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Business Performance Assessment Simulation of Enterprises Engaged in Production Textiles, Clothing

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Abstract. At all stages of the development of economic science, the key problem has been and remains the assessment of the efficiency of the functioning of economic entities. A feature of the proposed approach is to consider the efficiency of a commercial organization as a system with three blocks of indicators: at the input - indicators of the availability and state of resources, in the process of converting resources into a finished product - particular indicators of the efficiency of using certain types of resources, at the output - indicators reflecting the achievement of business goals. Closing this system is the final indicator of efficiency, which is defined as the ratio of output to input. The developed models of the final indicators are based on the use of factor analysis methods, which makes it possible to establish the degree of influence of each block of the system on the resulting indicator. Approval of the proposed approach in 23 economic districts of the Vitebsk region, mainly engaged in the production of textiles, clothing, leather and fur products; resulting in a massive increase in production efficiency. The main reserves for the growth of return on assets lie in the optimization of the size and structure of assets; whereas the main reserves for increasing the level of business profitability, assessed by the added value created, are in the system of converting resources into a finished product.

INTRODUCTION

The definition of the content of the efficiency assessment model in this study is based on the synthesis of key concepts that form this economic category: «model», «efficiency», «performance assessment».

The content of the concept «model» in various fields of science and practice is diverse. However, regardless of the field of application, the model is created for cognition or study of objects, phenomena and events. The concept of «model» is interpreted by the authors in various sources in different ways [1,2,3,4,5]. But even proceeding from definitions of a different nature, it can be concluded that in most cases a model is understood as a description of an object, object or property; visual embodiment of an object, object or phenomenon; the image of the object of research, etc.

Thus, a model is an object that reflects the most important features of the studied phenomenon or process. There can be several variations of the models of the same object, just as several objects can be described by one model. The complexity and versatility of real phenomena and processes, including economic ones, leads to the fact that the most successful way to study them is to build and research models that reflect a certain side of this reality. The latter leads to the fact that the model turns out to be simpler than the investigated phenomena or processes.

The concept of «efficiency» in economic science and practice is a fundamental part of its core and is subject to constant research by many authors. Some of them note that economic efficiency «reflects the interdependence of the costs of social labor invested in production, and the economic and social effect received from this by society, that is, the final result in the form of material goods and services, as well as intellectual values that society needs for its

existence and development [6]. Others emphasize the «ratio of results and costs to obtain them» [7]. Many authors understand economic efficiency as return in the form of income from various firm resources at its disposal. At the same time, effective activity presupposes obtaining the maximum result at the expense of available resources or obtaining a certain result with a minimum expenditure of resources.

Generalization of the opinions of the authors, theories of efficiency allows us to propose the following definition: efficiency is not only one of the characteristics of the quality of the final result of the organization's work, comparing this result with the costs of achieving it, but also the correct conclusion for the further development and existence of the organization.

Based on the proposed formulation, it should be noted that efficiency reveals the nature of the causal relationships of production. It reflects not so much the result itself, but at what cost it was achieved. Therefore, efficiency is most often characterized by relative indicators, which are calculated on the basis of two groups of characteristics (parameters) - results and costs. This, however, does not exclude consideration in the system of performance indicators and the absolute values of the initial parameters themselves.

Evaluation of effectiveness allows you to draw conclusions about how the product of the program translates into its result. Consequently, performance evaluation is the process by which it is determined how the total benefit from the implementation of an event, project or program is related to the total contribution and costs associated with that event.

Synthesizing research into the essence of the categories «model», «efficiency», and «performance assessment», the authors propose the following definition of the concept of a business performance assessment model.

The business performance assessment model is a reflection of the most important features of the business under study in the form of a system of indicators, between which there is a relationship and interaction, and the main purpose of which is to research and compare the results of activities for a certain period of time and then decide on the effectiveness of its functioning.

The following criteria are highlighted, which indicate the actions to assess the effectiveness of a business belong to the concept of a model:

1. clearly formulated subjects of assessment;
2. clearly formulated objects of assessment;
3. tools for evaluating effectiveness (technology for evaluating effectiveness);
4. system of interrelated indicators;
5. the ability to use different approaches to business valuation in one model.

MATERIALS AND METHODS

The study of the evolution of performance assessment models developed and applied in world theory and practice [6,7,8,9,10,11,12,13,14] allows us to conclude that they all correspond to the realities of their time, the peculiarities of national economies, the needs of certain user groups. At the same time, from the point of view of the definition of business performance assessment model and the selected criteria, proposed by the authors, some of them in their essence represent, rather, an approach to assessing efficiency, rather than a model.

The application of a systematic approach to the study of complex processes, which undoubtedly includes the functioning of a commercial organization, often leads to the need to consider these processes as a «black box» model, in which «input» and «output» are characterized by many parameters. When applied to assessing the functioning of an organization, it is not only a set of characteristics, but also the relationship between these characteristics. [15.16]

So, at the input, it is legitimate to consider the characteristics of attracted resources, which are closely related: the absence or insufficiency of one of them disrupts the production process and affects the efficiency of using other resources.

In turn, the use of resources is intertwined in the production process: less efficient use of some resources will require more intensive use of others.

At the output, a result appears, which will depend on the characteristics of the input, and on the efficiency of the process of converting resources into a finished product.

The most problematic is the choice of the final indicator for assessing the efficiency of the business, which should close the system, combine all its elements and satisfy the definition of the efficiency indicator as the ratio of the effect to the generator of this effect.

Considering all of the above, in this study, an attempt was made to simulate the assessment of business performance from the standpoint of a systematic approach, which can be clearly represented in the form of the following diagram:

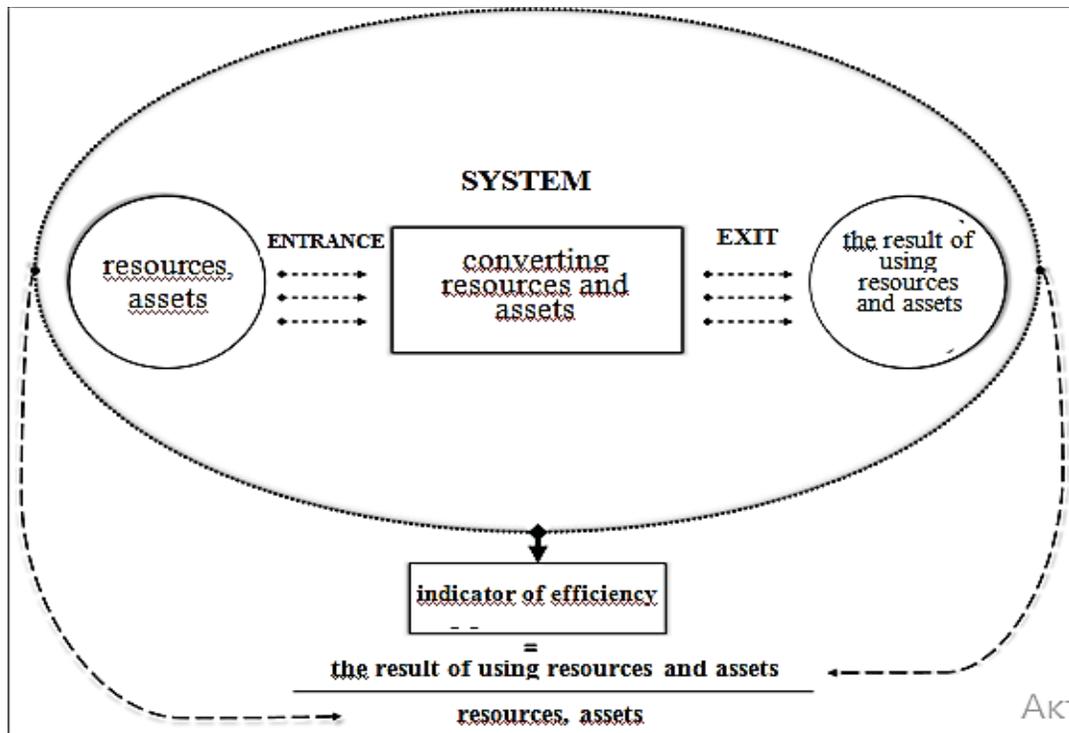


FIGURE 1. Business performance assessment model.

Thus, it is proposed to define the final indicator for assessing the effectiveness of a business as the ratio of one of the output indicators to the characteristics of the input. A system of indicators has been developed, which, according to the authors, can serve as characteristics of the input, the system for converting resources into a finished product and output.

So, the characteristics of the input include indicators of the availability of assets / resources of the organization (the value of assets and their individual groups, average indicators of the number of employees for the period, and others), characteristics of the structure of assets / resources (the share of machinery and equipment in the cost of fixed assets, the share of workers in the total number of employees of the organization, the proportion of receivables in current assets, etc.), as well as indicators of the state of resources (for example, the depreciation rate of fixed assets).

When developing indicators characterizing the system of transforming resources into a product of production, a classical resource and cost approach was applied to assessing production efficiency, which involves the use of direct and inverse indicators: labor productivity and labor intensity, wages and salaries, capital productivity and capital intensity and similar indicators of the return of resources / assets and capacity of released products.

In our opinion, the choice of indicators characterizing the result of a business's functioning should be targeted: for a business owner, this is an increase in its value, for an investor, it is making a profit, for management, it is getting a positive net cash flow that allows making current payments promptly, for building up the country's economic potential - added value created in the production process as a contribution of business to GDP.

The outlined approach made it possible to construct a number of multifactor models of the final indicators of the business, which were tested in real business conditions.

RESULTS AND DISCUSSION

Based on the fact that a comprehensive characteristic of the profitability of a business in most cases is obtained by the indicator of the profitability of assets, first of all, the modeling touched upon this final indicator.

A model was constructed using the method of sequential splitting of factors, which included the following indicators:

at the «input»:

- the proportion of short-term assets in the total amount of assets;
- the proportion of accounts receivable in the amount of short-term assets;
- the proportion of long-term assets in the total amount of assets;
- the share of intangible assets in the amount of long-term assets;

in «system»:

- indicator of production capacity, calculated by short-term assets;
- indicator of the return on receivables;
- indicator of production capacity, calculated for long-term assets;
- indicator of return on intangible assets;

at the «output»:

- the net profit of the organization.

When developing a model for assessing the effectiveness of a business, we proceeded from the criteria that allow the actions and technology of assessing the effectiveness to be attributed to the concept of a model.

Thus, the final indicator of the effectiveness of the return on assets has a clearly defined object of assessment - the effectiveness of the assets invested in production. The asset profitability model is revealed through the «use of assets» in the production system, for which indicators of various approaches are used: resource and cost. In addition, the model has its own individual technology, as it includes forward and reverse performance indicators. And finally, these indicators are interrelated.

The approval of the asset profitability model was carried out in the conditions of 23 subjects of the national economy. All of them are industrial organizations and mostly belong to the production of textile materials and products. At the same time, the existing dynamics of the final indicator of return on assets was taken into account: 11 objects of study showed a positive dynamics of this indicator, and for 12 - there was a tendency for a decrease in business profitability. The generalization of the research results was carried out separately for each of the indicated groups. At the same time, the task was not so much to establish the factors of success as to determine the factors that hinder success - the reserves for the growth of business profitability.

For the group of research objects that demonstrated an increase in the return on assets, a quantitative assessment of the influence of factors showed that a positive trend was formed under the influence of «output» indicators, but the «input» indicators had a significant restraining effect. In our opinion, the main reason for this situation is the presence of surplus assets that are often not involved in business activities in the reporting period. This is also proved by the existing reserves in the level of utilization of existing production capacities.

The generalization of the results of approval of the asset profitability model for economic entities that have a drop in the profitability level indicates the main reason for the current negative trend is the factors of the «system» in which assets are transformed into a finished product. None of these organizations have seen an increase in the return on assets and a decrease in the level of assets required to produce one ruble of the cost of production, that is, the capacity of production.

The increased interest in the indicator of value added in the national economy has led to the fact that added value is considered today not only as an indicator of the production effect, but also as an indicator of the financial effect, combining the interests of the owner, the state and employees. Consequently, this indicator can rightfully be considered the final indicator of the functioning of the business. As an indicator of business efficiency, in our opinion, it is advisable to consider the added value per ruble of resources involved in the business.

Observing the designated criteria of the business performance assessment model, a multifactor model of the «value added per ruble of resources» indicator was built, which included the following characteristics:

at the «input»:

- the ratio of the average annual cost of fixed assets and their active part;
- the ratio of the average annual cost of working capital and inventory;
- the ratio of the total number of employees and the number of workers;

in «system»:

- capital intensity of products, calculated for the active part of fixed assets;
- stock capacity of products;
- wages and salaries of products;
- labor productivity of one employee;

at the «output»:

- gross value added.

When conducting a study in real business conditions, it was revealed that out of the entire set of studied economic units, only two organizations have a positive trend in both the return on assets and value added per ruble of assets. According to the presence of negative tendencies, coincidences were observed in seven objects of study. For the majority of organizations that work on the processing of customer-supplied raw materials, there are negative trends in profitability indicators and an increase in value added indicators.

An attempt to establish the factors that influenced mainly positively on the dynamics of the value added per ruble of resources, led to the conclusion that in most cases these are characteristics of «input» and «output». The main part of the studied organizations demonstrates an increase in production capacity indicators for the resources involved, which leads to a decrease in the added value created per ruble of resources.

CONCLUSION

In modern conditions of development of scientific economic thought, the need to define the concept of «business performance assessment model» is emerging. The actively developing sphere of entrepreneurship requires the development of tools for finding ways of its development, for determining possible reserves for increasing efficiency. The theoretical and methodological solution of these issues requires, according to the authors, clarification and delineation of the concepts of a business performance assessment model and an approach to business performance assessment. In this study, these concepts are delimited as follows: the narrower concept of «approach» is considered as a set of indicators for assessing the performance of an organization, while the concept of «model» combines different approaches, has a certain technology and assessment tools, covers a system of interrelated indicators, has clearly formulated objects and subjects of assessment.

The developed models for assessing the efficiency of business functioning in terms of the final indicators of return on assets and value added per ruble of resources correspond to the criteria formulated in the study.

The developed models were tested in the conditions of functioning of 23 economic entities of the Vitebsk region of the Republic of Belarus. The Vitebsk region occupies key positions in the production of textile materials and products, and therefore the main contingent of research objects is the organization of this type of economic activity.

Evaluation of the functioning efficiency of the selected research objects using the asset profitability model showed that the main growth reserves of this indicator lie in the optimization of the size and structure of assets. It should be noted that this assessment largely reflects the interests of the owner. At the same time, in assessing the contribution of real business to the creation of gross domestic product and gross national income, the value added indicator prevails. Studies have shown that the main reserves for increasing the level of business profitability, assessed by the created added value, are laid down in the system for converting resources into a finished product, that is, in increasing the level of use of these resources in the production process, in the development of detailed resource conservation programs.

REFERENCES

1. A. A. Arkhipov, *Economic Dictionary* (Prospect, Moscow, 2016), p. 930.
2. E. F. Borisov, *Reader on Economic Theory* (Yurist, Moscow, 2000), p. 536.
3. Yu. A. Brigham and L. G. Gapenski, *Financial Management: A Complete Course* (School of Economics, St. Petersburg, 2007), p. 669.
4. V. A. Konoplitsky and A. B. Filina, *Explanatory Dictionary of Economic Terms* (Alterpress, Moscow, 2017), p. 398.
5. L. E. Romanova and L. V. Davydova, *Economic analysis: textbook* (Peter, St. Petersburg, 2015), p. 329.
6. A. Yu. Gorodnichev, "Comparative analysis of modern models of analysis and evaluation of the performance of enterprises based on efficiency" in *Audit and financial analysis*, edited by Yu. V. Chistyakov (Publishing House "DSM Press", Moscow, 2006), pp. 72–79.
7. E. V. Gradoboev, "The problem of classification of methods for assessing the efficiency of an enterprise" in *Izvestiya Irkutsk State Economic Academy*, edited by A. P. Sukhodolov (publishing house Baikal State University, Irkutsk, 2007), pp. 59-61.
8. F. Kh. Doronina, "An integral approach in the comprehensive assessment of the efficiency of an enterprise" in *Bulletin of the Moscow University. Series 1: Economics and Management*, edited by V.N. Chubarikov (Allerton Press, Inc., Moscow, 2017), pp. 40–47.

9. N. Yu. Zhukovskaya, "EVA as a tool for enterprise value management" in *Bulletin of SGUTiKD*, edited by A. V. Goryachev (publishing house Sochi State University, Sochi, 2011), pp. 46-50.
10. R. S. Kaplan and D. P. Norton, *Strategic unity. Creation of synergy of the organization using a balanced scorecard* (ZAO "Olimp-Business", Moscow, 2012), p. 486.
11. G. V. Meshkova, "Basic approaches to the analysis of the efficiency of enterprises in a market economy" in *International Research Journal*, edited by A. I. Menshakov (Publishing house Institute of electrophysics URO RAS, Yekaterinburg, 2016), pp. 62–67.
12. A. A. Nikolaenko and T. A. Khudyakova, *Business performance management based on BPM* (Yuurgu, Chelyabinsk, 2017), p. 114.
13. O. V. Kharamova, "Model for assessing the level of economic efficiency of enterprises" in *Kazan State University of Architecture and Civil Engineering*, edited by E. A. Vdovin (Publishing house Kazan State University of Architecture and Civil Engineering, Kazan, 2013) pp. 9–18.
14. G. M. Kharisova, "Model of economic value added (EVA) and its application in substantiating the strategy of integrated formations in the real sector of the economy" in *Kazan State University of Architecture and Civil Engineering*, edited by E. A. Vdovin (Publishing house Kazan State University of Architecture and Civil Engineering, Kazan, 2015), pp. 1–15.
15. A. Greasley, "Using business-process simulation within a business-process reengineering approach" in *Business Process Management Journal*, edited by Professor Majed Al-Mashari (Emerald Group Publishing Limited, London, 2003), pp. 408-420.
16. V. A. Shekhovtsov, "Towards validating QOS requirements using stakeholder assessments of simulated service qualities" in *Eastern-European Journal of Enterprise Technologies*, edited by D. A. Demin (PC Technology Center, Kharkov, 2010), pp. 4-8.