Technique of the Complex Assessment of Business Activity of an Industrial Enterprise with JSC «Belgorodstroydetal» as an Example

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Abstract: The article is devoted to business activity study and its assessment within the industrial enterprise. Qualitative and quantitative indices characterizing business activity of the enterprises are described and proved in it. The technique of the complex assessment of business activity by determination of its level and calculation of the made coefficients is offered and approved. The coefficient of business activity is grouped and compared with a hierarchical scale. Recommendations for practical application of the technique for the assessment of business activity at the industrial enterprises are offered.

Key words: Technique of the complex assessment of business activity of the industrial enterprise · Business activity · System of indicators · Technique · Assessment · Complex indicator of business activity (CIBA)

INTRODUCTION

Today business activity is one of the main elements of the economic system in Russia and it is inseparably linked both with productivity and financial results of a certain enterprise and with economic well-being of nation as a whole. In this regard the main approaches to business activity study at a macro-and a microeconomic level are different. Thus, the following task has been formulated: to determine the level of the organization belonging to the market environment and its competitive advantages [1].

Business activity of the industrial enterprise is an individual, complex characteristic of the economic subject reflecting its effective and rational use of material, technological, financial, information and manpower resources through the system of qualitative and quantitative indices with the aim of the analysis of the economic condition of the managing subject and the assessment of its production potential. It also aims at the identification of existing problems in the course of making and implementation of administrative decisions for further improvement of the results of business activity.

Business activity as a complex characteristic of the enterprise activity can be expressed not only by the theoretical description and comparison of its characteristics, but also by means of a concrete quantitative assessment. At the moment there is a set of indicators characterizing business activity, the definition of which is based on a set of approaches [2, 3]. To assess business activity of the enterprise it is necessary to carry out a complex analysis in accordance with the developed plan of indicators [4-6]. Thus, both qualitative and quantitative characteristics reflecting the influence of internal and external parameters through the system of absolute and relative indicators must be included in it. In this research we will deal with the components of business activity, each of which will be characterized by its own set of parameters.

The Main Part Justification of the Assessment Technique of Business Activity of Industrial Enterprises:
In the technique offered both qualitative and quantitative indices influenced by internal and external parameters through the system of absolute and relative indicators are presented. In the course of development of this technique
Fig. 1: Indicators necessary for business activity assessment of the enterprise

we will rely on the components of business activity, each of which is characterized by the set of indicators. We will define qualitative indicators as internal, as well as external, which are used to characterize the following types of activities: marketing, innovative, investment.

As for quantitative indices they are based on production, labor and financial activity. To assess business activity a complex technique must be used. It will combine different values of indicators and include the most closely connected types of activities forming business.

For this purpose we offer procedure for the assessment of business activity of the industrial enterprises based on the following indicators (Fig. 1).

As far as quantitative criteria are concerned, their calculation will help to reveal the internal state of business activity of the industrial enterprise and identify its problems which can be solved by rational management. Labor productivity and annual average salary directly estimate business activity from the point of real, labor activity of the personnel and reveal social aspect of the analysis [7-10]. Then it is reasonable to dwell upon production indicators being some kind of efficiency indicators of production process. But, unlike job performance, capital productivity and turnover coefficients don’t characterize human factor of an economic cycle, they characterize "activity" or high-quality work of means and objects of labor.

As for external parameters, they influence business activity absolutely differently. While internal parameters show efforts and capabilities of the organization aimed at gaining a good position among suppliers, investors, competitors and buyers, external ones determine degree and availability of such position by the final result. For a example, marketing researches, advertizing activity and the range of goods directly influence business reputation of a firm, range of its markets and competitiveness [11]. And, therefore, the more developed the activity of the company in the foreign markets is, the more opportunities for the improvement of internal business activity it has.

And, therefore, the more developed the activity of the enterprise, the extent of its influence and its position in the regional competitive market.

The structure of interrelation of business activity indicators is given in Fig. 2.
Quantitative indices of business activity in a certain dependence are given in Fig. 2. Two necessary values applied for their calculation correspond to each of the indicators. Many of such values correspond not to one indicator but to several ones at the same time. Thus, structural links revealed by us are expressed in them. We can judge about the number of applications of these values by these structural links and can determine their importance. As it was already noted above, profit is one of the main indicators for the efficiency evaluation of the enterprise activities which is approved by its position and by the number of links in the scheme given.

As a result of the complex analysis of all factors and indicators of business activity the technique of a universal assessment of business activity has been suggested. It includes ten stages:

- the analysis of the current trends of development of Russian and Belgorod industrial market;
- the choice of the indicators characterizing business activity, development of the mechanism and model for the assessment of business activity of the industrial enterprise;
- Allocation according to each feature of gradation;
- Collection of information and its processing for indicator calculation (quality, quantitative);
- Calculation of the generalizing indicator of CBA;
- Development of the hierarchical scale of the level value of business activity;
- Correlation of received CBA of the analyzed enterprises with the scale of business activity level.
- The choice of the industrial enterprise which needs to increase the level of business activity;
Making conclusions according to the results of the analysis;

Development of the recommendations and ways of improvement of business activity of the industrial enterprise.

Content of the Technique for Business Activity Assessment and its Application with JSC «Belgorodstroydental» as an Example: To calculate the index of business activity it is necessary to compare all the values received which require numerical expression of qualitative indexes. For such multidimensional comparison it is necessary to simplify calculation to achieve the main objective in case of technique development – to bring all indicators into a comparable type. Thus all indicators are replaced with one quantitative value which represents a kind of a certain combination of interchangeable indicators and is referred to as a complex assessment (CA) [12].

The Complex Assessment (CA) turns out as a result of summing, i.e. it is an integrated indicator [13]. The main benefit of CA is that it is possible to compare any number of objects, to range them, to reveal the best and the worst ones and to find out how much one object is better or worse than the analyzed ones.

The complex assessment is not only the instrument of comparison, but also, first of all, a powerful tool of generalization of the analysis results. By means of the complex assessment any number of indicators different in their sense is replaced with a single unique integrated indicator which can fully characterize the object of the analysis.

It is based on indicators regulation.

According to this method, indicators values are normalized according to their minimum and maximum as follows:

\[ x_{ij} = \frac{a_{ij} - a_{\min j}}{a_{\max j} - a_{\min j}}, \quad i = 1, n; \quad j = 1, m \]  

where

\[ a_{\min j} \] - Minimum value of j indicator;
\[ a_{\max j} \] - Maximum j value of j indicator.

Regulation formula is such that xij values in case of any aij values (including negative ones) range from 0 to 1:

\[ x_{ij} = 0, \text{ if } a_{ij} = a_{\min j}; \]
\[ x_{ij} = 1, \text{ if } a_{ij} = a_{\max j}. \]

The formula of a complex assessment looks like:

\[ CA_i = \frac{x_{i1} + x_{i2} + \ldots + x_{im}}{m} \times 100 = \frac{\sum_{j=1}^{m} x_{ij}}{m} \times 100, \quad i = 1, n \]  

CA ranges from 0 to 100 (0 ≤ CA ≤ 100).

To make the assessment objective we recommend to determine business activity in dynamics, namely: to calculate quantitative indices within the period of five years [13].

To calculate quantitative indices it is necessary to enter the data for JSC Belgorostroydental which are provided in Fig. 3. [14]. To simplify calculations and automation of this routine process the Microsoft Office Excel has been used.

The process of making a complex assessment is provided in Fig. 4. The expert method revealed the normalized values for each indicator and the complex assessment was calculated.

Then we put all the values in the formula of a complex assessment (formula 3) and receive the result which is given in dynamics in Fig. 5.

\[ CA_{2012} = \frac{0 + 0,387 + 1 + 0,201 + 0 + 0,615 + \sum_{j=1}^{m} 9,226 + 0,844 + 0,700 + 0,566 + 0,375 + 0,357 + 0,411 + 0,382 + 1 + 0,5 + 1 + 1 + 0,507 + 0,381}{18} \times 100 = 51,254 \]  

The CA value ranges from 0 to 100 (0 ≤ CA ≤ 100).

\[ CA_{2012} = 51,254; \quad CA_{2011} = 49,178; \quad CA_{2010} = 26,828; \quad CA_{2009} = 20,052; \quad CA_{2008} = 77,28. \]
Dynamics of results of complex assessment of JSC Belgorodstroydetal by the level evaluation method

![Dynamics of results of complex assessment of JSC Belgorodstroydetal by the level evaluation method](image)

Fig. 3: Form for filling in necessary information within the period of five years

Fig. 4: Algorithm of CA calculation for JSC «Belgorodstroydetal» as an example

Dynamics of results of complex assessment of JSC Belgorodstroydetal by the level evaluation method

![Dynamics of results of complex assessment of JSC Belgorodstroydetal by the level evaluation method](image)

Fig. 5: Dynamics of results of CA of JSC Belgorodstroydetal by the level evaluation method
Fig. 6: The form for an expert evaluation of the analysis of questionnaires and the measurement of a qualitative index
Then the assessment of qualitative indexes which is carried out by means of questionnaires is made. The procedure will take place as follows: enterprises are offered questionnaire which must be filled in by at least three heads of structural divisions.

The results of questioning were estimated by an expert way. The score for each question is provided in the expert questionnaire (Fig. 6).

The formula of calculation of a qualitative index looks like:

\[ \text{P}_{\text{qual}} = \frac{\sum B_v}{n} \]  

(4)

where

- \( \text{P}_{\text{qual}} \) - Quality coefficient;
- \( \sum b_v \) - The amount of points for i respondent;
- \( n \) - the number of respondents.

The standard value of the coefficient ranges from 14 to 48. The calculated qualitative index is 42, 64.

The formula offered looks like (formula 6):

\[ \text{P}_{\text{quan}} = \frac{51,254 + 49,178 + 26,828 + 20,052 + 77,282}{5} = 44,919 \]  

(5)

where \( \text{P}_{\text{quan}} \) - the average value of the quantitative index.

Let's offer the formula of the coefficient of business activity taking into account both qualitative and quantitative indices the arrangement of which within a numerator and a denominator doesn’t play any role and will be taken randomly. Maximization of qualitative and quantitative indexes must be also taken into account, as well as the properties of fraction characterizing inverse relationship between a quotient and a divider. Therefore, not to allow the possible growth of CBA as a result of reduction of a qualitative index, i.e. a denominator, it is necessary to give quotient the form of a difference (100 - \( R_{\text{quan}} \)). The formula offered looks like (formula 6):

\[ \text{CBA} = \frac{\text{P}_{\text{quan}}}{(100 - \text{P}_{\text{quan}})}; \]  

(6)

where CBA – the coefficient of business activity.

Let's calculate the coefficient of business activity of JSC «BSD».

\[ \text{CBA} = \frac{44,919}{(100 - 34,667)} = 0,688 \]

Then we will form the hierarchy of estimates of the general level of business activity (Table 1). The received standard value of the coefficient of business activity ranges from 0 to 2. It was received as a result of substitution of the maximum and minimum values of qualitative and quantitative indicators in the formula of KDA.

Having calculated the coefficient of business activity for JSC Belgorodstroydetal we can arrive at the following conclusion:

- According to its structure business activity of JSC «Belgorodstroydetal» belongs to an unstable type, but it should be noted that threshold value of this type in the structure begins with 25 and finishes with 50. The received value is on the border of two types of the scale. It means that the enterprise has an opportunity to get into the following “normal” type, which is quite real if the management of the enterprise takes measures to improve the level of business activity in advance;
<table>
<thead>
<tr>
<th>Category of a hierarchical scale</th>
<th>Low (CBA&lt;sub&gt;l&lt;/sub&gt;)</th>
<th>Satisfactory (CBA&lt;sub&gt;s&lt;/sub&gt;)</th>
<th>Medium (CBA&lt;sub&gt;m&lt;/sub&gt;)</th>
<th>High (CBA&lt;sub&gt;h&lt;/sub&gt;)</th>
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<tr>
<td>CBA&lt;sub&gt;l&lt;/sub&gt; &lt; 0.5</td>
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<td>0.5 &lt; CBA&lt;sub&gt;s&lt;/sub&gt; &lt; 1</td>
<td>1 &lt; CBA&lt;sub&gt;m&lt;/sub&gt; &lt; 1.5</td>
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<td></td>
<td>CBA&lt;sub&gt;s&lt;/sub&gt; &lt; 1.5</td>
<td>CBA&lt;sub&gt;m&lt;/sub&gt; ≥ 1.5</td>
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As for the level of business activity, it is also on the boarder of two categories, i.e., the value received shows that JSC «Belgorodstroydetal» should be put into "satisfactory" category, but there is also a probability to get into "low" category.

### CONCLUSION

Thus, the assessment of the level of business activity of industrial enterprises generally depends on the optimum structure of capital sources (the ratio of own and borrowed funds) and the rational structure of assets of industrial bodies [15]. The ratio of fixed and current funds, availability or lack of balance of assets and liabilities of industrial enterprises according to the functional feature must be taken into consideration. Thus, the system and structure of indicators of business activity described in this work was confirmed and estimated by the technique developed.

The universal character, simplicity of calculation and versatile character of indicators prove that the offered model of the assessment of business activity of industrial enterprises is actual. It can be used in case of the change of factors of influence on business activity or of the change in the reporting documentation of enterprises.

### REFERENCES