



FORECASTING THE EFFECTIVENESS OF INNOVATION AND INVESTMENT ACTIVITIES OF OIL AND GAS INDUSTRY ENTERPRISES BASED ON CROWDSOURCING STRATEGY

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ABSTRACT

This article takes the basics of forming a complex of crowd models as a national strategy and forecast indicators developed on the basis of its practical application, on the basis of which the results are analyzed for the coming years and explanations of effectiveness are described.

KEY WORDS: *crowd models, mass assessment, innovation, innovation, stability, financial flow, modernization, fundamentals of strategic management.*

Today, working with software and developing each strategy and model has become a traditional strategic management activity. Programming methods are not complex, algorithmic approaches in strategies and models have improved economic engineering activities. The application, based on a crowdsourcing model, is in practice considered an efficient platform that mainly acts as a central technology service.

Forecasting based on crowdsourcing model is a widely used forecasting method in developed countries. The significance of forecasting based on a crowdsourcing model in making major strategic and operational decisions of developed oil and gas enterprises is not only innovative, but also occupies a high place in alternative enterprise management due to the probable performance indicators of investment activities. Its main advantage when tabulating forecast indicators is that in this forecast the need for relevant data on the indicators of previous years is not very great. Companies such as UBS (financial services company), AbbVie (pharmaceutical company), and Procter & Gamble (consumer products manufacturer) widely use forecasting methods based on crowdsourcing models.

Crowdsourced forecasting takes into account the following aspects and summarizes the indicators:

1. Status quo of the organizational and economic situation when studying the trend of the consensus forecast level changes are made in the coating;
2. Quality scores are also taken into account when predicting based on the crowdsourcing model;
3. Able to highlight the most important indicators when aggregating forecast indicators;
4. Forecasting the market U and X in the forecast based on the crowdsourcing model and the probability-based forecasting method opens up opportunities for widespread application;

1. Industry-specific open innovation market risk reduction and mitigation services are considered as a forecasting outcome.

Based on the crowdsourcing strategy, an improved understanding of the crowdsourcing model is acquired in terms of its ability to complement each other in the development of innovation and investment activities of oil and gas industry enterprises and ensure the rational application of strategic planning measures . in ensuring continuity of production. The crowd-directive strategy can be used in other sectors and areas of industry to increase the efficiency of innovation and investment activities.

Based on the crowdsourcing strategy, we use several forecasts to predict the effectiveness of innovation and investment activities of oil and gas enterprises. In this case, we schematically apply the combined forecasting method for the crowdsourcing model developed by Korean economists Tae Hwa Ri and Kyungwan Ryu:¹

$$y^T + 1 = \beta_0 + \beta_1 x^T + 1,1 + \beta_2 x^T + 1,2 + \beta_{kx_0}^T + 1, k + e^T + 1(1);$$

$$C_j: y = \beta_0^j l + \beta_1^j x_1 + \beta_2^j x_2 + \dots + \beta_e^j x_e + e^j(2);$$

As a result of connecting and intersecting combinations, a matrix equation is formed:

¹ Rhee T., Keunquan R. *Crowdsourcing economic forecasting: combining individual forecasts using Bayesian model averaging*, 2022, 100-125. <http://sje.ac.kr/xml/28120/28120.pdf>



$$\Leftrightarrow S_j: y = X_j \begin{pmatrix} \beta_0^j \\ \beta_1^j \\ \vdots \\ \beta_j^j \end{pmatrix} + e^j(3);$$

$$\Leftrightarrow S_j: y = X\beta^j + e^j(4).$$

As part of the management strategy of Uzbekneftegaz JSC, practical guidance on the above methods and a forecast of the most necessary technical and economic indicators are summarized.

3.3 – Table

- Economic Indicators Based on the use of crowdsourcing strategy in Uzbekneftegaz JSC, in percentage (2023 – 2032)²

No	K – name of indicators	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
1	2	3	4	5	6	7	8	9	10	eleven	12
1.	Technological update	3.8	3.4	3.6	3.3	4.1	4.4	4.6	3.7	5.0	5.3
2.	Production efficiency	3.9	3.6	3.9	3.4	3.9	4.2	4.3	4.0	4.4	4.4
3.	Innovation activities	2.84	2.4	2.5	1.8	2.2	2.3	2.6	2.3	3.1	3.6
4.	Reducing production costs	0.9	1.4	1.9	1.4	1.8	2.1	2.5	2.2	2.6	2.7
5.	Intellectual capital	0.7	0.8	1.1	1.0	1.4	1.7	2.0	2.2	2.4	2.5
6.	Personnel shortage	0.4	0.4	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.2
7.	Professional growth	1.6	1.3	1.3	1.4	1.4	1.3	1.6	1.6	1.7	1.7
8.	Investment activities	5.85	5.5	5.8	4.9	5.3	5.7	6.0	5.5	6.6	6.8
9.	Transportation and storage	2.25	2.5	2.6	2.6	2.9	2.9	3.0	3.0	3.2	3.2
10.	Digital transformation	2.67	2.7	3.3	3.0	3.5	4.0	4.4	4.2	4.5	4.7
11.	Employee motivation	5.5	5.2	5.2	5.2	5.1	5.2	5.2	5.2	5.3	5.5

Technological innovation is projected to grow at an average rate of 4.8 percent over the next 10 years, with a 1.6-fold increase by 2032 compared to 2023. Although the updating of technological tools at the level of enterprises within a joint stock company does not cover fundamental changes, measures that can have a positive impact on the indicator of technological growth are considered within the framework of clustering, while ensuring the ratio of economic stable growth of enterprises to each other . As a result, the speed of continuous production increases, the production cycle is accelerated, technical and technological problems are eliminated during such types of labor activities as exploration, drilling, digging, processing, as well as transportation and storage. This is important for the rapid development of industry in the country.

It is worth noting here that for the rapid development of innovative and investment activities of oil and gas enterprises at the strategic level of “crowddirecting”, a “crowdsourcing” (crowddirecting) model, flexible to classifications of low cost and economic status, is used with the aim of proportional development of domestic industrial enterprises. To determine the effectiveness of improvement, Figure 3.3, presented on page 98 of the dissertation, presents a forecast of the effectiveness of innovation and investment activities with the transformation of digital technologies into the enterprise system for the period 2023-2032. percent and based on the application of the crowdwriting strategy presented in table 3.3, according to the forecast of technical and economic indicators, the average indicator for 2023 allowed an increase of 2.76 percent. Having determined the sum of both indicators, we see that the efficiency of innovation and investment activities of society and enterprises within society increases by 7.4 percent. It's also worth noting that most of this figure is made proportional to current data .

As a result of technological renewal, by 2032 production efficiency will increase by 1.2 times, and the average growth rate will be 7.6 percent. In 2024, production efficiency increased by 0.1%, but this is a large amount in terms of product and its monetary equivalent. In 2025, the efficiency index increased by 0.3 percent compared to 2024, and by 2026 it is likely to decrease by 0.3 percent. This is due to the fact that in combinatorial-matrix correlation regression, continuous growth of indicators leads to rapid decline of the enterprise, and this is observed with negative S, taking into account the decrease in indicators.

²Author's development



The growth rate of innovation activity within the framework of crowdsourcing is expected to be significant: in 2032 the probability of obtaining results is 1.7 times greater than in 2023, and only in 2024 - 0.3 percent compared to 2023, and in 2025-2024 - 0.1. percentage growth is expected. By 2026, the percentage share for this indicator decreased to 1.8%, but its steady growth can be observed in the coming years. In particular, in 2027 - 0.4%, in 2028 - 0.1% compared to 2027, in 2029 - 0.3% compared to 2028, and a sharp increase will be observed in 2031 and 2032 .

The change in the share of production cost reduction in a joint stock company will average 3.8% over the next 10 years. Achieving sustainable growth in product competitiveness is a complex socio-economic activity and an organization is expected to achieve successful results in this regard. For example, in 2024 it is expected to increase by 0.8% compared to 2023, and in 2026 – by 0.5% compared to 2025. It is expected that the reduction in production costs will be achieved due to the large impact of innovation and investment activities, and technological updates.

Intellectual capital is expected to grow by 3.1% by 2032 compared to 2023, taking into account important aspects such as access to technological tools, higher education, participation in innovation and career growth in the case of a joint stock company. forecast given. In 2023, this figure was 0.4 percent, and by 2032 it is expected to increase 6 times. Between 2023 and 2032, the change in growth rate will be 1.1 percent, representing steady progress. Overall, this organization can be considered a successful result, and its chain of results will increase its influence on the development of intellectual investment activities and increase its investment attractiveness by increasing it by several positions in international indicators.

Staffing shortages are the result of either a valuable employee's career advancement or his or her inability to secure a permanent position in each enterprise. At the same time, for Uzbekneftegaz JSC it will average 2.9% over the next 10 years. While this kind of chaos can arise within a meritocracy, it is likely that these metrics are based on their contribution to innovation performance.

Investment activity is projected at 5.3% in 2023, in 2024 compared to 2023 this figure will increase by 0.2%, in 2025 it will increase by 0.5% compared to 2023. This figure is expected to increase by 0.5% in 2027, despite the possibility of a decrease of 0.9% in 2026. The average growth rate over the next 10 years will be 10 percent. This is considered relevant in ensuring the investment attractiveness of the sector and can significantly reduce the share of risk in portfolio performance. As a result, the procedure for working with investment projects in the country will expand and their implementation will increase. This has a significant impact on the further development of our national economy.

Forecast indicators of the crowdsourcing strategy for transport and warehousing activities average 2.8% for the period from 2023 to 2032. In 2023 it was 2.2 percent, and by 2032 it is expected to grow another 1.4 times. Transportation and storage activities in the oil and gas industry mean the implementation of processes associated with the transportation and underground storage of containers, however, the scope of application of the crowd-directing strategy involves the interpretation of these activities as crowd-framing, that is, the participation of digital technologies in transportation and a forecast is given for the effectiveness of using innovative developments in the field storage. The growth trend of this indicator is considered stable and shows a stable 100-110 percent . This means a 78% increase in the likelihood of eliminating wait and delivery issues while maintaining production continuity.

Digital transformation is expected to reach 1.7 percent in 2023, with this figure expected to triple by 2032. Average growth over the next 10 years will be 3.6 percent. The implementation of the digital transformation process means the transformation of one's infrastructure into a digital one by providing it with digital technologies, starting from management activities and ending with the functioning of production in the fields. Accelerating future changes in the field requires regular updating of digitalization technologies. After all, all production processes in the oil and gas industry are mobile by nature, and by re-selecting and assembling these digital technologies, there is the potential to accelerate technological decline. Accordingly, it is necessary to ensure that digital transformation is carried out with attention to this aspect.

Employee motivation is aimed at expanding the capabilities of the enterprise and the employee by highlighting the researched forecast indicators within the framework of crowdfunding, within the framework of which employee training is carried out, assignment of appropriate positions in career growth, and financial incentives. It is formed by digitizing the employee's initials and the evaluation given to him in exchange for the employee's performance and contribution to his work. This is hidden crowdfunding, which means that the owner of the development, work management and similar project documents or private activities is secretly informed only of his contribution and votes are given to him. Transparent crowdfunding implies incentives for an employee who ensures the fulfillment of the requirements specified in the contract. Crowdfunding forms the basis for assessing the contribution of management to increasing the efficiency of labor in the production of groups and management teams. In our case, all this is taken into account, and the average growth is 5.2 percent, which means stable performance of crowdfunding. It also takes into account meritocracy and the innovation-diffusion state , and it is assumed that production specialists and talent holders will work in harmony



to ensure the effectiveness of crowdsourcing activities. All such chain connections serve to effectively increase the main technical and economic indicators in ensuring balanced production.

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