Integral Valuation of an Enterprise's Competitiveness in the Industrial Economy

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Abstract:

The article studies the phenomenon of competitiveness of a business entity and reflects various methodological approaches to its valuation. Comparative analysis of methodological approaches determined the choice of the appropriate valuation algorithm employed in the empirical part of this research.

The study tests one of the valuation methods and provides a critical comprehension of the possibility to obtain adequate estimates of an enterprise's level of competitiveness regarding the realities of the contemporary industrial economy.

It is concluded that future valuations of firms' competitiveness would require additional factors to be included into integral indices to comply with the pace of industrial economy.

These factors entail innovation and R&D potential that are the key components to enable development of leading sectors of an economy.

Keywords: Competition, competitiveness, development strategy, industrial economy, integral valuation, competitiveness valuation model.

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1. Introduction

Enterprise competitiveness is a basic concept of modern economy and is a complex phenomenon. It is taken care of at various levels, including the level of enterprise, where it acts as a tool to improve the efficiency of the economic entity. The organization, which maintains its level of competitiveness on a permanent basis, thus provides a higher level of profit and rates of return, achieving sustainable operation in the market.

Hands-on problems of increasing the level of enterprises' competitiveness, including proper design of valuation algorithms and rational choice of methods of valuation, are important for an economy and require research regarding the context of current economic situation. The new data, profound literature and a proper collection of best practices of corporate competitive valuation facilitate the demand to revisit existing approaches to quantifying competitiveness considering current and perspective trends of development.

2. Literature review

Industrial economy issues also affect the perception and attitudes towards competitiveness. Being relatively outdated – major research on industrial economies traces back to Geroski (2001), Belussi (1996), Miles (1993) and much earlier papers – the concept of industrial economy is still regarded when dealing with many macro- and microeconomic instances. Revisions of industrial economy postulates and principles are numerous and almost regular since there appear more evidence and data to verify or adjust the existing models of industrial development, e.g., Voronkova *et al*. (2018) or Miheeva *et al*. (2018).

Industrial economy interlaces the output capacity and market performance with an enterprise's competitiveness, thus opening a new realm for discussion mainly in terms of industrial competitiveness (Maskell and Malmberg, 1999) way down to Porter's theory.

Special attention to firms' (corporate) competitiveness was drawn soon after the introduction of the concept on the national and industrial level (Ivanova *et al.,* 2017). Main contributors to competitiveness identification, definition and quantification were Egri (2002), who provided the vast aggregation and analysis of then-existing theories to conclude on the basic approaches to competitiveness evaluation, Man *et al*. (2002) who fitted and amended the theory to SMEs providing linkages to the factors – competencies (previously introduced by Prahalad and Hamel). Lechner and Dowling (2003) explored network effects' influence on enterprises' competitiveness, followed by Rao and Holt's (2005) adaptation of the former findings to positive drive to competitiveness from the effects of supply-chain density growth, and by top-down approach implementation by Polyakova and Simarova (2014) regarding the influence of spatial relatedness on regional

performance that included the micro-level competitiveness as well. Later studies expand competitiveness and collocate it to sustainability and resilience of enterprises (Gunasekaran *et al.,* 2011; Serebryakova *et al.,* 2016) or to territory-specific features of development (Sycheva *et al.,* 2018). Financial studies, e.g., Ekimova *et al.* (2017), define competitiveness of a company as its ability to generate and increase shareholders' value.

Today, the broad interpretation of competitiveness defines it as an enterprise's ability to achieve its goals in competitive environment (Nikolova *et al.,* 2017). Consumer-side definition states that competitiveness might be treated as an extent of consumer satisfaction, both actual and potential, compared to similar objects presented in the given market. Thus, competitiveness of an enterprise, being an integral concept, combines not only the product-side features (including packaging, the level of service, advertising, delivery terms, consulting support, storage conditions, etc.), but also can be complemented by such characteristics as:

- competitiveness of available resources (financial, human, tangible, intellectual, natural, etc.);
- competitiveness of management (management style, speed of decision-making, generation of new ideas, ability to go to take sound level of risk);
- competitiveness of a business-idea as it is – feasibility and prospects of a business (Shkardun, 2008).

The variety of concepts mentioned above generates a variety of proposed methods for determining factors of competitive advantage, as well as for an enterprise's competitiveness valuation.

3. Methodology

Many researchers who deal with problems of enterprises' competitiveness, are trying to fit the phenomenon in a specific approach that determines further use of a certain quantification method to valuate competitiveness (Table 1).

Most methods of an enterprise's competitiveness valuation presume the estimated value is interpreted as a certain "balance of power" between the company and its main competitors. These are so-called parametric methods based on calculation of parameters of competitors' comparison (using primary data-sources) and on identification of opinions of consumers, sellers, suppliers concerning the chosen comparative characteristics. The advantages of their use include the relative simplicity and low cost of research. However, the practical implementation of this group of methods has certain peculiarities and limitations.

Table 1: *Basic methods of an enterprise's competitiveness valuation*

Method	Description
Comparative	The main criterion used is low costs. An enterprise has an advantage if its

advantage-based valuation	production costs are lower than those of its competitors.
Matrix methods	The approach relies on market-based assessment of an enterprise's operations and its product considering the life cycle of the latter.
Competition efficiency valuation	**Structural approach**. Valuation can be made from industry monopolization data: capital and output concentration, barriers to entering an industry. **Functional approach**. Valuation is based on performance indicators: return on sales, capacity utilization, output quantities, profit margins, etc.
Product quality-based valuation	Valuation is based on comparison of several parameters of a product reflecting its consumer value. The computation is based on so-called "parametric" indices that characterize the degree of a need satisfaction by a product.
Polarity profile	The approach is based on identification of parameters an enterprise's under-performance and proper performance compared to competitors, i.e. strengths and weaknesses.

Source: Developed by authors.

Since the level of an enterprise's competitiveness is a relative characteristic, the given enterprise can be treated as competitive compared to the regional industry group, but to the national scale it can under-perform. Therefore, competitiveness valuation and competitive advantage identification require reliable set of peers and benchmarks to assure quality valuation outcomes. Thus, selected peers must have the following parameters:

- comparable characteristics of products that meet identical customer needs;
- comparable market segments where products are traded;
- comparable phases of the life cycle of a company.

Thus, the competitive advantage of one enterprise over another can be estimated when the compared economic entities satisfy identical needs of buyers, belong to comparable segments of the market and are in the same phase of the life cycle. If these conditions are not met, the comparison may be considered incorrect.

The disadvantages of a group of parametric methods are the risk of subjectivity and the inaccuracy of value judgments. It is often very difficult to objectively assess the strength and weaknesses of a competitor, as these are the parameters of the internal environment, and it is almost impossible to reliably predict the development of competing firms.

Another approach to an enterprise's competitiveness valuation relies on rating-based methods and is characterized by computations using information obtained from interviews of competing firms' employees (if possible) and from consolidated financial statements of competing companies. The data are used to estimate a mathematical model in which all data on competitor firms are reduced to coefficients. These indicators are then used to derive the rating of enterprises.

Different authors, depending on the area and objectives of research propose significantly diverse groups of factors to be included in the integral competitiveness indicator. In addition, various ways of carrying out expert assessments are proposed. Often, the resulting rating values can be visualized and presented in the form of scales, matrices, fields, polygons, and similar objects.

The obvious advantage of this group of methods can be attributed to the objectivity and accuracy of identifying a competitive position based on financial and economic performance. This methodological approach is quite convenient both from a logical point of view, and as a mathematical description. However, it has the following disadvantages:

- It is difficult to obtain reliable information about several parameters of competing firms, and sometimes it is simply impossible;
- expert scores of various parameters, employed in comparative valuations, may be subjective and unreliable.

Another group of techniques related to a more detailed study of the industry involves analysis of both the enterprise and its competitors, as well as forecasting the industry development. It requires information that reveals the internal mechanisms of competitors. Such information may include data on production volumes broken down into separate nomenclature items, detailed export and shipment data, production plans etc. Using these data allows to build a model of a competitor's behavior and to predict its future status and steps to adjust plans and strategy regarding the new information. These techniques, when used properly, allow to obtain a large analytical advantage over competitors. At the same time, it is necessary to consider the specific feature of this group of methods, which is the fragile balance between market research and industrial espionage. To facilitate competitiveness valuation on practice and to take the maximum use of its results, the valuation methodology must meet several requirements:

- to entail the key factors of competitiveness in the current economic environment;
- to ensure simplicity of calculations and economic interpretation of the estimates obtained;
- not to cause difficulties in estimating individual indicators included in the final indicator of an enterprise's competitiveness;
- to eliminate unnecessary subjectivity in the calculated values.

Focusing on the implementation of the above requirements, special attention should be paid to the coefficient method of an enterprise's competitiveness valuation proposed by Belousov (2001). The idea is to estimate certain coefficients characterizing the use efficiency of separate elements of the marketing mix in combination with financial performance indicators. In this case, the model for

competitiveness valuation will look as follows.

Stage A: Estimation of "market-testing of competitiveness" ratio
- A.1. A product competitiveness estimation: market share ratio; pre-sales ratio; sales change index.
- A.2. Estimation of price competitiveness (price level ratio).
- A.3. Estimation of competitiveness by the criterion of bringing the product to the consumer – outlet and distribution chain efficiency.
- A.4. Estimation of competitiveness by the criterion of product promotion (advertising activity ratio).

Stage B: Estimation of the net working capital ratio

Stage C: Estimation of the current ratio

Stage D: Estimation of the integral indicator of an enterprise's competitiveness as [D=A*B*C]

The competitiveness of the product (A.1) is estimated by the parameters:

- A.1.1. The market share ratio, which shows the market segment occupied by an enterprise, and is determined by the share of sales of the enterprise in total sales of the product in the market.
- A.1.2. The pre-sales preparation ratio, characterizing the efforts of enterprises to increase competitiveness by improving quality of product design. If the goods do not require pre-sale preparation, the ratio value is assumed to be equal to one.
- A.1.3. The ratio of change in sales, indicating the growth or decline in the competitiveness of the enterprise due to growth/decline in sales. It is calculated as a statistical growth rate.
- A.2. Price competitiveness is characterized by a price level ratio reflecting the growth or decline in the competitiveness of the enterprise due to the dynamics of product prices. It is defined as the ratio of minimum and maximum prices total to the doubled sales price of a company.
- A.3. Competitiveness measured by outlet and distribution channel efficiency relies on sales costs dynamics. This ratio shows the company's desire to improve competitiveness by improving distribution chain efficiency.
- A.4. Competitiveness as advertising activity ratio is estimated by the relative growth of advertising expenditure through one-year period. It indicates the will of an enterprise to keep up with its competitiveness by proper marketing and advertising effort.

The final indicator of "marketing-testing competitiveness" is obtained as the arithmetic mean of the above coefficients:

$$A = 1/6 \; (A_{1.1}+A_{1.2}+A_{1.3}+A_2+A_3+A_4) \tag{1}$$

In addition, to calculate the composite index of an enterprise's competitiveness, overall financial ratios are calculated using the data reported in balance sheet statement. To determine an enterprise's competitiveness, one might limit to assets and liabilities structure analysis using liquidity ratios and working capital ratios.

Current ratio is a measure of an enterprise's solvency, its ability to repay current (up to a year) liabilities and is calculated as the ratio of current assets to short-term liabilities.

The ratio of net working capital shows the sufficiency of the organization's own funds to finance current operations. To calculate it, first, non-current assets are deducted from equity, and then the resulting value is divided by the value of current assets. In the Russian practice of financial analysis, this ratio is used as an indicator of insolvency (bankruptcy) of the organization: the normal value of the ratio should be at least 0.1.

The integral indicator of an enterprise's competitiveness is defined as the product of the three ratios: "market-testing competitiveness", sufficiency of own working capital and current liquidity. According to the differentiation of the final values of the competitiveness coefficient, all enterprises are divided into different groups (Table 2).

***Table 2**: Classification of enterprises according to the value of integral competitiveness*

Group of enterprises	Coefficient value range	Characteristics of enterprises
Leaders	From 9 and above	As a rule, they have the maximum market share in sales, are leaders in pricing, cost optimization, they use a variety of distribution channels, etc. The attributable behavior for enterprises of this group is to protect their positions.
Candidates	from 3.1 to 9	Usually they fight for an increase in the market share of sales, exercising price dumping. The enterprises of the second group are characterized by a strategy of attack on all fronts of the business operations.
Followers	from 0.1 to 3	These enterprises pursue a policy of following the industry leader, avoid risk, but do not show passivity. They take decisions concerning their operations in the market carefully and rationally. Market followers try to copy the operations and activity patterns of leaders, while acting more prudently and relying on fewer resources. They are usually subject to attacks from candidates.
Market niche takers	from 0 to -6.9	Operate in small market segments that other competitors do not see or consider. The enterprises of the fourth group are characterized by a high level of specialization, a limited

		customer base, but at the same time a high level of prices. In their operations, they are most dependent on customers and rely on them.
Bankrupts	from -7 to -10	Accept external management regime, conduct anti-recession measures to get out of bankruptcy, carry out settlements with creditors or are liquidated.

Source: *Developed by authors.*

4. Results and discussion

The described methodology was applied to valuate competitiveness of an industrial enterprise. The results of calculations are presented in Table 3.

Table 3*: Indicators of competitiveness of an industrial enterprise*

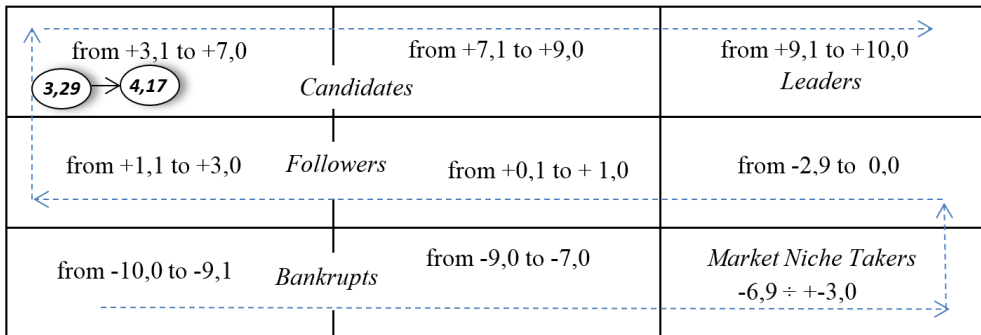| Indicator	01 Jan. 2017	31 Dec. 2017
1. ratio of marketing testing of competitiveness	0,87	0,91
- market share ratio	0,08	0,08
- pre-sales ratio	1,00	1,00
- sales index	1,17	1,22
- price level ratio	1,12	1,01
- distribution channel efficiency	0,89	1,03
- advertising ratio	0,98	1,09
2. Ratio of own working capital	0,62	0,68
3. Current ratio	6,09	6,77
Enterprise competitiveness coefficient	3,29	4,17

Source: *Authors' calculations.*

Analyzing the data of Table 3, it can be noted that over the year the enterprise's competitiveness slightly increased mainly due to the increase of sales, growth of distribution expenditure and advertising. The range of values allows to pre-classify this case into the group of market leadership candidates.

A visual display of all the situations considered in Table 2 represents the field of enterprise groups competing in the market. It is a rectangle divided into nine quadrants (segments), each corresponding to a certain coefficient of competitiveness from (-10) to (+10). The rectangle also contains the five groups of competition-distributed enterprises attributable to a given range of index values (Figure 1).

Despite several crisis trends observed in recent years, the studied business entity managed to improve its position in the market and gain a foothold in the sector of candidates for the role of leader, moving away from the lower level of enterprises-followers. Having information about competitive positions, the company can determine its advantages and disadvantages, as well as to choose the right strategy and tactics of behavior, adequate to the realities of the market.

Figure 1: *Field of enterprise groups competing in the market*

from +3,1 to +7,0 3,29 → 4,17	from +7,1 to +9,0 *Candidates*	from +9,1 to +10,0 *Leaders*
from +1,1 to +3,0 *Followers*	from +0,1 to + 1,0	from -2,9 to 0,0
from -10,0 to -9,1 *Bankrupts*	from -9,0 to -7,0	*Market Niche Takers* -6,9 ÷ +-3,0

5. Conclusion

It can be noted that the used model of assessing the competitiveness of the enterprise allows to adequately assess the level of competitiveness of the business entity in accordance with the realities of the modern industrial economy. A more accurate and multifaceted valuation of the competitive position of a company in the market will contribute to development and adoption of timely and competent managerial decisions.

Noting several practical advantages inherent in the coefficient method described above, it should be said that in the long term, given the conditions of the modern industrial economy, it is advisable to take into account additional factors of competitiveness that have not been described in the valuation model. First, that is innovation, which has become a key condition for development of the leading sectors of the economy. Currently, the large-scale use of innovations in economic operations is becoming one of the main sources of competitiveness and sustainable economic growth.

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