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# Technologies for Assessing the Level of Enterprise Development

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***Abstract*: The purpose of the article is to develop proposals for improving the technology for assessing the level of enterprise development. It has been found that assessment of the level of the enterprise development provides a vision of the actual state of its development and allows to develop the necessary measures to overcome its low level. It has been proved that the practical use of the proposed approach for calculating the integrated indicator of the development level allows to regularly monitor the state of enterprises and substantiate the organizational support for the development of the enterprises under study. It has been revealed that increasing competitiveness will contribute to the development of a new strategy for scientific and industrial innovative policy based on supporting the activities of research and development centers, technopolises, and technology parks. It has been determined that the prospective development of enterprises must necessarily provide for further improvement in the distribution of their productive forces and strengthening the integrated development and specialization of the economy of regions, where the main focus should be made on deepening the specialization of individual economic regions in the development of the industries that have the necessary conditions for creating the effective raw material base, bringing the level of development of some industries in economic regions to the extent that meets the needs of the regions in the respective types of products, and optimizing the enterprise size according to their types in the economic regions in accordance with the requirements of a market economy.***

***Keywords*: development, economy, enterprise, market environment, need, optimization, products, region.***

## I. INTRODUCTION

The activities of the enterprise in the medium and long term depend on the formation and implementation of the organizational and economic development mechanism. At the same time, modern enterprises operate in a constantly changing market environment, which necessitates the projects for their development, and, consequently, the presence of methodological approaches that would allow to assess the existing and forecast level of the enterprise development.

The level of the enterprise development can be estimated through the assessment of its activities because the improvement of production parameters and business processes indicates an improvement of the enterprise performance, while the enterprise development is manifested through the improvement of these parameters. However, consideration of various approaches to assessing the enterprise development indicates the incompleteness of a scientific study of this problem, since the general indicators used in modern practice reflect no more than five components, mainly quantitative ones. The problem of determining an integrated indicator that would describe the values of the set of heterogeneous factors of the potential development remains unresolved. There are many methods for building aggregated, integrated, generalizing, or synthetic indicators, which differ by attributes – the ways of reducing indicators. For example, the taxonomic methods, factor analysis, heuristic methods of reducing dimensions, building a composite (integrated) latent quality indicator (or functioning efficiency) of a complex system, multidimensional scaling, and other methods are successfully used to find the generalizing, integrated indicators.

## II. LITERATURE REVIEW

The issues related to assessing the level of enterprise development were covered in the works of A.V. Vorotyntseva [1], O.V. Mazorenko [2], A.A. Omarova [3], V.M. Repnikova [4], V.P. Smolkina [5], S.N. Yashin [6], and others. An analysis of the literature on the research topic allows to identify the contradictions that prove the need to improve the technologies for assessing the level of enterprise development. The academicians [1], [2], [4] noted that each integrated indicator had its limits of application and both positive and negative sides. Not all of them take into account the fact that some of the partial indicators positively influence the measured value, while some influence it negatively. Therefore, the dimensionless values to which the initial indicators are reduced may not always be explained.

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## III. PROPOSED METHODOLOGY

### A. General description

An analysis of the approaches used in the theory and practice of business entities indicates that it is most advisable to formulate a comprehensive method for assessing the level f the enterprise development, which includes a comparison method, regulatory, balance, and forecasting methods.
The sum of elementwise potentials of the business entity development is found using the regulatory method.

The comparison method is based on finding the economic efficiency by its value in the underlying business entity. The economic efficiency in the balance method is estimated based on the value of economic resources and survey data. The statistical data of state bodies, legislative and regulatory documents regulating the activities of entrepreneurial structures serve as the information base of the article.

### B. Algorithm

The plan of the study includes the following measures: to improve the technology for assessing the level of enterprise development, to develop measures for the coordination of activities between the key business entities that ensure economic security, and to justify the situation on the rational use of resources in the context of the economic relations development.

### C. Flow chart

According to the plan, the study will be carried out using the following chart, where the development of entrepreneurial structures is considered as a mechanism arising from a set of factors of the economic environment (Fig. 1).

## IV. RESULT ANALYSIS

It is advisable to apply the method of taxonomic development indicator to build a generalizing integrated indicator of the enterprise development level, which always allows to reduce the set of characteristics of the phenomenon under study to one synthetic attribute. The advantage of this approach is that it does not require preliminary determination of subsets of strongly correlated features and does not lead to the determination of several uncorrelated factors. The technology for building an integrated indicator of the level of the enterprise development using the method of finding the taxonomic indicator is shown in Fig. 2.

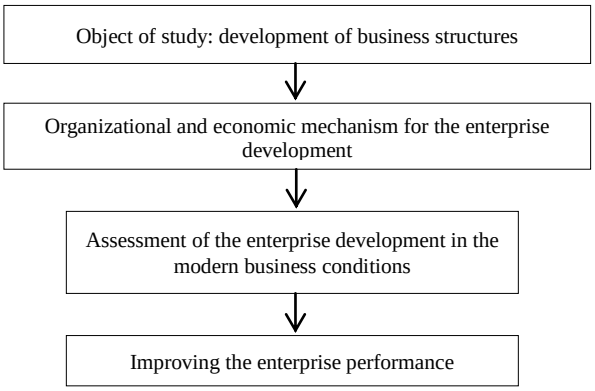


**Fig. 1.Flow chart of the research approaches to assessing the enterprise development in the modern business conditions**

Let us consider the proposed methods for calculating such an indicator for several enterprises and time intervals. A matrix of the output data for a certain period of time should be built to find the taxonomic indicator: $X = (X_{ij})$; $i = \overline{1,m}$; $j = \overline{1,n}$.

The first stage of this method is to form a set of indicators for the individual components of the organizational and economic mechanism of the enterprise development, which play a decisive role in the formation of the integrated indicator. After this, it is proposed to distinguish a relatively small number of indicators playing a decisive role in the formation of the integrated indicator from the composition of the a priori formed set of particular criteria.

The second stage is to determine the weight of indicators for each component. It is recommended to use the expert method for this. An important stage in building an integrated indicator of the development level is to separate the elements of observation into incentives and disincentives. Their choice is determined by their influence on the level of the enterprise development – positive or negative.

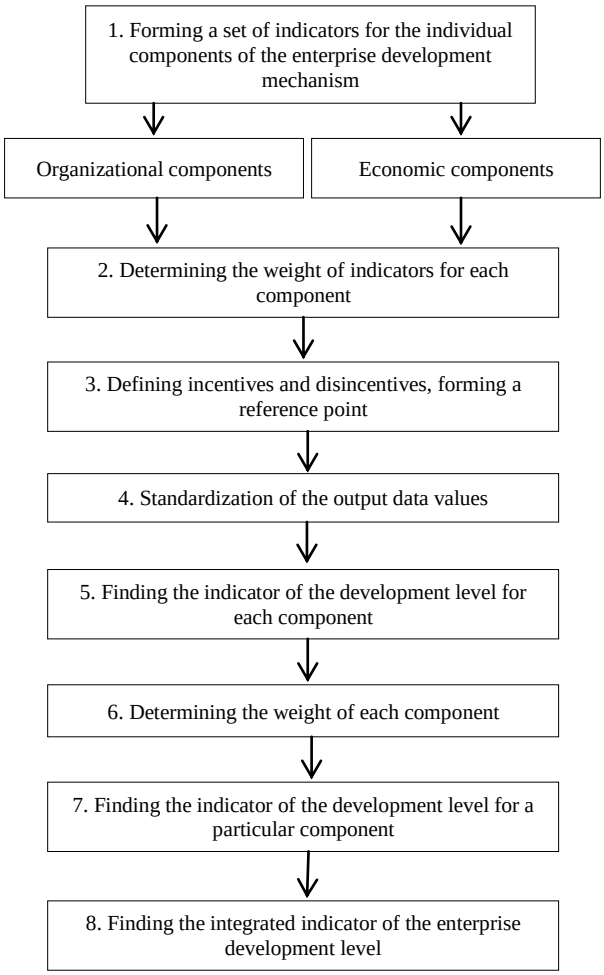


**Fig. 2.Flow chart of finding the integrated indicator of the enterprise development level**

For example, the indicators of incentives, the growth of which secures the enterprise development, include return on assets, return on production, and market share ratio.

The disincentives include indicators that cause an inhibitory effect on the enterprise development, for example: staff turnover rate, fixed assets depreciation rate, resource intensity ratio, and energy intensity ratio.

The next stage in finding the integrated indicator is to build a reference point. These can be standard or target values that allow to determine the achieved level of enterprise potential in comparison with a certain standard, i.e., to conduct not only an analysis of the dynamics of changes, but also a static analysis. At the same time, any researcher should be able to set target values using publicly available statistical reporting or relevant regulatory documents. This is why it is preferable to consider the existing standards as the target values of indicators, and the best or average values of indicators in the industry in the absence of the latter. The decision to accept an average or better value as a target is largely determined by the specifics of the industry. The next stage in the calculations is standardization of attributes because the indicators included in the observation matrix are heterogeneous and have different units of measurement. This is why it is proposed to carry out a standardization procedure to bring all the attributes to a one-dimensional form, i.e., a transition to some identical characteristics. After this, the indicator of the level of development for each component should be found. It is proposed to find the indicator of the level of development for each component ($I_P^K$) using the following formula:

$$I_D^K = \sum_{i=1}^{n} \beta_i \cdot z_i, \quad (1)$$

where $\beta_i$ is the weight of the $i$-th indicator of a particular component, and $z_i$ is the standardized value of the $i$-th indicator of a particular component.

It is proposed to find the development level indicator for each component by multiplying the development indicators of the respective components by their weight. It is proposed to find the general integrated indicator of the level of the enterprise development ($I_D$) using the following formula:

$$I_D = \sqrt{I_{ORG} \cdot I_{EC}}, \quad (2)$$

where $I_{ORG}$ is the indicator of the level of the enterprise development by organizational component; and $I_{EC}$ is the indicator of the level of the enterprise development by its economic component. Using the proposed approach to finding the integrated indicator of the development level in practice allows to regularly monitor the state of enterprises and substantiate their organizational support. The results of finding the integrated indicators of the development level for the enterprises under study are presented in Table I.

**Table-I: General integrated indicator of the development level for the enterprises under study in the Moscow region**

| Enterprises | Years | | | | |
|---|---|---|---|---|---|
| | 2014 | 2015 | 2016 | 2017 | 2018 |
| Global-Kart LLC | 0.217 | 0.244 | 0.277 | 0.264 | 0.286 |
| SKM LLC | 0.262 | 0.285 | 0.286 | 0.323 | 0.335 |
| Garant-Moscow | 0.317 | 0.353 | 0.371 | 0.295 | 0.313 |
| Meteor-IT LLC | 0.623 | 0.614 | 0.595 | 0.541 | 0.488 |
| Stolitsa LLC | 0.517 | 0.542 | 0.573 | 0.585 | 0.630 |
| Due Diligence LLC | 0.456 | 0.431 | 0.455 | 0.496 | 0.514 |

Stolitsa LLC has the best indicators of its activity during the study period. The enterprise had an average level of development in 2014 – 2017, and a high level in 2018. A stable average level of development was characteristic of Meteor-IT LLC and Due Diligence LLC. While there is a constant decrease in the value of the development indicator for Meteor-IT LLC, this index has had positive dynamic for LLC Due Diligence since 2015. The activities of Global-Kart LLC, SKM LLC, and Garant-Moscow LLC have been described by a low level of development over a long period. They require an immediate solution to the existing problems.

At the same time, a systematic assessment of the trends and patterns of the enterprise development indicates that along with certain positive changes associated primarily with the establishment of various forms of ownership and organization of production and management, a number of significant negative phenomena emerged, including a significant reduction in production, an increase in its value, a decrease in sales, and a decrease in the level of satisfaction of the population needs.

The established trends in market transformations were determined by numerous reasons, including the following that played the decisive role: there had been significant shortcomings in arranging the transition to a market management system – in particular, a hasty process of privatizing enterprises and liberalization of economic processes, after which the development of individual branches, enterprises and industries could not be managed; there had been a significant reduction in the volume of domestic raw materials for production, which led to a sharp decrease in output and an increase in the unit costs for its production. The availability of significant regional imbalances in the territorial distribution of the main components of productive forces is an essential aspect of the current crisis state of the enterprise development. Studies have revealed significant differences in the dynamics of production of certain types of products, which indicates an insufficient consideration of regional factors. The main reasons for the significant regional imbalances in the consumption of basic goods, which indicate the imbalance in the development of the national market, are the following: regional differences in the income level; specifics of production and its efficiency in certain regions and areas, which, in particular, determine the difference in retail prices; low territorial mobility of some goods due to high prices for transportation; and poor development of the market infrastructure. Besides, it has been found during the study that the main organizational and economic component that influences the efficient development management of enterprises of various forms of ownership and management is the innovative component, where the main goal of the innovative development is to obtain the maximum economic effect from each invention and idea introduced and turned into a commodity.

The quantitative indicators in relation to enterprises in various fields, which introduced innovations in their industries, are the source information on the dynamics of the innovative process development used to assess the development of innovative activities of enterprises.

Therefore, an efficient mechanism for investing in technological changes should be created to secure the innovative development of enterprises. Regional instruments of influence of regional innovative funds and targeted competitive financing on the implementation of the latest achievements of scientific and technological progress and state regulation of innovative processes should be strengthened. Shaping the active environment for the perception of innovation is a necessary condition for ensuring the successful development of enterprises. This should be facilitated by an appropriate legislative and regulatory framework, on the one hand, and by initiative measures to create organizational structures focused on innovation, revitalizing inventive activities, structural changes in the economy and new views on the development from the perspective of leadership development, on the other hand.

The existing legal framework for the formation and implementation of the priority development fields should be focused primarily on the selection and implementation of technical innovations. Their influence on encouraging entrepreneurship to innovative business is insufficient – in particular, due to the regular suspension of some provisions, as well as the declarative nature of many of them. The discipline of compliance by the state and other entities with their obligations to comply with laws and regulations remains weak. The fundamental principles of the state policy on securing the development of a national innovation system remain undefined in the Russian Federation. The state regulation of the development of the national innovation system should be focused on such areas as the formation of institutional support for the innovation-driven growth of the national economy, implementation of priority areas for the development of science and technology, as well as innovation, and program-targeted funding of scientific, technical, and innovative activities.

To secure an innovative breakthrough, not only the appropriate legislative and regulatory framework and structures that would allow following the progress of the implementation of relevant plans and programs should be formed, but reliable support of the mechanisms for assisting innovation from business and civil society is also required. At the same time, the concept of strengths and weaknesses should be transformed into the concept of relationships between business and consumers. The above assumes the formation of new specifics of the organizational and managerial potential of enterprises, which should be based on production, marketing, finance, and the experience of corporate governance. A high level of scientific and technological development in this aspect will allow to offer highly processed products for exchange to other regions and countries and to play a leading role in the implementation of high-tech international projects involving new concepts, new brands, products and services, and unique managerial experience, which will allow opening new and unknown markets.

## V. CONCLUSION

It can be summarized that an assessment of the enterprise development level provides a vision of the actual state of its development and allows to develop the necessary measures to overcome its low level. In addition, the practical use of the proposed approach for calculating the integrated indicator of the development level allows to regularly monitor the state of enterprises and substantiate the organizational support for the development of the enterprises under study. The above will allow increasing the competitiveness of enterprises and contributing to the development of a new strategy for scientific and industrial innovative policy based on supporting the activities of research and development centers, technopolises, and technology parks, on the development of venture business, small and medium innovative enterprises, encouraging the export orientation of high-tech industries, and expanding the domestic market for high-tech products. The prospective development of enterprises must necessarily provide for further improvement in the distribution of their productive forces and strengthening the integrated development and specialization of the economy of regions, where the main focus should be made on deepening the specialization of individual economic regions in the development of the industries that have the necessary conditions for creating the effective raw material base; bringing the level of development of some industries in economic regions to the extent that meets the needs of the regions in the respective types of products; and optimizing the enterprise size according to their types in the economic regions in accordance with the requirements of the market economy, and the latest achievements of science, technology, production, and progressive world experience.

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