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FORMING COMPOSITE FINANCIAL INDICATOR FOR COMPANY RANGING IN OIL AND GAS COMPLEX

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Abstract

Investment and financial policy of companies facilitate getting additional resources for financing and strengthen their financial status. Various methods have been developed so far, and there are a lot of financial coefficients by which one can evaluate and mark not only financial but also industrial potential of companies. But every region of the Russian Federation and every industry have specificities that are very difficult to take into account in defining regulatory meaning of financial indicators. That is why, the authors suggest forming a single financial indicator, and they have analyzed some companies of the oil and gas sector of Tomsk region. In the authors' viewpoint, the consolidated financial indicator allows assessing and analysing comprehensively the level of competitiveness of business entities. The obtained rating revealed that the first places belong to truly successful companies, which in fact undertake managing activity. The last places belong to the companies that do not manufacture goods, do not have any managerial and production expenditures. In this connection, the subsequent study and construction of an optimum business strategy is possible based on the constructed rating and comprehensive study of the leaders. The knowledge of factors, influencing the functioning of the organisation negatively, allows the agents of management to elaborate managerial decisions, correcting the managerial process. The number of taken corrective managerial decisions depends on the quality of managerial decisions made, which will lead to the change in the company's position in the composite rating.

Keywords: Financial index; oil and gas companies; resources extraction companies; financial statement; account report.

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1. Introduction

The complex of the financial index used to assess the efficacy and efficiency of company management can be considered as the indicators of financial status, because they objectively reflect company's industrial and financial potential (Balandina, Bannova, Ryumina, 2016).

It is considered to be of great importance because using results of financial analysis, one can receive a true picture of a company financial status, define strong and weak sides of companies and make strategic decisions that can result in company performance.

But one has to remember about region and industry specificities that can be quite hard to assess using some financial indicators (Ermakova et al., 2016). That is why one can have objective results only by forming a single indicator, and ranging companies of an industry in a chosen region in accordance with this indicator. So, it is possible to draw the objective conclusion about performance of a single legal company in comparison with its competitors. Analyzing strong and weak sides of companies in competitive environment and making conclusions of their industrial and financial strategy, one can suggest a strategy of successful development for poor performers in order to reach maximum efficacy of company performance to become market leaders in the industry sector or region.

2. Problem Statement

So, the main objective of the paper is forming a composite financial indicator for ranging companies in the regional market by assessing their financial status. Using such financial indicator, compiling various factors is much more effective and demonstrable. That is why, a composite financial indicator has been developed, and by this, one can take into account financial and industrial aspects of a company performance and develop an appropriate strategy of a company.

3. Research Questions

On the basis of the information received through the network of business communications and the exchange of electronic documents between the companies "Sbis" (Drobyshevsky et al., 2005), the authors are forming the basic values that are necessary for creation of indicators for the calculation of financial ratios with the help of the financial statements of users of subsurface resources of Tomsk region.

4. Purpose of the Study

Forming a composite financial indicator for company ranging is the purpose of this paper.

5. Research Methods

Having identified the main financial coefficients that characterize aspects of the processing of companies, the authors are making the summary. The results of calculations are presented in Tables 1 – 6, which are compiled by the authors.

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Table 01. Current liquidity ratios of organizations of subsurface users in Tomsk region for 2013-2015.

Company	K_1 (Current liquidity ratio)		
	2013	***2014***	***2015***
Tomskaya neft LLC	1,02	5,74	6,72
Vostokgazprom PLC	18,64	21,11	25,82
Rosneft PLC	1,91	1,82	2,74
Swepco PLC	0,02	0,01	0,01
Tomskgazprom PLC	6,12	4,93	4,73
Tomskneft PLC	1,58	1,68	5,13
Allianceneftegaz LLC	2,59	1,40	0,88
Bakcharneftegaz LLC	0,33	0,13	0,32
Gazpromneft-Vostok LLC	2,32	9,54	10,04
Giant LLC	3,64	2,92	2,22
Lineynoye LLC	0,15	0,03	0,01
Matiushkinskaya Vertical LLC	16,96	18,04	37,81
Nord Imperial LLC	16,29	18,15	6,64
Petrogrand EP LLC	0,02	0,02	0,01
Sibinterneft LLC	0,00	0,00	0,00
Sibneftegaz-innovatsiya 21 vek LLC	0,78	0,73	0,39
Sibneftegaz-innovatsiya LLC	1,37	1,37	2,24
SN-Gazdobicha LLC	8,01	5,88	6,24
Tomskaya neft LLC	0,78	5,38	0,33
Vostokgazprom PLC	2,68	2,23	5,46
Rosneft PLC	1,73	1,93	2,00

Table 02. Absolute liquidity ratios of organizations of subsurface users in Tomsk region for 2013-2015.

Company	K_2 (Absolute liquidity ratio)		
	2013	***2014***	***2015***
Tomskaya neft LLC	0,00	0,00	0,00
Vostokgazprom PLC	0,01	4,82	3,48
Rosneft PLC	0,48	0,38	1,07
Swepco PLC	0,01	0,01	0,01
Tomskgazprom PLC	0,46	0,38	0,85
Tomskneft PLC	0,00	0,00	0,83
Allianceneftegaz LLC	0,00	0,08	0,05
Bakcharneftegaz LLC	0,09	0,02	0,00
Gazpromneft-Vostok LLC	0,07	0,02	0,01
Giant LLC	0,03	0,04	0,02
Lineynoye LLC	0,00	0,01	0,00
Matiushkinskaya Vertical LLC	0,22	0,20	0,13
Nord Imperial LLC	0,90	1,16	0,74
Petrogrand EP LLC	0,00	0,00	0,00
Sibinterneft LLC	0,00	0,00	0,00

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Sibneftegaz-innovatsiya 21 vek LLC	0,04	0,06	0,11
Sibneftegaz-innovatsiya LLC	0,00	0,00	0,00
SN-Gazdobicha LLC	0,30	0,28	0,32
Tomskaya neft LLC	0,03	0,06	0,00
Vostokgazprom PLC	0,00	0,09	0,00
Rosneft PLC	0,00	0,00	0,00

Table 03. Ratios of borrowed and owned funds of organizations of subsurface users in tomsk region for 2013-2015.

Company	**K_3 (Ratio of borrowed and owned funds)**		
	2013	***2014***	***2015***
Tomskaya neft LLC	2,10	2,81	3,57
Vostokgazprom PLC	0,07	0,06	0,05
Rosneft PLC	2,55	4,56	5,41
Swepco PLC	6,30	-3,50	-2,8
Tomskgazprom PLC	0,40	0,44	0,46
Tomskneft PLC	1,20	1,07	0,44
Allianceneftegaz LLC	4,17	-5,49	-2,41
Bakcharneftegaz LLC	-190,59	-226,83	-50,34
Gazpromneft-Vostok LLC	0,86	0,22	0,31
Giant LLC	-3,73	-2,99	-2,79
Lineynoye LLC	0,53	11,03	-5,83
Matiushkinskaya Vertical LLC	1,96	2,01	0,18
Nord Imperial LLC	0,10	0,07	0,17
Petrogrand EP LLC	-22,11	-22,65	-23,25
Sibinterneft LLC	-1,00	-1,00	-1,00
Sibneftegaz-innovatsiya 21 vek LLC	19,66	5,45	232,38
Sibneftegaz-innovatsiya LLC	2,72	2,72	0,81
SN-Gazdobicha LLC	4,03	4,08	3,61
Tomskaya neft LLC	67,32	-2,72	-2,07
Vostokgazprom PLC	0,82	0,89	0,31
Rosneft PLC	-14,87	-14,35	-14,89

Table 04. Ratios of owned circulating assets flexibility of organizations of subsurface users in Tomsk region for 2013-2015.

Company	**K_4 (Owned circulating assets flexibility ratio)**		
	2013	***2014***	***2015***
Tomskaya neft LLC	0,03	0,28	2,97
Vostokgazprom PLC	0,91	0,92	0,92
Rosneft PLC	0,84	1,41	2,28
Swepco PLC	-5,52	1,83	2,07
Tomskgazprom PLC	1,10	1,14	1,10
Tomskneft PLC	0,56	0,51	0,98
Allianceneftegaz LLC	3,10	-2,85	0,20

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Bakcharneftegaz LLC	128,31	61,08	34,36
Gazpromneft-Vostok LLC	0,92	0,85	1,03
Giant LLC	-1,74	-1,21	-0,82
Lineynoye LLC	-0,45	-1,70	5,74
Matiushkinskaya Vertical LLC	2,11	1,91	0,77
Nord Imperial LLC	0,78	0,74	0,72
Petrogrand EP LLC	20,09	20,69	21,20
Sibinterneft LLC	1,00	0,57	1,00
Sibneftegaz-innovatsiya 21 vek LLC	-4,38	-2,56	-141,30
Sibneftegaz-innovatsiya LLC	1,00	1,00	1,00
SN-Gazdobicha LLC	3,08	3,21	2,91
Tomskaya neft LLC	-14,18	0,20	1,37
Vostokgazprom PLC	1,09	1,05	1,00
Rosneft PLC	-5,50	-6,09	-6,58

Table 05. Return on equity net profit margin of organizations of subsurface users in Tomsk region for 2013-2015.

Company	**K_5 (Return on equity net profit margin)**		
	2013	***2014***	***2015***
Tomskaya neft LLC	0,19	-0,10	-0,20
Vostokgazprom PLC	0,08	0,14	0,04
Rosneft PLC	0,10	0,36	0,16
Swepco PLC	-0,38	1,33	0,53
Tomskgazprom PLC	0,23	0,14	0,17
Tomskneft PLC	0,31	0,33	0,63
Allianceneftegaz LLC	-1,26	2,04	0,68
Bakcharneftegaz LLC	0,49	0,68	0,83
Gazpromneft-Vostok LLC	-0,02	0,03	0,04
Giant LLC	0,35	0,29	0,11
Lineynoye LLC	-0,06	-3,87	1,39
Matiushkinskaya Vertical LLC	-0,43	-0,55	0,18
Nord Imperial LLC	-0,14	-0,07	-0,08
Petrogrand EP LLC	1,46	1,16	1,05
Sibinterneft LLC	0,29	0,43	0,25
Sibneftegaz-innovatsiya 21 vek LLC	0,15	0,55	0,91
Sibneftegaz-innovatsiya LLC	0,00	0,00	0,35
SN-Gazdobicha LLC	0,14	0,00	-0,12
Tomskaya neft LLC	-3,16	1,02	0,57
Vostokgazprom PLC	0,40	0,40	0,32
Rosneft PLC	0,02	0,00	0,00

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Table 06. Coefficients of profitability of goods, works, services of organizations of subsurface users in Tomsk region for 2013-2015.

Company	K_6 (Coefficient of profitability of goods, works, services)		
	2013	*2014*	*2015*
Tomskaya neft LLC	0,16	0,00	-0,04
Vostokgazprom PLC	0,06	0,08	0,19
Rosneft PLC	0,06	0,04	0,03
Swepco PLC	—	—	—
Tomskgazprom PLC	0,34	0,27	0,31
Tomskneft PLC	0,18	0,19	0,24
Allianceneftegaz LLC	-0,11	-0,20	-0,29
Bakcharneftegaz LLC	—	—	—
Gazpromneft-Vostok LLC	-0,01	0,03	0,06
Giant LLC	-0,54	-0,67	-0,50
Lineynoye LLC	-1,00	-1,00	-1,00
Matiushkinskaya Vertical LLC	-0,21	-0,35	-0,48
Nord Imperial LLC	-0,40	-0,47	-0,32
Petrogrand EP LLC	-1,00	-1,00	-1,00
Sibinterneft LLC	-1,00	-1,00	-1,00
Sibneftegaz-innovatsiya 21 vek LLC	0,01	0,19	0,04
Sibneftegaz-innovatsiya LLC	—	—	—
SN-Gazdobicha LLC	0,63	0,35	0,16
Tomskaya neft LLC	-0,12	-0,21	-0,35
Vostokgazprom PLC	0,19	0,17	0,26
Rosneft PLC	—	—	—

The basis for the formation of the composite indicator is the creation of an objective picture of the relationship between the coefficients selected in order to reduce the multiple impact of the same factor in a single coefficient on the position of the company in the sectoral and regional markets (Tasaki et al., 2010). In order to do this, the authors calculate the estimations of the correlation coefficients for each pair of indicators under study using the formula

$$r_{xy} = \frac{\sum_{i=1}^{m}(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{m}(x_i - \bar{x})^2 \sum_{i=1}^{m}(y_i - \bar{y})^2}},$$

where xi is the value of the first indicator from the pair for the i-th organization in the corresponding year, yi is the value of the second indicator from the pair for the i-th organization in the corresponding year (i=1,2,…,51), $\bar{x} = \frac{1}{m}\sum_{i=1}^{m} x_i$ and $\bar{y} = \frac{1}{m}\sum_{i=1}^{m} y_i$ are the sample average values of the first and second indicators, respectively, m = 51.

The authors will present the results of the calculations in a form of the empirical normalized correlation matrix of the studied indicators:

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$$\left\| r_{xy} \right\| = \begin{bmatrix} 1,00 & 0,47 & -0,17 & 0,16 & -0,16 & -0,20 \\ 0,47 & 1,00 & -0,08 & 0,07 & 0,00 & 0,11 \\ -0,17 & -0,08 & 1,00 & -0,98 & -0,05 & 0,06 \\ 0,16 & 0,07 & -0,98 & 1,00 & -0,13 & -0,01 \\ -0,16 & 0,00 & -0,05 & -0,13 & 1,00 & 0,08 \\ -0,20 & 0,11 & 0,06 & -0,01 & 0,08 & 1,00 \end{bmatrix},$$

where r_{xy} is the sample correlation coefficient between the x-th and y-th indicators.

Analyzing the matrix mentioned above, the authors can make the following conclusions (Kozlov et. al., 2015).

- The sample correlation coefficient between coefficients K_1 and K_2 is equal to 0.47, which means there is a small positive correlation between these indicators, that is, there is a noticeable connection.
- The sample correlation coefficient between K_3 and K_4 equals –0.98, and this shows that between these indicators there is a pronounced negative correlation close to the linear functional relationship, that is, there is a very close relationship.
- The sample correlation coefficients between the rest of the pairs of indicators do not exceed 0.2 by their modulus of absolute value. Consequently, one can assume that the remaining pairs of indicators are practically uncorrelated, that is, the connection between them is weak.

On the basis of the obtained relationships between financial coefficients, the authors will identify the sufficient weight of each of them in a single composite indicator, to form an objective position of companies and to conduct analysis on the production and financial strategies selected (Marcela et al., 2011; Mysova et al., 2016).

It should be noted that all coefficients, except for K_3, pertain directly to the ranging of companies, i.e. the higher the value of the coefficient, the more successful a company is in the market. Coefficient K_3 has a reciprocal value; therefore, in general, the composite indicator should not be taken by coefficient K_3, but by opposite coefficient $K_3' = -K_3$, in the general composite indicator, one should take opposite coefficient $K_3' = -K_3$ instead of K_3.

Initially, the authors assign all the coefficients in the general total indicator to the same weights of 1:1:1:1:1:1. Since K_1 and K_2 have a small positive correlation, one changes their weights from 1 to 0.75. Since a pronounced negative correlation is observed between K_3 and K_4, which is close to linear functional relationship, a pronounced positive correlation (close to the linear functional relationship) is observed between $K_3' = -K_3$ and K_4, close to the linear functional relationship. So one changes their weights from 1 to 0.5. Since the sum of the shares must be equal to 1, and the sum of the weights is equal to 4.5, one divides each weight by 4.5. As a result, one will obtain the following values of the shares, presented in Table 7.

Table 07. Shares in the composite indicator

Coefficient	Share in the composite indicator
K_1	1/6
K_2	1/6

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K_3'	1/9
K_4	1/9
K_5	2/9
K_6	2/9

Let us define the lower and the upper bounds of the range of variation for each coefficient using the authors' data from Tables I – VI as an example. The results are presented in Table 8.

Table 08. The ranges of variation of values of coefficients for users of subsurface resources of HCS of Tomsk region

Coefficient	The lower bound	The upper bound
K_1	0,00007	37,80723
K_2	0,00000	4,82341
K_3'	-232,38375	226,82880
K_4	-141,29761	128,31063
K_5	-3,86939	2,04120
K_6	-1,00000	0,63101

*Compiled by the authors, according to the data from tables 1 – 6

Table 8 shows that all coefficients have different ranges of variation, in which there is a wide spread of values from each other. This can distort the results of further calculation of the composite indicator, so it is necessary to bring all the indicators to one single scale. For this, the authors use the following formula:

$$\widetilde{K} = \frac{K - a}{b - a} * 100,$$

where K is the coefficient, $\widetilde{K}$ is the modified coefficient, a is the lower bound of the range of variation of the coefficient values; b is the upper bound of the range of variation of the coefficient values. Modifying the financial coefficients based on the formula, one uses them in the future to form a composite financial indicator.

Using the data from Table 7, one can derive the following formula for a composite financial indicator for the ranging of companies (by an example of the oil and gas sector of Tomsk region):

$$\mathrm{I} = \frac{1}{6} * \widetilde{K}_1 + \frac{1}{6}\widetilde{K}_2 + \frac{1}{9}\widetilde{K}'_3 + \frac{1}{9}\widetilde{K}_4 + \frac{2}{9}\widetilde{K}_5 + \frac{2}{9}\widetilde{K}_6,$$

where $\widetilde{\mathrm{K}}_1$ is a modified current liquidity ratio, $\widetilde{K}_2$ is a modified absolute liquidity ratio, $\widetilde{K}'_3$ is a modified opposite ratio of borrowed and own funds , $\widetilde{K}_4$ is modified own circulating assets flexibility ratio, $\widetilde{K}_5$ is modified return on equity net profit margin, $\widetilde{K}_6$ is a modified coefficient of profitability of goods, works, services.

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6. Findings

The authors have obtained the following results.

Using the data from Tables 1 – 6, one can calculate the composite financial indicator for organizations of subsurface users in Tomsk region. The results are presented in Table 9, which is compiled by the authors.

Table 09. Composite financial indicator for the ranging of companies (by an example of the oil and gas complex in Tomsk region)

Company	Composite financial indicator		
	2013	2014	2015
Tomskaya neft LLC	42	42	43
Vostokgazprom PLC	41	67	67
Rosneft PLC	42	44	47
Swepco PLC	-	-	-
Tomskgazprom PLC	47	47	51
Tomskneft PLC	43	44	52
Alliancenefteg az LLC	33	46	38
Bakcharneftegaz LLC	-	-	-
Gazpromneft-Vostok LLC	40	44	47
Giant LLC	34	33	36
Lineynoye LLC	26	11	33
Matiushkinskaya Vertical LLC	36	41	50
Nord Imperial LLC	37	45	42
Petrogrand EP LLC	33	32	35
Sibinterneft LLC	27	28	29
Sibneftegaz-innovatsiya 21 vek LLC	40	39	40
Sibneftegaz-innovatsiya LLC	-	-	-
SN-Gazdobicha LLC	50	48	47
Stimul-T LLC	25	43	33
RN-Uvatneftegaz LLC	44	45	49
Energeticheskii Aliyans LLC	-	-	-

* Compiled by the authors, according to the data presented in Table 8.

Analyzing the resulting table, one can rate the companies starting from the most successful ones to the laggards (Ozkan et al., 2013).

The results of the rating are presented in Table 10, compiled by the authors.

Table 10. Rating of companies (by the example of oil and gas complex of Tomsk region)

Company	Place in the ranking		
	2013	2014	2015
Vostokgazprom PLC	7	1	1
Tomskneft PLC	4	8	2
Tomskgazprom PLC	2	3	3

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Matiushkinskaya Vertical LLC	11	12	4
RN-Uvatneftegaz LLC	3	5	5
SN-Gazdobicha LLC	1	2	6
Gazpromneft-Vostok LLC	9	7	7
Rosneft PLC	5	9	8
Tomskaya neft LLC	6	11	9
Nord Imperial LLC	10	6	10
Sibneftegaz-innovatsiya 21 vek LLC	8	13	11
Allianceneftegaz LLC	14	4	12
Giant LLC	12	14	13
Petrogrand EP LLC	13	15	14
Stimul-T LLC	17	10	15
Lineynoye LLC	16	17	16
Sibinterneft LLC	15	16	17
Swepco PLC	18	18	18
Bakcharneftegaz LLC	19	19	19
Sibneftegaz-innovatsiya LLC	20	20	20
Energeticheskii Aliyans LLC	21	21	21

7. Conclusion

In the authors' opinion, it is possible to comprehensively access and to analyze the level of competitiveness of companies. From the rating received, it is clear that the first positions are taken by really successful companies that actually carry out economic activities - they are extracting hydrocarbon raw materials, investing in the development of production, and so on. The lower lines of the rating are taken by the companies that do not produce products, that do not have managerial and production costs, i.e. those that do not actually lead commercial activities aimed at generating revenue and profits even in the foreseeable future. In this regard, further research and the construction of an optimal business strategy are possible on the basis of the rating built and comprehensive study of market leaders. Being aware of the factors that negatively affect functioning of a company allows managers to come up with management solutions that correct the management process (Kireenko et al., 2017).

The number of corrective management decisions taken depends on the quality of the management decisions made to achieve the adjustment in the composite financial indicator, which will result in a change in a company's position in the consolidated rating.

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