Integral indicator of enterprise development
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Abstract - In the article the essence of enterprise development is considered. Conceptual graphical model of enterprise development is formed. Approaches to the quantity evaluating the development of enterprises are analysed. The system of indicators, that includes not only quantitative, but also qualitative indicators is formed. The system of indicators included: indicators of potential, functioning and effectiveness of the enterprise development.

Key words – enterprise development, potential of enterprise, effectiveness, functioning, integral indicator, qualitative assessment, quantitative assessment.

I. Introduction

Unstable trajectory of the national economy, increasing of uncertainty and growing conditions of competition in the market give rise to problems of identification and evaluation of domestic enterprises development. Prevailing of short-term interests in the industrial and economic activities lead to the neglect of long-term perspectives and further loss of development opportunities. Gradual reduction of industrial enterprises potential slows their growth and causes worsening socio-economic situation in the country, confirming the relevance of the research topic.

Current requirement for the process of forming tools of evaluation and analysis of enterprise development becomes the need to consider both financial and non-financial indicators, and use of appropriate to the new realities methods of achieving the set results.


Despite considerable number of publications in this field and worked out tools of management development is not worked out the problem of identification of the enterprise development, determining the nature and properties of development, establishing quantitative assessment of development.

II. Enterprise development

The concept of development is common in the scientific literature. So along with enough popular categories innovations are used and such phrases as: the development of innovation, investment development, the development of innovative capacity, innovation development, marketing, social, social-economic development, potential of enterprise development etc.

Despite the frequency of use of the term "development" in researches, it focuses on issues of development and evaluation of the achieved results, while the sphere of identifying the presence of this process and the development of effective models of development remains unaddressed.

Based on processed of scientific literature [1-10], it can be argued that under term of development scientists understand the process of transition of enterprise to new quantitative or qualitative state under the influence of external or internal environment factors.

However, development is a changeable process that can change bankruptcy, degradation or stagnation at any stage of the life cycle of an enterprise, it means that enterprise development can not take place for some reason. An important feature is the lack of such state of enterprise, which eliminates not only its operating activity, but also the implementation of business activity.

Scientists agree, that development is characterized by the change of the enterprise potential. However, the concept of capacity is ambiguous and needs clarification. Often under it understands the maximum possible volume of production, or simply availability a certain number of resources.

However, the potential represents from one point of view the possibility of achieving a certain goal, and from the other one - the ability to realize it [11].

The worked out multilevel model of forming of potential of enterprise is in the article [12] distinguishes three kinds to potential: productive(workers, technology, informatively-administrative providing, power resources and capital assets), economic (business activity, marketing environment, productivity of activity) and institutional(economic, investment, financial activity).

It costs to notice, that productive potential in this case is examined as internal, and economic - as an external display at the market. Based on these assumptions was proposed conceptual graphic model of enterprise development (Fig. 1).

The most commonly used are two approaches to the evaluation of companies, namely scalar, by developing an integrated assessment; vector by comparing sets of indicators. A positive first approach is the ability to calculate the numerical values of integrated assessment for a number of companies and their subsequent comparison. A major disadvantage of this method is the ambiguity of assumptions about the weight of the constituent elements of integral index, since the formation of dynamic assessment for 3-5 years weight components may vary.

The second approach is devoid of this shortcoming, but it requires the development of methods of comparison of vector variables with the possibility of further analysis and comparison. It is clear, that the scorecard should contain a minimum number of them that will provide visibility interpretation of numerical values and convenient operation [13].
External environment (ExE)

Management of the enterprise (EM)

Internal environment (IE)

Potential of enterprise (PE)

Functioning of enterprise (FE)

Enterprise effectiveness (EE)

Enterprise Development (ED)

Legend: «IE→PE» – internal environment (factors) forms potential (opportunities, ability) of the enterprise; «PE→FE» – potential (opportunities, ability) realize through the functioning of enterprise (efforts); «FE→EE» – the functioning of enterprise (efforts) determines enterprise effectiveness (achievement); «EM→IE», «EM→PE», «EM→FE» – changes in the internal environment, potential or functioning of enterprise initiated by the management enterprise; «EM↔ED» – mutual influence of the environment on the enterprise development and vice versa.

Fig 1. Conceptual graphic model of the enterprise development

TABLE 1

<table>
<thead>
<tr>
<th>Names of indicators</th>
<th>Types of indicators</th>
<th>Descriptions</th>
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<tbody>
<tr>
<td>1. Indicator of external potential (opportunities) (I_{EP})</td>
<td>qualitative</td>
<td>Takes into account the range and life cycle of products, enterprise image, position in the domestic and foreign markets.</td>
</tr>
<tr>
<td>1.1. Indicator of market opportunities of enterprise (I_{MO})</td>
<td>qualitative</td>
<td>Takes into account the availability of financial, raw material and power resources.</td>
</tr>
<tr>
<td>1.2. Indicator of resource opportunities of enterprise (I_{RO})</td>
<td>qualitative</td>
<td>Takes into account quality of life, the state of economy, etc.</td>
</tr>
<tr>
<td>1.3. Indicator of socio-economic conditions (I_{SC})</td>
<td>qualitative</td>
<td></td>
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<tr>
<td>2. Indicator of internal potential (ability) (I_{IP})</td>
<td>qualitative</td>
<td></td>
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<tr>
<td>2.1. Indicator of capital-labor ratio (I_{CR}): Net book value of fixed assets/ Average number of employees</td>
<td>quantitative</td>
<td>Measures the amount of eligible assets (at net book value) per 1 employee.</td>
</tr>
<tr>
<td>2.2. Indicator of maneuverability ratio of own funds (I_{MF}): (Current assets - Current liabilities) / Equity capital</td>
<td>quantitative</td>
<td>Measures the financial capacity of enterprise to implement new projects</td>
</tr>
<tr>
<td>2.3. Indicator of other internal conditions (I_{IC})</td>
<td>qualitative</td>
<td>Considering introduced international standards, participation in associations and working together with other institutional agencies and organizations, changes in organizational structure management, training and retraining, conduct their own scientific and technological developments.</td>
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III. EVALUATION OF ENTERPRISE DEVELOPMENT

A model of evaluation of companies in [14] is based on establishing resultant (integral) index, which includes three components: assessment of the potential change, quantitative and qualitative changes. The potential change is calculated on the basis of the difference of its beginning and end. Thus for an eventual period an estimation is given on two signs: the multiplier potential (market position of the company) and the structure of potential (fixed assets, personnel, financial resources). In assessing the performance of quantitative changes included assessing the financial situation (income, return on equity, economic value added) and strategic change (productivity, market share enterprise, innovation, internal processes).

Qualitative changes are measured primarily by changing internal characteristics (quality, internal processes, management) and external characteristics of the enterprise (competitiveness, image, opportunities of entering on new markets).

Proposed in [15] approach to the definition of integral index of system efficiency of enterprise development is built on the method of establishment integral estimation that is formed from three components: potential (existing), functional organization and effectiveness. This approach takes into account the balanced system of indexes of Каплана-Нортона on the stage of construction panels of partial indexes, that is taken into account during the calculation of effectiveness. Available potential is estimated from its quality and resource intensity, and organization - through efficiency and other quantitative characteristics [16].

Despite some disadvantages considered approaches provide the basis for the formation of a coherent system of indicators of enterprise development, consisting of indicators of potential of enterprise (IP), functioning of enterprise (IF) and enterprise effectiveness (IE) [17].

The worked out structure of integral indicator of potential (IP) of enterprise is given in Table 1.

Integral indicator of potential of enterprise (Ip) can be represented as a function of indicators of external potential (IpE) and internal potential (IpI), which in turn are expressed in the form of individual indicators market opportunities of enterprise (IpMO), resource opportunities of enterprise (IpRO), socio-economic conditions (IpSC), capital-labor ratio (IpCR), maneuverability ratio of own funds (IpOF) and other internal conditions (IpIC).

\[ I_P = f(I_{PE}; \; I_{PI}); \]
\[ I_P = f(I_{CR}; \; I_{MO}; \; I_{RO}; \; I_{SC}); \]

The structure of the integral indicator of functioning of enterprise are presented in Table 2.

Calculation of integral indicator of functioning of enterprise can be represented as a function of individual indicators business activity (IpBA), operating activity (IpOA), capital productivity (IpCP), labor productivity (IpLP), business expectations (prospects) (IpBE), information-communication orientation (IpIO)

\[ I_e = f(I_{BA}; \; I_{OA}; \; I_{CP}; \; I_{LP}; \; I_{BE}; \; I_{IO}); \]

The proposed structure of the integral indicator of enterprise effectiveness are presented in Table 3.

Calculation of integral indicator of enterprise effectiveness (Ie) can be represented as a function of individual indicators of return on sales (IpRS), safety of development (IpSD)

\[ I_e = f(I_{RS}; \; I_{SD}); \]
Calculation of integral indicator of enterprise development ($I_D$) proposed to make the following equation:

$$ I_D = f(I_P; I_F; I_E). \quad (4) $$

In Eq. (1) - (4) the values of $I_P$, $I_F$, $I_E$ are examined as a function of number of implicitly defined functions, each of which may have additive or multiplicative form. For justification it is necessary to make a special type of function and important task that needs further study.

The system of evaluation indicators of the enterprise may be supplemented and modified according to the characteristics of the studied enterprise, industries, their activities and set goals and objectives of the study. Dynamic assessment of the enterprise should be based on establishing estimates for the period 3-5 years [5].

**Conclusion**

The current conceptual graphic model of enterprise development has allowed to develop a system of indicators of evaluating development. Which includes not only quantitative, but also qualitative indicators, that allow to objectively evaluate the potential of the enterprise and its implementation.

**References**


