

The Influence of Macroeconomic Factors on the Innovation Potential of Russian Oil Companies

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Abstract

The innovation potential of an enterprise determines its ability to perform tasks within the framework of achieving specific innovation goals, that is, the degree of readiness to implement programs of innovative transformations and to introduce innovative technologies, products, and processes. It reflects the ability of an enterprise to effectively use its available resources to achieve set objectives, while considering external environmental factors.

Keywords: innovation potential, oil company, macroeconomic factors, oil price

In most studies, the innovation potential of an enterprise is defined as a combination of various resources with different levels of detail. For example, T. V. Kolosova (2009) interprets the innovation potential of an enterprise as a combination of the following types of resources: (1) labor resources involved in innovation activities, (2) new combinations of natural resources, (3) norms and principles of innovation activity, and (4) information in the form of knowledge and skills.

According to L. S. Valinurova and N. A. Kuzminykh (2007), the components of innovation potential include: production potential (the ability to produce and implement different types of innovations), scientific and technical potential (R&D expenditures, acquisition of intellectual property rights, licenses, etc.), intellectual and human resources (labor costs, qualifications), marketing potential (capabilities in market analysis, forecasting, and promotional planning), financial and production potential (investment opportunities and material base), and informational potential (costs for IT, communications, and related services).

O. P. Korobeynikov, A. A. Trifilova, and I. A. Korshunov (2000) identify six groups of resources in the structure of innovation potential: (1) intellectual (patents, industrial designs, licenses), (2) material (experimental equipment, prototypes), (3) financial (own and borrowed funds, state funding), (4) human resources (employees engaged in R&D and

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innovation), (5) infrastructure (laboratories, innovation divisions), and (6) additional sources (cooperation with universities, research institutes, etc.).

Analysis of approaches and methods for assessing the effectiveness of forming and implementing innovation potential allows the following conclusions:

- All methods for assessing innovation potential involve calculating an integral indicator based on a system of grouped factors.
- Sets of indicators differ, but most commonly include financial and human resources.
- Industry-specific characteristics are insufficiently accounted for.
- External environmental factors are often overlooked, although they significantly shape innovation potential.

Therefore, innovation potential should be considered as comprising two components: (1) the internal potential of the enterprise and (2) the ability to utilize external environmental factors for innovation-driven development.

Based on literature analysis and the specifics of Russian industrial enterprises, the following internal factors of innovation potential are identified: (1) financial (stability, liquidity, capital structure), (2) investment (share of R&D and technological innovation expenditures, payback period), (3) production (technological level of production), and (4) human resources (qualification levels of employees).

A high level of internal innovation potential alone is insufficient. Strategy selection and outcomes depend heavily on macro- and microenvironmental conditions. Thus, evaluation of innovation potential must also include the ability to use external factors for innovation development. For example, enterprises with low internal potential but favorable external conditions must optimize internal structures and attract external funding. Conversely, enterprises with both strong internal potential and favorable external conditions should pursue aggressive innovation strategies.

The proposed methodology includes:

1. Assessment of external environmental factors and the potential for their use in innovation development.
2. Assessment of internal potential by financial, investment, production, and human resources factors.
3. Calculation of an integral indicator of innovation potential using weighted coefficients derived from expert evaluation.
4. Determination of the company's position relative to competitors.

Innovation in the oil and gas sector is particularly capital-intensive and long-term. Therefore, the macroeconomic situation, especially oil price fluctuations, significantly influences companies' innovation capacity. For example, the average price of Urals crude in January 2016 was \$28.53 per barrel (Rossiyskaya Gazeta, 2016).

Impact of macroeconomic conditions on oil companies' innovation potential

1. **Deterioration of financial potential.** Financing structures are destabilized under crisis conditions due to increased foreign debt servicing costs and higher borrowing costs.

According to EY (2014), 52% of respondents identified internal funds as the main source of financing, 18% rely on the domestic market, 18% on Asian investment, and about 7% on U.S. and European financing.

2. **Deterioration of investment potential.** In late 2015, Russia's Ministry of Energy requested major oil companies to model financial performance at oil prices around \$30/barrel. According to RBC (2016), Lukoil projected a 20% cut in investment, though devaluation of the ruble had reduced costs per barrel. Rosneft, by contrast, confirmed that its 2016 investment program would proceed.
3. **Changes in the tax system.** Russia's tax maneuver (2014) planned to gradually raise the mineral extraction tax while lowering export duties. However, in 2016 export duties remained at 42%, higher than originally scheduled. This boosted state revenues but limited companies' investment capacity. Fitch Ratings estimated the freeze would cost oil firms 5–7% of EBITDA (BBC, 2016).
4. **Changes in innovation expenditures and outcomes.** Falling oil prices, ruble depreciation, and higher borrowing costs negatively affected project profitability (NPV, IRR). Fitch Ratings projected oil production stabilization in 2016 but a 3–4% decline at mature fields in subsequent years. UBS and Bank of America Merrill Lynch, however, forecast stable output through 2018 due to ruble devaluation and relatively low extraction costs.

Conclusion

Macroeconomic conditions significantly influence the innovation potential of Russian oil companies, especially financial and investment components, and must be considered in innovation strategies. Failure to properly account for external factors can result in flawed strategies and negative outcomes. Given resource base deterioration and increasingly difficult hydrocarbon extraction, the role of new technologies is growing as a key driver for sustainable industry development.

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