The multipurpose industrial company's competitiveness evaluation method for instable environmental conditions

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Abstract. The competitiveness evaluation method for industrial companies was created by authors and described in the article. This method allows considering specific features of contemporary economic conditions. There are two main features: Russian economy is under the external pressure, it instable and needs structural changes. The main advantage of the method is following: it can evaluate both the current and the perspective competitiveness of company considering the aim of increasing competitiveness of Russian economy in general. The evaluation of competitiveness includes five main blocks of company's particular characteristics and accumulates them into several generalizing competitiveness indicators. Such multifactorial model can be successfully used for managing the competitiveness, at the same time the limited number of generalizing indicators makes the final evaluation of competitiveness quite convenient.

1 Introduction

The increasing of industrial companies' competitiveness is one of the most important factors of sustainable development of national economy. The leading experts of strategic management confirm the great importance of this factor [1], [2]. However market participants today are under the pressure of changeable environmental conditions both at the micro-level and at the level of national economy in general. The external sanctions pressure influences the majority of economic processes in Russia and creates the specific conditions for Russian companies.

In contemporary market conditions an industrial company's management has to use specific tools and techniques to provide the decision-making processes which can decrease the negative consequences of external influence. That is why it is really important to develop the existent competitiveness evaluation tools and to create some techniques to increase the competitiveness potential of industrial companies. Moreover, the specific relevance of industrial companies' competitiveness investigation is provided with government policy on import substitution.

All this factors lead us to investigate the problem of evaluation the competitiveness level of industrial companies in dynamic environmental conditions. Also the development of evaluation tools both for current and perspective competitiveness is very important, because companies need to protect and enhance their competitive advantages in the future.

2 The problem to investigate

2.1 The main disadvantages of existing evaluation methods

There are many foreign and Russian scientists who investigated the different sides of competitiveness evaluation problem. We can name such famous researchers as E. Chamberlin, J. Schumpeter, A. Cournot, A. Marshall, D. Ricardo, J. Robinson, P. Samuelson, A. Smith, F. Hayek, M. Porter, I. Ansoff, G. Azoev, L. Balabanova, A. Voronov, P. Zavialov, P. Zabelin, V. Krivorotov, G. Mazhinsky, I. Maksimova, A. Sivachenko, L. Sokolova, A. Temchenko, A. Tkachenko, H. Faskhiev, R. Fatkhutdinov, A. Tsvetkov etc.

According to our analysis there are two main groups of competitiveness evaluation models and methods: graphical and analytical ones.

1) Analytical methods of companies' competitiveness evaluation

- The ratings [3], [4].

- The methods, which use a market share to evaluate competitiveness [5], [6].

- The methods, which use a competitiveness of product to evaluate competitiveness of company [7], [8], [9].

- The methods based on the effective competition theory [10].

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- The methods based on the SWOT-analysis model [11].

- The integrative evaluation methods. These models are the most popular and various [12], [13], [14], [15], [16].

2) Graphical methods of companies' competitiveness evaluation

- The methods based on comparative competitive analysis.

- The matrix methods.

- The market attractiveness models.

- The Porter's model [17].

All of these methods have their own advantages and can be used in practice, but all of them have significant disadvantages which ones restrict their usefulness and sometimes make them useless at all.

The main disadvantages are following:

- the methods use complicated calculations or factors which are hard to be evaluated and inaccessible information;

- the majority of these methods are based only on internal factors and don't take into consideration the environmental ones;

- they also don't take into consideration the characteristics of exports and imports, technologies and equipment condition, human resources, effectiveness of management, basic marketing characteristics, which are needed to create a new strategy to promote and sell products in the domestic and foreign markets.

2.2 The way to solve the problem

A macroeconomic volatility influence on industrial companies can be estimated only by using specific companies' competitiveness evaluation methods, not by using the common tools [18]. Therefore the main aim of our investigation was to create the multipurpose company's competitiveness evaluation method for instable environmental conditions, which can be used to increase the long-term competitive capacity.

3 The multipurpose industrial company's competitiveness evaluation method

3.1 The specific factors of industrial company's competitiveness

The diversity of factors which influence industrial company can be classified into two groups: the objective ones (they can be managed by the company) and the subjective ones (they can't be managed by the company and can be also named as environmental factors).

There is the list of objective factors:

- a size of a company;

- a branch of industry;

- characteristics of products, which are produced by company;

- the level of interplant cooperation;

- the direction and volume of company's export or import.

The subjective factors are the following ones:

- the level of scientific and technical development;

- customs and tariff legislation;

- the competitive activity;

- the paying capacity of the main customers;

- the technical legislation;

- internal and external official decisions, which are made according to specific political situation.

3.2 The particular indicators of company's effectiveness

After identification of specific factors of industrial company's competitiveness they should be combined into particular indicators which are connected with the main characteristics of company and its effectiveness. We propose to combine these indicators into five groups, which characterize the different spheres of company's activity: marketing, organizational and human resources, financial position, technical and technological level, characteristics of products.

For estimation of every group the different particular indicators can be chosen and calculated. The majority of them (with equations) can be found in [19]. In addition to the common indicators the share of imported materials and components should be included into financial indicators group, because it is the high risk factor in contemporary economic conditions.

All indicators must be compared with some basic level – for different indicators the basic level could be either the standard or the average value, also it may be the industry leader's level of the indicator. After the comparison the specific deviations must be identified.

3.3 The generalising indicators of company's effectiveness

Only after evaluation of all particular indicators we can start to estimate the generalizing ones, which must be used as a basis for competitiveness criteria, which would be the final result of calculation.

We suggest using the following generalizing indicators:

- the consumer price of the product;

- bringing the product to the consumer index;

- equipment and labor productivity;

- the bankruptcy probability.

The bankruptcy probability can be predicted with using different methods, one of the most common is the Altman's discriminant factor model [20].

If we compare the level of each generalizing indicator of the industrial company with the basic level, we'll be able to make a conclusion about strengths and weaknesses of this company.

3.4 The criteria for company's competitiveness evaluation

We suggest estimating the following criteria of company's competitiveness:

- quality of its product;

- its domestic market share;

- the added value, which is generated by the company.

These criteria are the initial base for comparing the effectiveness and competitiveness of industrial companies between each other and with the baseline. In our opinion these criteria completely characterize the industrial company's competitiveness in contemporary economic conditions in Russia. We chose them according to several important features of such conditions and the main current aims of national economic development.

These criteria are connected with:

- required structural changes in Russian economy;

- required increasing of the processing level of domestic products;

- the increasing of global competitiveness of national products aimed by government;

- the company's success in internal competition during the nation economy is under the external economic pressure and the perspective global competitiveness of domestic industrial companies.

For different purposes of estimation or investigation companies can be ranked according to every criterion separately or according to only one of them which is evaluated as the most significant one for this specific investigation.

If we need the comprehensive evaluation of company's competitiveness and we want to compare easily the current position of investigated company with its competitors' positions, it will be convenient to use the final integrative indicator of competitiveness (1). This integrative indicator can be calculated in this way:

$$C = Q^{V1} \times S^{V2} \times AV^{V3} \qquad (1)$$

C – industrial company's competitiveness; Q – quality of the product; S – domestic market share; AV – the added value,

which is generated by the company; V1,V2,V3 – the weighting factor of the corresponding criterion.

It is to be said that the multiplicative type of model is the most suitable one to calculate the integrative indicator of competitiveness, because all criteria must be taken into account in total. Even if one of the criteria becomes a zero, the company's competitiveness also becomes a zero.

The following situations may be analyzed as the examples:

- If the industrial company don't have any production which was produced by itself (Q=0), it will not be able to compete in the industrial sphere of economy, it can take a part in competition only in the commercial sphere.

- If the industrial company is not represented in the domestic market at all (S=0), it will be equivalent to total absence of its current competitiveness in contemporary situation when the international trading is vastly limited.

- If the industrial company don't generate any added value (AV=0), it can't be named as the industrial one at all. Moreover, this company obviously doesn't have the aim to increase the processing level of its products, that is why it doesn't have any competitiveness as the industrial company in contemporary environmental conditions.

These three facts lead us strictly to the multiplicative model of the integrative indicator of competitiveness. The next problem to investigate and question to answer is the values of weighting factors because not in every situation the significance of identified competitiveness criteria are equal.

The process of choosing and setting the specific values of weighting factors is one of important parts of the assessment process, because they can significantly influence the balance of power between competitors in the result. In our opinion, for every specific industry and for every specific market situation the specific values of weighting factors must be set and used because the significance of these factors will be different for every industry and situation.

The values of weighting factors must be set according to two important characteristics:

- the level of external economic pressure (Tab. I);

- the necessity of structural changes in the specific industry (Tab. II).

As we can see from Tab. I the significance of two criteria rises according to increasing of external economic pressure. These two criteria are:

- the domestic market share;

- the added value, which is generated by the company.

Table 1. Significance of the Competitiveness Criteria According to External Economic Conditions.

The Criterion	External Economic Conditions		
	Adverse	*Neutral*	*Favorable*
Quality of the product	High	High	High
Domestic market share	High	Medium	Low
The added value, which is generated by the company	High	Medium	Medium

Table 2. Significance of the Competitiveness Criteria According to How the Situation in Industry is Corresponding to the Aims of Structural Changes in National Economy.

The Criterion	The Necessity of Structural Changes in the Industry		
	High	*Medium*	*Low*
Quality of the product	High	High	High
Domestic market share	Medium	Medium	Medium
The added value, which is generated by the company	High	Medium	Low

It can be easily explained. If the international economic relations are limited (when the economy is under the external pressure) the current competitive positions of company can be evaluated only in connection with its domestic market share and independence from import will become the important competitive advantage, vice versa if the international relations are stimulated this factors will become less important.

According to increasing of structural changes necessity in the industry the significance of one criterion (the added value, which is generated by the company) rises. At the same time the criterion of product's quality remains highly significant regardless of necessity of structural changes in the specific industry.

If we combine Tab. I and Tab. II in one, we will create the matrix which let us define the recommended ranges of weighting factors values for all competitiveness criteria according to different combinations of external economic conditions and of necessity of structural changes in economy. These recommended ranges are presented in Tab. III. To choose the specific values from presented ranges correctly we must remember that anyway the sum of all weighting factors in every situation must be equal to unity.

The lower right quadrant of the matrix (combination of favorable external economic conditions and low level of structural changes necessity) describes the most perspective and preferable situation. As we can see the criterion of product's quality becomes the most significant and important in this situation. The upper left quadrant of the matrix (combination of adverse external economic conditions and high level of structural changes necessity) describes the most unfavorable situation which characterizes the current statement of the vast majority of domestic industrial companies. In this

case the weighting factors of all competitiveness criteria become approximately equal.

4 Conclusions

The developed company's competitiveness evaluation method can be easily used for detecting both the problems of the particular company and its hidden reserves. This method

Table 3. The Recommended Ranges of Weighting Factors Values.

External Economic Conditions	The Necessity of Structural Changes in the Industry		
	High	*Medium*	*Low*
Adverse	V1 [0,2–0,4]	V1 [0,2–0,4]	V1 [0,2–0,4]
	V2 [0,2–0,4]	V2 [0,2–0,4]	V2 [0,2–0,4]
	V3 [0,2–0,4]	V3 [0,2–0,4]	V3 [0,2–0,4]
Neutral	V1 [0,3–0,5]	V1 [0,4–0,6]	V1 [0,4–0,6]
	V2 [0,2–0,4]	V2 [0,2–0,4]	V2 [0,2–0,4]
	V3 [0,3–0,5]	V3 [0,3–0,5]	V3 [0,2–0,4]
Favorable	V1 [0,4–0,6]	V1 [0,4–0,6]	V1 [0,6–0,8]
	V2 [0,0–0,2]	V2 [0,0–0,2]	V2 [0,0–0,2]
	V3 [0,4–0,6]	V3 [0,2–0,4]	V3 [0,2–0,4]

can be characterized as multipurpose and easy to use in practice; it is based on common statistical database and doesn't use the complicated calculations. The method can be successfully used as a tool for strategic and current management, for continuous monitoring of company's activity to detect the problems and weaknesses, and for making the informed decisions to manage the competitiveness of company. Also one of advantages of this method is its applicability to evaluate not only the current competitiveness of industrial company, but its potential willingness to compete in international dimension too, so it can be useful for increasing the national competitiveness in general.

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