

## Company Efficiency Assessment Using Key Indicator System

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**Abstract.** The article covers the issue of efficiency assessment of individual oil and gas businesses that use key performance indicators. The authors try to improve the efficiency assessment methodology on the basis of SPACE-method. The approach is relevant as it suggests the transition from qualitative efficiency indicators to quantitative ones. The integral estimate for the key performance indicators constitutes the so-called efficiency profile of an organization that has four functional areas, e.g. budgeting, investments, asset and corporate relation management, treasury. The article presents the results of testing the approach in one of the Russian oil and gas businesses. The proposed approach is innovative and valuable from the scientific and practical point of view, and can be introduced in all industries.

### 1. Introduction

Today all global oil and gas corporations eagerly use methodologies and efficiency management tools when performing their management functions [1]. The system of key performance indicators (KPI) is one of these instruments that allow linking strategic priorities of a company with its current operational activities, to set quantitative indicators for the strategy achievement at the planning stage and assess the efficiency of implementing planned measures at the control stage [2; 3].

Russian integrated oil companies including Gazprom PAO are steadily introducing the KPI system to assess the efficiency of the company as a whole, its business segments, to monitor the company's strategy and to supervise the system of top management bonus awards. The process is being introduced at the moment, this is why not all the segments and business organisations use the KPI System [4]. This is why the problem of methodological support for introducing the KPI system in oil and gas companies is still pertinent.

## **2. How well the problem is researched**

The theoretical operational study showed that efficiency management is seen as both a system and a process. As a process, efficiency management includes planning, operational organisation control and analysis. As a system, it includes the following elements: Subject, object, key performance indicators, its measurement and monitoring, the mechanism for the identification of key performance indicators, the Management process. A performance management cycle in a company includes the development of the strategy, planning, measures and adjustments, monitoring and analysis [5].

The modern management system has a number of systems and methods for managing performance: Business Performance Management (BPM), Corporate Performance Management (CPM) and Enterprise Performance Management (EPM), Economic Value Add (EVA), Value Based Management (VBM), Total Quality Model (TQM), etc. Modern companies often combine the most efficient practices under a number of systems [6, 7]. The majority of performance management systems (BPM, CPM, EPM) employ the concept of Balanced Indicator System (BIS). Goals and indicators of the BIS concept are developed in accordance with the vision and strategy of a company using the four pillars: financial, client, internal business processes, education and development. The BIS concept is closely connected to key performance indicators that help a company to achieve its strategic and tactical objectives, which give it the opportunity to quantitatively measure the established goals.

The system of balanced indicators was developed and promoted by such researchers as D.Norton, R.Kaplan [8], N.-G. Olve, J.Roy, M.Wetter, H.K.Rampersad [9], H.R. Friedag [10], W.Schmidt, M.Brown [11], P.R. Niven, G. Lawry, etc. [12;13;14].

During the period of market economy development, Russian scientists have produced a wide range of research materials on performance assessment of a company. Performance management theory was studied by V. Slinkova [15], A.Gershun [16], M.Gorsky, G.Konstantinov, V.Kandalintseva [17], V.Khrutsky, A.Tereshenkova, E.Nikitina, K.Bagrinovksy, T.Grigorieva, V.Novozhilov, T.Teplova, etc.

At the same time, along with benefits, the proposed methods have some disadvantages, for example, lack of industry basis for the key indicators selection process, lack of clear quantity performance assessment methods, etc. What is more the KPI research in Russian vertically integrated oil companies and in the Gazprom PAO showed that the KPI system mainly employs two categories of indicators, namely production and economic ones and financial ones, and therefore has to be expanded [18]. The present study attempts to fill the identified gaps, which have established the goals, objectives and contents of this scientific research.

## **3. The goal setting**

The goal of the research is to develop a mechanism for the integral performance estimate of a company using key performance indicator system.

The object of the research is a performance management system in an oil and gas company. The subject of the research is the application of key performance indicator system in managing the operational performance.

KPI non-performance materiality qualifiers used in oil companies allow to qualitatively assess the operations of an entity using a specific KPI in a descriptive form. The authors propose to use quantitative assessment of fulfilment or non-fulfilment of key indicators as well as aggregated integrated index In every functional division.

## **4. Methodological approach to the integrated performance estimates of a company employing key performance indicators**

The authors suggest using popular in strategic management SPACE-method [19, 21]. Generally, it is a complex approach for analysing the situation and selecting a company strategy. The method is used to assess the attractiveness of a business and competitiveness of a company in the market and is based on the strategic situation matrix and assessment of measures taken by a company. Four groups of factors are assessed in a company: environment stability factors, industrial capacity factors, competitive

advantage factors, financial capacity factors. Every factor is evaluated by experts from 0 to 6. As a result, the strategic situation of the company is shown by the distance between the angles of a quadrangle from its centre.

The present study employs the general principle of this method. The method itself is used in the following way. The method of balanced indicators is taken as the basis. Four quadrants on a surface show the following functional areas: Budgeting, investment activities, asset management and corporate relations management, treasury.

KPIs for every area are identified by the following Guidelines of the parent company (Gazprom PAO). It is essential to transform the descriptive characteristics of KPI non-performance materiality qualifiers, in other words to convert them into quantity indicators (points). The conversion scale is shown in Table 1.

**Table 1.** The conversion of the KPI violation materiality qualifiers from the descriptive scale into the quantity one.

Violation materiality according to the descriptive scale	Violation materiality according to the quantitative scale, points
Marginal	3
Significant	2
Major	1
Grave	0

Table 2 shows an example of descriptive characteristics of KPI non-performance materiality, namely the "Net Profit" indicators and "EBITDA", and table 3 shows corresponding points awarded to the descriptive characteristics of KPI non-performance materiality.

**Table 2.** Violation materiality for Net Profit and EBITDA Indicators according to the descriptive scale

Deviation, million rubles	Deviation, % (from the estimated expenditures)						
	up to 0,25	0,25-0,5	0,5-1	1-2	2-3	3-5	> 5
up to 10	marginal	marginal	marginal	marginal	marginal	marginal	significant
10 - 20	marginal	marginal	marginal	marginal	marginal	significant	significant
20 - 50	marginal	marginal	marginal	marginal	significant	significant	major
50 - 100	marginal	marginal	marginal	significant	significant	major	major
100 - 200	marginal	marginal	significant	significant	major	major	grave
200 - 500	marginal	significant	significant	major	major	grave	grave
500 - 1000	marginal	significant	significant	major	grave	grave	grave
> 1000	significant	significant	major	major	grave	grave	grave

All the KPI for functional areas in the KPI system of a company were converted in the similar way. The KPI implementation profile based on the proposed group of indicators will be situated in a slightly different coordinate system (Figure 1). "0" corresponds to the gravest deviation from the target KPI in this functional area, while 4 shows that the target has been reached.

**Table 3.** Violation materiality for Net Profit/Losses and EBITDA indicators according to the quantitative scale.

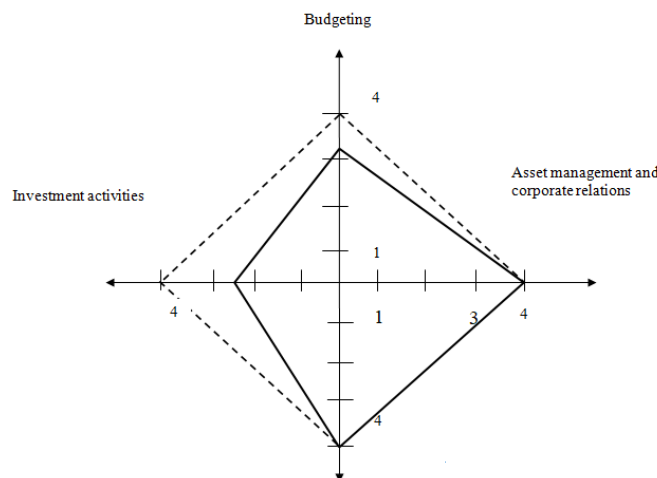
Deviation, million rubles	Deviation, % (from the estimated expenditures)						
	up to 0,25	0,25-0,5	0,5-1	1-2	2-3	3-5	> 5
up to 10	3	3	3	3	3	3	2
10 - 20	3	3	3	3	3	2	2
20 - 50	3	3	3	3	2	2	1
50 - 100	3	3	3	2	2	1	1
100 - 200	3	3	2	2	1	2	0
200 - 500	3	2	2	1	0	0	0
500 - 1000	3	2	2	1	0	0	0
> 1000	2	2	1	1	0	0	0

Having set the quantitative criteria for KPI implementation materiality, we can proceed to the next stage: the development of the accumulated estimate of every functional area. The integral estimates should be calculated as an arithmetic mean of the scores for all the KPIs in the group [20].

The developed method will allow company management to monitor the situation in real-time and achieve the KPI in the period.

**5. Method approbation**

The authors have tested the method in one of the oil and gas companies that are part of Gazprom PAO using the data on production and business activities in 2018. The KPI implementation 2018 profile is based on the conducted analysis (Figure 1). The dashed line shows the situation when all the KPI are fully achieved. The KPI implementation integral estimate for the oil and gas company showed that in 2018 the company fully achieved the target KPI in asset management and corporate relations but did not reach the targets in budgeting and investment activities.



**Figure 1.** KPI implementation integral estimate in one of the gas and oil companies.

The test identified the following advantages of this approach: it is easy to use, clear; it is possible to make a comparative assessment of the KPI implemented by different organisations within Gazprom PAO, and to evaluate the performance of the company during a number of years.

## 6. Conclusions

A methodological approach for the integral performance estimate in a gas and oil company using key performance indicators was proposed. As a result of the approbation, KPI implementation profile was developed on the basis of one of the gas and oil companies within Gazprom PAO in 2018. The test identified the following advantages of this approach: it is easy to use, clear; it is possible to make a comparative assessment of the KPI implemented by different affiliated organisations in a vertically integrated company, and to evaluate the performance of the company during a number of years.

The research is theoretically valuable because it has developed a methodological toolkit for developing the key performance indicator system in a gas and oil company. This study is practically valuable due to the fact that it allows to quantitatively and conclusively assess the performance of a gas and oil company on the basis of the integral estimate.

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