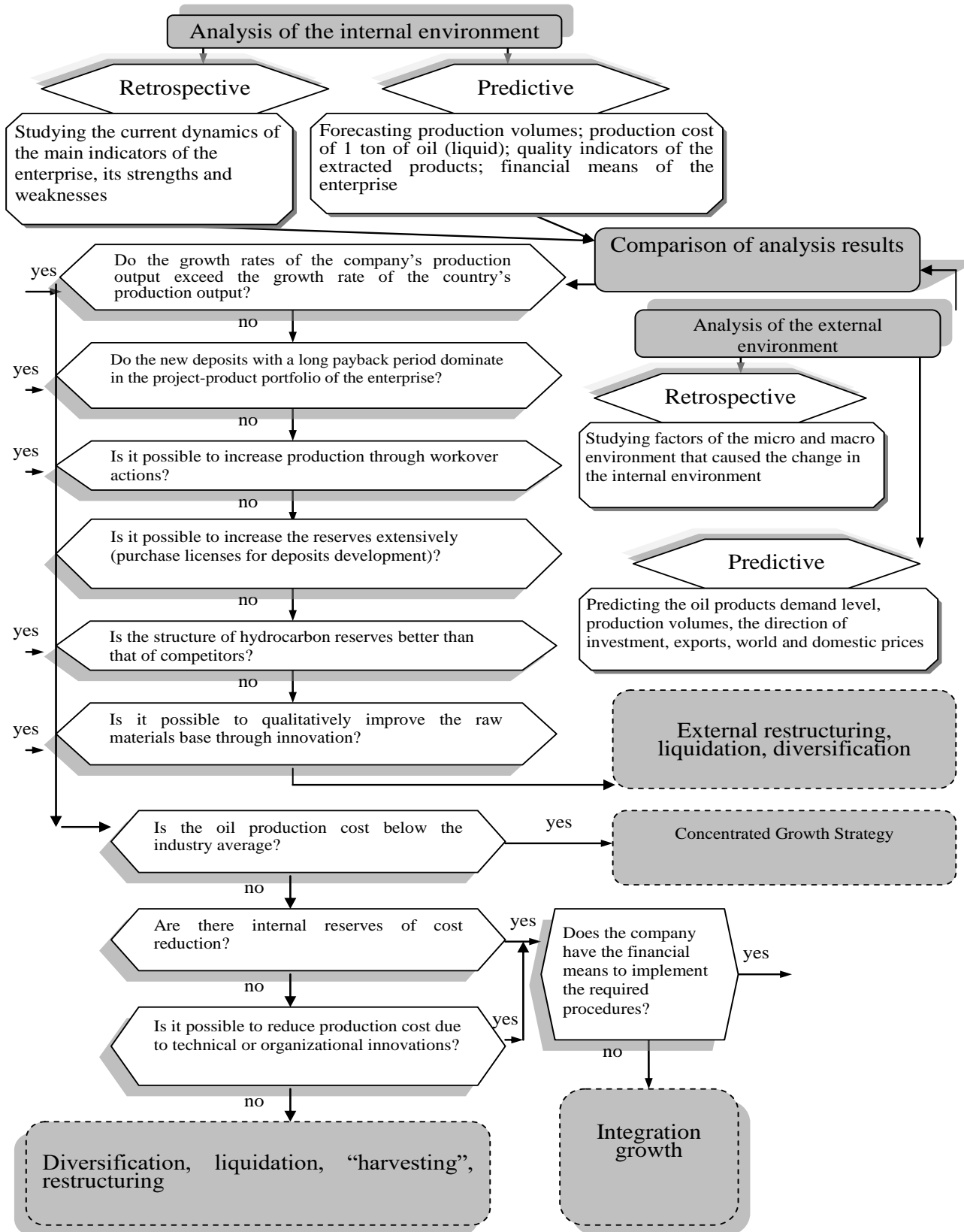
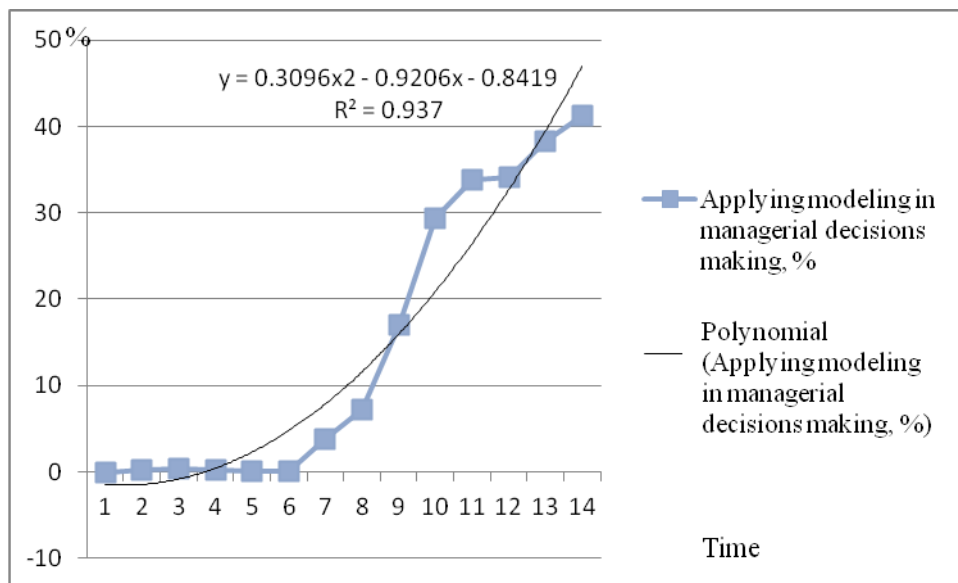


Fig. 3. Mechanism of development and adoption of strategic decisions on the example of oil and gas production companies (a model structure)

Discussions held among researchers and business representatives on the approaches to substantiating strategic managerial decisions mainly boil down to the conclusion that it is necessary to model the development of the company in the long-term period in one way or another, by considering multivariate parameters that account for the instability and uncertainty of the external environment.

The findings of studying the dynamics of using modeling when making managerial decisions made it possible to identify the relevant trend (Fig. 4) which was used as a basis for predicting further demand for modeling in strategic planning.



Symbols on the timescale:
 1 - 1972
 14 - 2007

Fig. 4. Application of modeling in managerial decisions making, %

Source: Domestic Management by Numbers. Review of statistical projects of the Ministry of Economic Development and Trade of the Russian Federation, 2007. Adapted by the authors.

Tables 2 and 3 present the study findings on the use of modeling when making managerial decisions, as well as the application of information model tools in making managerial decisions by international and Russian companies (Belyaeva et al., 2014).

Table 2. Application of modeling in making managerial decisions

Year	Application of modeling in making managerial decisions (as percentage of the total volume of decisions taken)
1972	0.01
1975	0.2
1981	0.35
1986	0.2
1989	0.1
1990	0.1
1991	3.8
1994	7.2
1996	17.1
1997	29.3
2000	33.8
2003	34.1

2006	38.3
2007	41.2
2008	55.0
2009	63.5
2010	72.8
2011	54.9
2012	93.2
2013	100
Note: The forecast data are given in italics.	

Source: Belyaeva et al., 2014

Table 3. Use of modeling tools in making managerial decisions by international and Russian companies

Company	Use of modeling tools in making managerial decisions (as percentage of the total volume of decisions taken)
LG Electronics	69
Microsoft	69
Boeing	65
Latsis Group	63
Lukoil	57
Soyuzplodoimport	54
Alrosa	49
SIBUR Holding	45
RIA Novosti	32

Source: Russian Focus, 2006

Data in Table 2 allow us to conclude that the trend of increasing use of modeling to substantiate managerial decisions that developed over the retrospective period is fully proven at present moment. Considering the dependency presented in Table 2, we can claim that from 2013 this tool was used in 100% cases when making such decisions. This is especially true for large oil and gas producing companies where dozens of parameters of the external environment should be modeled and considered altogether to substantiate strategic decisions and set a strategic reference point in the long-term perspective.

2.4. Strategic benchmarks of oil companies – innovative development in the long term

Over recent years, Russian oil and gas sector has not paid sufficient attention to the innovative processes in the global oil and gas industry. According to the Ministry of Industry and Trade of the Russian Federation, the dependence of Russian oil companies on Western equipment, considering hidden imports (when services are provided by Russian subsidiaries of foreign companies), the share of imported equipment and technologies in the industry reaches the total of 80%. For certain categories, such as equipment for offshore projects or software, the figure can exceed 90% (RBC Daily, 2014). Thus, the deficit of domestic technologies and equipment in the oil industry has reached critical level. At the same time, technology borrowing has economic and political limits. In the context of globalization, science and technological innovation are becoming one of the main factors of world politics. Under these conditions, oil and gas companies should make managerial decisions that shift their strategic focus towards long-term innovative development.

According to Rosstat, over the period of 2011-2013 the total cost of technological innovation for oil and gas producing companies grew from RUB 64.5 billion up to RUB 82.3 billion (ANP. The National Agency of Petroleum, Natural Gas and Biofuels, 2017).

Rosneft demonstrated the highest growth of R&D costs: from RUB 8.6 billion in 2011 to RUB 23.2 billion in 2013. Regarding R&D spending, in 2013 Rosneft was ahead BP and Statoil, increasing the share of R&D costs in revenues up to 0.49%. Over the past 6 years Chinese company PetroChina has been the world leader

in R&D investment, over last decade increasing its spending on research and development by 6.5 times from USD 355 million in 2004 up to USD 2.3 billion in 2013 year (Silkin, 2014).

The effectiveness of managerial decisions regarding investments in R&D can be analyzed using the indicator of patent activity of Russian oil and gas companies. Having analyzed the data presented in the table below, we can conclude that Russian companies are way below international competitors (Table 4) (ANP. The National Agency of Petroleum, Natural Gas and Biofuels, 2017).

Table 4. Patent applications of the world's largest oil and gas companies in 2013

Companies	Number of patents
International oil companies	
ExxonMobil	292
Total	250
Shell	220
Chevron	163
National oil companies	
PetroChina	1847 (22)*
Saudi Aramco	57
Petrobras	46
Statoil	28
Russian oil companies**	
Gazprom	219
Rosneft	52
Surgutneftegas	16

* - The total number of patent applications of PetroChina in 2013 amounted to 1847 in China and 22 – abroad.

* - Number of patent applications in Russia.

Source: companies reports, WIPO

It is worth mentioning a paper that presents the results of the interviews with the heads of oil and gas companies operating at all levels of the value chain, including both small companies and very large market participants working in exploration and production (including oilfield services), as well as in the refining and marketing segment (Hurley & Hunter, 2014). Approximately 4/5 of the respondents representing the oil and gas industry noted the importance of making strategic decisions aimed at introducing innovations in their business (Fig. 5). For 39% of the top executives of the oil and gas companies interviewed, innovations have already become a critical condition for maintaining competitiveness.

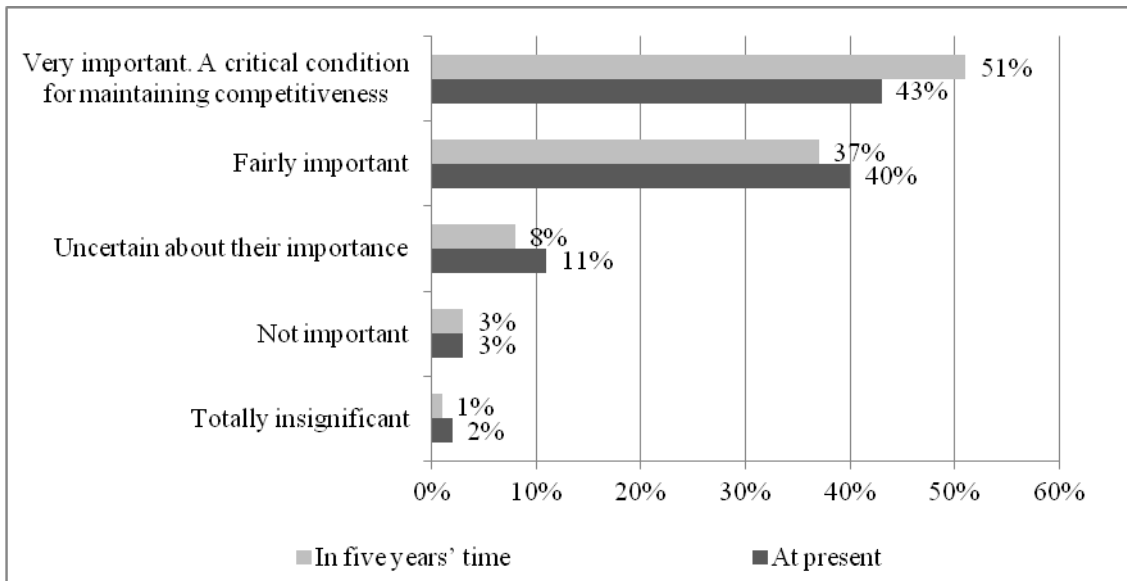


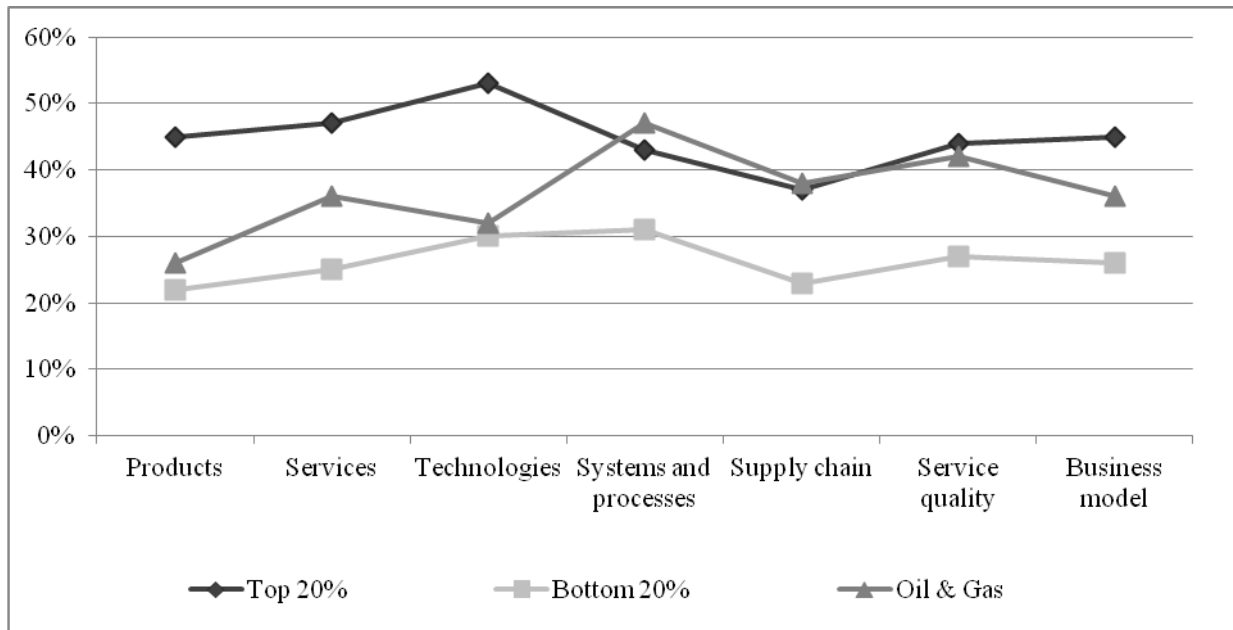
Fig. 5. Expert opinion of oil and gas companies top management on the importance of innovation and managerial decisions on its implementation

Source: PwC, Growth through Innovation. Russian and International Experience, <https://www.pwc.ru/en/innovationsurvey/assets/innovation-through-growth.pdf>

If we consider this issue for a five-year lead time, this figure is about to increase up to 48%, and this gives reason to believe that strategic managerial decisions that facilitate the innovation policy are important for each segment of the oil and gas industry. However, only about half of the respondents from the same oil and gas companies noted that their companies had a clearly formulated innovation strategy implemented in their practical activities. This is a serious problem for the companies with no clear concept of innovative development, since the practical solution of the problems of development and growth begins with the creation of a sound and detailed strategy.

This study shows that the constant focus of companies on the issues related to ensuring the balance of the innovative portfolio through timely, accurate and effective managerial decisions is one of the key growth drivers. We define balance as the optimal combination of investments when developing step-by-step, breakthrough and radical solutions in all innovative areas. For oil and gas companies, the optimal combination of investments will depend on the position they occupy in the value chain.

The top managers of oil and gas companies already expect that 32-47% of innovations in their companies will result in major improvements in all the areas considered (Fig. 6). Innovative products are an exception that is mainly relevant for companies working in processing and marketing.



Note:

Question: how significant do you expect your company's innovative projects to be in the following areas over the next three years?

Fig. 6. Areas of efforts focus of oil and gas companies on radical and breakthrough innovative projects

Source: PwC, Growth through Innovation. Russian and International Experience, <https://www.pwc.ru/en/innovationsurvey/assets/innovation-through-growth.pdf>

Due to such a high percentage of breakthrough and radical innovative projects, the structure of the innovation portfolio differs significantly from the structure of traditional portfolios with only 10-20% of such projects in the total volume. This shift towards increasing the share of breakthrough and radical innovative projects is an important sign that all sectors of the economy are already transforming through the implementation of strategic decisions aimed at increasing innovation.

3. Results

In the course of the research, we adapted the theoretical aspects of making strategic managerial decisions to the specifics of large oil companies' operation. We focused on the systematization of methods, approaches and technologies used when devising strategic decisions at each stage of the full cycle of decision-making. Recommendations were given regarding the appropriateness of applying a certain set of methods for different levels of managerial decisions. Their practical application by companies will improve the quality of general management and strategic decisions made through more detailed study of alternative solutions and better analysis of the external and internal environment of the company. This is especially relevant for oil companies expanding the field of their activities and operating on the international energy market. Under conditions of high uncertainty and rapid changes in the external environment, companies are forced to consider a large number of alternatives and analyze the distant future, which would allow them to make current managerial decisions that will strengthen their positions in the future. In all countries, the issues of innovation are becoming increasingly important and, consequently, strategic focus of the companies needs adjustment. Using various tools that allow both quantifying the priority options and comparing the results with the opinion of industry experts and top management of large companies, it is possible to outline a scientifically substantiated trajectory of oil companies development as far as introducing innovations and setting them as strategic benchmarks.

4. Discussion

The relevance of the topic under consideration is determined by the scope and range of the research that various Russian and international authors have conducted in the field of making managerial decisions, which can be found in publications of various levels.

Strategic management was considered through the prism of making managerial decisions in the work of A. Rowe and his team; D. Schendel, K. Hatten and others define strategic management as a decision-making process that combines internal organizational potential with threats and opportunities provided by external environment (Rowe, 2011; Schendel & Hatten, 1972).

In their works, A. Thompson and A. Strickland, J. Pierce II and R. Robinson identify strategic management with one of the areas in the theory of decision-making that is aimed at the development of an effective strategy (or strategies), which facilitates achieving corporate goals (Thompson-Jr. & Strickland, 2006; Pierce II & Robinson, 2013).

General questions of the theory of making managerial decisions have been considered in a number of works (Belyaeva, 2014; Vorobiev et al., 2003; Glushchenko & Glushchenko, 2000; Dik, 2000; Lafta, 2002; Eddous & Stensfield, 1997). Theoretical specifics of strategic decisions are also discussed by some researchers (Rumyantsev, 2012; Moiseeva & Kostina, 2010; Lenkova et al., 2011; Medvedev, 2014).

Researchers have also explored the specifics of the development and adoption of managerial decisions at the level of oil companies (Osinovskaya, 2015; Plenkina, 2017; Omelicheva & Pranovich, 2002; Trakhtengerts et al., 2005; Ermilov & Milovidov, 1998).

We would like to highlight the research of T. Saati which shows the possibility of making strategic decisions on the basis of the hierarchical synthesis of the problem being solved applying the Analytic hierarchy process (Saati, 1993).

Conclusions

One can see the shift in the strategic focus of oil companies towards innovation occurring primarily during the implementation of large projects if one considers managerial decisions made by top management of such companies, and which was analyzed in detail in research papers.

For example, Rosneft has made a decision to invest USD 400 billion in the program of Arctic offshore fields development until 2034. It should be noted that this took place in the conditions of unstable external environment and political threats (which can be seen quite fairly in the SWOT analysis) which call into question the possibility of cooperation with Seadrill and ExxonMobil.

Strategic managerial decisions of Gazprom are also fairly ambitious. For example, the company plans to continue exploration and development of deposits on the Yamal Peninsula, on the continental shelf, in Eastern Siberia and in the Far East.

Another good example of making managerial decisions in the field of innovation development is Russian company Lukoil which actively introduces innovations in all business areas to strengthen its position in the industry. For instance, the official website of the company states that managerial decisions aim at developing competitive advantages, which is achieved by active application of modern technologies, search for optimal technical solutions, expenses control, creating and using synergies within the vertically integrated production chain (Lukoil. Oil company, 2017).

Analysis of the performance of other companies also allows us to talk about an established and stable trend in the field of strategic managerial decisions aimed at wide introduction of innovations in all areas of the company's activity.

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