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BUSINESS DEVELOPMENT STRATEGIES FOR OIL-AND-GAS COMPANIES AND SOCIAL POLICIES OF EASTERN SIBERIA

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Abstract

The purpose of the efficient development of municipal social areas is to ensure a stable growth of the gross regional product (economic growth) due to satisfaction of social needs of the population of oil and gas extraction areas. Development of the oil and gas industry in the Eastern Siberia is one of the priorities of the Russian energy strategy. To identify an efficient business development strategy, SWOT analysis and analysis of Michael Porter's five competitive forces industry are used. The first method aims to assess internal potential of the company and allows identification of development areas by comparing competitive environment (external threats, favorable possibilities, internal weaknesses, and advantages). SWOT-based strategy development involves several stages. To analyze activities of oil and gas producing companies of the Eastern Siberia, three leading enterprises were selected: a private oil company INK; a private vertically integrated oil company JSC Surgutneftegaz; a partially government-owned company VCNG. The article deals with methods applied to increase municipal and regional financial resources required for satisfying social needs of the population. Strategic issues of economic survival and prosperity of oil and gas producing companies and population of the territories should be solved. It can be possible due to development of markets and diversification of activities of enterprises (Ermilov et al, 1998). Differentiation of approaches to assessing the efficiency of social programs helps to identify possible changes of the component in the coordination of economic and social policies when introducing education, health care, non-for-profit entrepreneurship in northern territories with low-income budgets.

1. Introduction

Municipal management involves activities of municipal bodies aimed to ensure public interests (Latyshev, Shupletsov, 2015; Nechaeva, Shupletsov, 2015). The main purpose of local bodies is coordination of economic activities and creation of favorable economic conditions. They aim to develop the socially oriented economy.

The article deals with methods applied to increase municipal and regional financial resources required for satisfying social needs of the population. That increase is possible due to the assistance of the local economy in efficient development of oil and gas resources of sparsely-populated territories of the Eastern Siberia. It is a basic resource of the local economy.

The main area of the energy strategy of Russia is development of energy exports to the APCs. The Eastern Siberia is one of the promising regions of the Russia's oil and gas industry. Priorities should be shifted from extraction towards advanced refining, internal demand satisfaction and entry into a market with high refined oil products. An increase in energy reprocessing in sparsely-populated areas of the Eastern Siberia results in the additional demand for products of investment industries (building, transport, manufacturing, and social ones) which create conditions for employment.

2. Problem Statement

Natural gas of the Eastern Siberia contains high concentrated ethane, propane, butane, condensate and helium. It triggers the development of oil chemical, gas chemical and helium industries in the region (Eder, Filimonova, 2015).

The raw materials sector is sensitive to the geopolitical situation and price fluctuations. Only diversified companies can achieve an optimum risk/profit balance (Shhupletsov, Bunkovskiy, 2016). If one of the industries is in the depths of the recession, they can gain a profit from products showing upward trends (Safonova, 2012).

3. Research Questions

For this purpose, strategic issues of economic survival and prosperity of oil and gas producing companies and population of the territories should be solved. It can be possible due to development of markets and diversification of activities of enterprises (Ermilov et al, 1998; Shupletsov, Bunkovskiy, 2016).

4. Purpose of the Study

Economic growth as a result of the satisfaction of community needs of the population is a priority task for the efficient social development. A key component of the municipal economy is a number of methods which influence it (Voronin, Lapin, Shirokov, 1998). Let us analyze some well-known methodological requirements for municipal economic parameters which can be applied to the economy of social areas as well.

Consistency means well-ordered identification of the social economy, objects of its impact, their role and relations in the corporate structure. The requirement for development means differentiation of fields of the social economy according to changeable system and environment development stages as well as considering a time factor. The allowance for a resonance and synergy with a high level system means ensuring compliance of social economic fields and development levels with regard to changes and purposes. Impacts on key manageable system parameters and components are a fourth requirement. These methods provide insight into the local economy.

5. Research Methods

Rational distribution of financial resources requires linearly constrained minimization of the non-linear multiparametric function. Correct decisions and assessment of the size of their component in socially oriented economic activities are important. One of the tools can become an option. Let us assume that its price will always depend on a random process used for simulating changes in asset costs (investment).

Let us assume that random values simulating the option price depend on time points m^*, Δt where $m = 0, 1, \dots M$. For each time point m^*, Δt, investment price is a random value; for time point 0, it is known. Let us use the Monte Carlo method for European options. The option price formula is:

$$V_0^{(M)} = \exp(-rT) * E(V_T) , \qquad (1)$$

where $V_0^{(M)}$ – option price at 0. M shows that the price was calculated when dividing the time period from 0 to T into M parts; r – annual interest rate; T – expiration term; $E(V_T)$ - expected value (V_T).

An investment price change trajectory from 0 to T is created. An arithmetic mean of option prices at time point T can be taken as $E(V_T)$. The investment price at time point T is calculated by formula:

$$S_T = S'' * \phi + S' * (1-\phi), \qquad (2)$$

where ϕ and $(1-\phi)$ are risk neutral probabilities (option completion probability).

$$S' = S * d, \quad S'' = S * u , \qquad (3)$$

where S – investment price at time moment $m * \Delta t$ when $m = 0,1 \dots, M$ and $\Delta t = T / M$; d and u are positive numbers, $d<u$, $u = \exp(\sigma \sqrt{\Delta t})$, $d = \exp(-\sigma \sqrt{\Delta t})$.

To identify an efficient business development strategy, SWOT analysis and analysis of Michael Porter's five competitive forces industry are used. The first method aims to assess internal potential of the company and allows identification of development areas by comparing competitive environment (external threats, favorable possibilities, internal weaknesses, and advantages). To analyze activities of oil and gas producing companies of the Eastern Siberia, three leading enterprises were selected: a private oil company INK; a private vertically integrated oil company JSC Surgutneftegaz; a partially government-

owned company VCNG. They have been developed since the beginning of the 2000s when the construction of the main oil pipeline "the Eastern Siberia – the Pacific Ocean" was launched.

Development levels of these companies meet world standards, but their resource potentials and long-term development strategies are different. Using open information sources, a SWOT model by four activity areas (manufacturing, marketing, management and organization) was developed.

6.   Findings

SWOT-based strategy development involves several stages. At the first stage, key external factors are identified and variability prediction is developed. At the second stage, internal advantages and disadvantages are identified; and at the third one, strategic alternatives are developed (Bogdanov, 2002). Each group of strategies uses a specific pair combination of internal and external factors. The following pairs of values are analyzed (Table 1).

Table 01. Pair Combinations Of Internal And External Factors

	Strengths (S)	Weaknesses (W)
Opportunities (**O**)	**S-O**	**S-W**
Threats (**T**)	**S-T**	**W-T**

S-O strategy involves maximization of the force using available opportunities. That approach is efficient for developing companies. They have a high potential for supplying oil and gas resources and increasing oil extraction volumes. The Federal Law no 151 of July 27, 2006 allows   minerals developers to reduce a payback period using a zero subsoil tax rate.

Internal procedures of vertically integrated companies are unable to ensure flexibility of their decisions and operability of their actions when developing new deposits.

Lack of the gas-transportation infrastructure in the region prevents from commercial gas extraction. For this reason, gas deposits are ignored at the geological development stage. The main gas pipeline "Sila Sibiri" can turn this around. In 2018, the Gazprom company is going to complete the first phase of construction. It allows minerals developers to develop gas deposits and export gas to foreign countries. However, taking into account the current gas prices and transportation costs, the gas projects can turn out to be unprofitable (Perelygin, Shhupletsov, 2017). The companies should apply gas chemical processing technologies to ensure high stability of their activities due to the increase in demand for derived materials in the internal market.

The INK company has completed the construction of the plant for gas reprocessing. Besides, it is planning to construct a plant for polymeric materials in Ust-Kut.

The VCNG company as an oil and gas producing enterprise has no possibility to diversify its production processes, develop oil and gas reprocessing methods, and extend the geographic reach.

Successful development of the East Siberian companies allows them to extend the geographical reach and enter new internal and external markets. The Lucoil company has successfully implemented the S-O strategy.

One of the constraints for full-scale expansion of independent holding companies is a government control.

S-W strategy involves minimization of weaknesses and maximization of opportunities. Development of service and research centers in the structure of the holding ensures stability and freedom from the unstable market of contractors. That strategy is efficient under the conditions of stable development of assets and stable volume of services. Availability of advanced technologies, equipment and experts are key factors of successful implementation of own service centers. JSC Surgutneftegaz has successfully implemented the S-W strategy.

Skilled staff, equipment and services are important development factors. Taking into account that in the Eastern Siberia, active deposits development began in 2008, the main engineering staff are invited professionals from other oil and gas producing regions. Personnel deficiency requires development of own staff training and retraining centers. This policy is being implemented by the Gazprom company.

To achieve synergy, regional authorities should form a united ground for negotiations of minerals developers and operators aimed to form a uniform oil and gas extraction development strategy.

S-T strategy involves maximum development of the force aimed to reduce potential threats. The main uncontrollable threats to oil and gas industries are market conditions and internal and external government policies.

The oil export strategy of small oil producing companies having commercial freedom and using the main transport system ES-PO allows them not to experience competition for marketing channels. However the constrained demand and access to the transport network make the companies look for new market channels, diversify production and launch oil and gas refining plants.

Large vertically integrated companies are subject to oil price changes least of all. The investment project portfolio of the LVIC includes investment in oil refining, petrochemical industries, and production distribution as well as long-term investment in development of new deposits (Ayvazyan et al, 1998).

In comparison with other oil and gas producing regions, in the Eastern Siberia the life of fixed production assets is still useful. The companies do not have to perform depreciation activities stimulating technological upgrading.

Import substitution makes oil and gas producing companies independent of foreign equipment, spare parts and services. Despite the higher quality and longer life of foreign equipment, their market prices discourage Russian manufacturers.

W-T strategy involves minimization of weaknesses to reduce potential threats. One of its important elements is a prompt response to constant market, legislative, production, ecological and other changes. Vertically integrated oil companies have several management levels. Each element has its own strategic interests, so the coordination of the general position requires additional time. Decentralization of powers is important for efficient production management. It allows lower level managers to make decisions at the local level (Andreev, 2016). The strategy has been implemented by the TNK-BP Holding Group.

Implementation of the W-T strategy aims to create competitive advantages, ensure profitability, eliminate negative effects of the market instability, ensure a balance of external requirements and internal opportunities. To this effect, the company should be self-sustainable and financially independent. It is

important to reduce dependency of products export on foreign loans. Short-term loans from Russian banks can be a way out (Bogdanov, 2002).

Inflated costs of new plots of land and expenses on prospecting works decrease project profitability. When employing services of external contractors, it is necessary to compare specific internal and external costs taking into account transaction expenses (Bogdanov, 2002).

The oil and gas extraction company development strategy aims to obtain a maximum profit and decrease expenses, meet public and social interests (raising living standards of people in regions). In particular, it concerns partially government-owned companies. It is a multicriteria task with competing interests that should be constantly solved under the conditions of fuzzy information.

For example, from the viewpoint of business performance, the VCNG company is highly profitable. An optimum deposit development system can maintain low levels of water cut and obtain a maximum oil extraction rate. The Rosneft company is attracting investment, especially from the APCs. However the SWOT analysis shows a decrease in its mid-term competitiveness level as oil extraction rates are decreasing in the main fields, and development of new fields will start in 2020 whereas the competitors launched three or four new fields for the last five years. To maintain current production levels, it is necessary to increase the volumes of prospecting works aimed to reduce a time lag between land acquisition and development of reserves.

New fields have the following advantages: subsoil tax preferences; employment creation; project payback period reduction; an increase in living standards of citizens; company image improvement; an increase in tax budget revenues; regional infrastructure development due to field infrastructure development.

The model of distribution of financial resources at the municipal level was examined to solve the economic task "Problems of children in the north of Irkutsk oblast". It aims to improve education conditions, develop new education and health care facilities in the northern territories of the region. Under the municipal budget deficit, there was a probability of inadequate funding of cost intensive measures. At the initial stage, different implementation options and possibilities were analyzed. But they seemed vague and fuzzy. An option method makes it possible to assess the social significance of results and opportunities which were not taken into sufficient account at the development stage (Tables 2, 3).

Table 02. Key Components Of Option Price Assessment

Scenarios	Risk neutral opportunity	Investment price (S), thousand rubles	Option period expiration (T, years)	d	u
Pessimistic	20%	4286	4	0.9	1.1
Optimistic	80%	13686	3	0.7	1.4

Table 3 describes permanent components when assessing option prices. The values are constant and permanent under the existing conditions.

Table 03. Permanent Components Of Option Price Assessment

Values	Most probable values
Random numbers of investment price change from 0 to T (M)	1
Credit interest rate (r)	8%
Point of investment and option price simulation time (m where $m = 0,1,2...M$)	0
$\Delta t = T / M$	3

Random positive numbers u and d which can influence the option price are calculated:

$$u = \exp(\sigma\sqrt{\Delta t}) = 1.35, \ d = \exp(-\sigma\sqrt{\Delta t}) = 0.75.$$

Investment price at time point m^*, Δt is equal to $S = 13\ 686$ thousand rubles. Hence $S' = S * d = 9\ 176$ thousand rubles, and $S'' = S * u = 16\ 433$ thousand rubles.

Considering the topicality of the issue, implementation probability for two investment projects is 80%, inverse probability is 20%. It follows that at time point T, the investment price equals

$$S_T = S'' * \phi + S' * (1 - \phi) = 14\ 981 \text{ thousand rubles.}$$

At the project implementation period, the option price is determined as $V_0^{(M)} = \exp(-rT) * E(V_T) = 10\ 605$ thousand rubles.

The choice of their own strategies is an important stage of long-term development of oil production companies. Advantages and disadvantages, opportunities and risks are specified based on the technical and economic assessment and fuzzy sets theory when choosing strategic alternatives, macroeconomic development predictions and internal and external political conditions. Under these conditions, long-range goals can be achieved by using long-range impact mechanisms. Short-range mechanisms are unable to achieve those goals.

The eastern regions of Russia need an optimal investment structure for social measures in sparsely populated territories of Siberia which would produce maximum costs at limited financial resources. In a 3-5 year investment project, tax revenues, budget transfers and payments by the population should cover all manufacturing and financial expenses. It is also possible to cover a differential investment cost in the amount of:

$$\Delta = \left(-\sum_{t=1}^{T}\sum_{i=1}^{15} h_{it}x_{it} \right) + \left(\sum_{t=1}^{T}\sum_{j=1}^{10} h'_{jt}y_{jt} \right), \quad (4)$$

where Δ - difference of the sum of a negative balance of budget payments and positive balance of direct and indirect budget payments by oil and gas companies among other payers; x_{it} - intensity of social budget payments i to the population in year t; y_{jt} - intensity of direct and indirect j-type payments which citizens have to pay now and receive budget compensation of social payments in year t; h_{it} - number of people in the territory who are beneficiaries of i-group in year t; h'_{jt} - number of people in the territory who are payers (investors) of j-group in year t.

Every citizen can earn an income to pay any sum charged by the government in each of *j*-intervals to compensate for earlier satisfied needs with intensity x_i. The expenses on the citizens are partially covered by their tax payments and commercially activity tax payments. That method is appropriate for sparsely populated northern territories of Irkutsk oblast.

The financial flow chart forms the basis of an optimal financial flow model of a social program. Discounting at the rate of *z* can make revenue and expense flows comparable when developing a three (five)-year financing project. The sum of negative and positive balances of discounted budget payments is:

$$\left(-\sum_{t=1}^{T}\sum_{i=1}^{15} h_{it} x_{it} / (1+r)^t \right) + \left(\sum_{t=1}^{T}\sum_{y=1}^{10} h'_{jt} y_{jt} / (1+r)^t \right) \geq 0. \ (5)$$

The current stage of investment financial planning of socially oriented programs is characterized by relatively stable and predicted parameters h_{it}, h'_{it} (number of beneficiaries and payers) at the current inflation rate (which influences standard social payment rates m_{it} and requires an increase in tax and payment amounts m_{it}^1). More and more people are categorized as elderly.

Under these conditions, it is necessary to determine an optimal intensity of social budget payments to the population of territory (x_{it}), optimal intensity of direct and indirect payments into the budget (y_{it}) for the short- and long-term financing of social activities. The purpose is to maximize the final cost of the social program oriented to the population of northern municipalities of Irkutsk oblast where oil-and gas fields are developed:

$$\left(-\sum_{t=1}^{T}\sum_{i=1}^{15} h_{it} x_{it} / (1+r)^t \right) + \left(\sum_{t=1}^{T}\sum_{y=1}^{10} h'_{jt} y_{jt} / (1+r)^t \right) \to \max \quad (6)$$

Some constraints should be taken into account: a balance between revenue and expenditure flows within a planning horizon is formed on the ground of financial flows (revenues and expenditure in favor of the population), flows of short-and long-term investment projects and budget deficit financing projects, own temporarily surplus funds; limits on external financing and budget payment intensity; limits on use intensity for long-term investment, long-term lending, and own temporarily surplus funds.

It should be noted that the method of equalizing revenues and expenses helped to determine their optimal balance, identify regional financial reserves and minimize the regional budget deficit. The model is based on the dynamic situation in the region related to the involvement of oil and gas companies in increasing the regional budget.

7. Conclusion

Differentiation of approaches to assessing the efficiency of social programs helps to identify possible changes of the component in the coordination of economic and social policies when investing education, health care, non-for-profit entrepreneurship in northern territories with low-income budgets.

Forms and methods of business process management, their direct and indirect involvement in co-financing of social projects often aim to increase municipal budget revenues to the disadvantage of the

population. It requires development of an innovation approach to process management to develop municipal territories, to increase business activities in oil and gas production markets, to improve the quality and rational use of municipal, regional and federal facilities.

It can raise living standards of the population of the north-ern territories of Irkutsk oblast. The method is innovative implementation of functions of the municipal economy aimed to satisfy interests of its subjects, to create favorable investment innovation environment, to raise living standards of the population, to ensure stable development of municipalities and businesses.

Acknowledgments

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