THE METHOD OF ESTIMATION OF ECONOMIC POTENTIAL OF THE INDUSTRIAL ENTERPRISE

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Abstract — This article describes the development of the author's methodology for assessing economic potential. It is based on rapid assessment, which is carried out on three main components of economic potential: production capacity, financial potential and intellectual potential. The evaluation of indicators in this methodology will be carried out by the method of expert assessments, using the example of the industrial enterprise of PJSC "Nizhnekamskshina". The carried out approbation of the developed methodology allowed to make a number of analytical conclusions concerning the economic potential of PJSC "Nizhnekamskshina": during 2014-2015. Economic potential of the enterprise was characterized by a low level of financial and intellectual potential, in 2016 this indicator was upgraded to an average level due to an increase in the return on intangible assets. In 2017 average level of economic potential was maintained as well.

The main problem side of the enterprise identified in the analysis is a low level of financial capacity which characterizes the critical insolvency of the enterprise and strong dependence on borrowed sources of financing. Accordingly, capital restructuring is one of the priority strategic tasks of PJSC "Nizhnekamskashina" and the main reserve of growth of financial and economic potential.

Keywords — economic potential, analysis, method of peer review, production potential, financial potential and intellectual potential, industrial enterprise.

I. INTRODUCTION

The Russian tire market is considered to be as one of the most promising and fastest growing in the world. Every year the country increases the number of cars, which generates demand for tires. All this creates good opportunities for further development of the domestic tire industry, including PJSC "Nizhnekamskshina".

PJSC "Nizhnekamskshina" is the largest enterprise among Russian tire factories in terms of production capacity, volume and assortment of products. The tasks facing PJSC "Nizhnekamskshina" in 2018 are aimed at implementing the marketing strategy and further developing of the company. An important factor in achieving these goals remains the task of ensuring the uninterrupted operation of equipment, reducing the cost of manufactured products, including through the competent organization of the production process in all its sections and redistribution.

In the process of assessing their activities, national enterprises continue to apply standard methods of financial analysis. However, at present, the technologies by which an enterprise can assess its current state and develop effective and efficient strategies for future development, undergo significant changes [1]. One of the urgent tasks of improving the toolkit for diagnosing economic activity of an enterprise is the use of integrated indicators that allow to reflect the most important aspects of the functioning of economic entities, as well as the development of methodological approaches to their evaluation.

One of the indicators is the economic potential of the enterprise. Economic potential is understood as a set of available types of resources that are interrelated, the use of which allows achieving economic effect. At the same time, economic potential reflects the potential of the enterprise, expressed in achieving a positive economic effect in the long term. The idea of the size of the economic potential of the enterprise and its individual elements

provides additional opportunities for targeted strategic and operational management.

II. METHODS

The analysis of a number of methodological approaches [2,3,4] allowed to develop an author's methodology for assessing economic potential. It is based on rapid assessment, which is carried out in three main blocks:

- evaluation of the production potential (PP);
- assessment of financial capacity (FI);
- intellectual potential analysis (IP).

Production potential should be understood as an enterprise's ability rationally produce products and services, determined by availability of labor resources, fixed and circulating production assets and the efficiency of their use [5].

Financial potential of the enterprise is determined by the security and efficiency of the distribution and use of financial resources, which is identified by levels of income, solvency, financial stability, business activity and profitability.

Intellectual potential in a narrow sense, characterizes the equipment of the enterprise with objects of intellectual property, in managerial and accounting designated as intangible assets and the degree of their implementation efficiency in the processes of economic activity [6]. In a broader sense, the intellectual potential in addition to the above-mentioned also includes the level of scientific, technical and information support of economic activities, as well as intellectual abilities, knowledge and skills of personnel.

The evaluation of the indicators in this methodology will be carried out by the method of expert assessments, i.e. the values of the levels for each indicator are selected according to the methods of experts in the field of financial and economic activity analysis, for example, the methods of Fomina-Starovoitova and Valeeva-Isaeva, offering to evaluate the integral indicator based on the results of ranking rating of its production, material and personnel components [4].

III. MAIN INDICATORS WERE SELECTED FOR THREE COMPONENTS OF THE ECONOMIC POTENTIAL

On the basis of expert assessments, two threshold values of each indicator are formed (upper bound of low level and upper limit of mean level) dividing the set of numbers into three ranges of values corresponding to three qualitative levels: A is high, B is average; C is low [7-9].

Three main indicators were selected for three components of the economic potential. Levels of indicators determine the level of the evaluation block. The levels of composite evaluation blocks determine the level of the integral indicator of economic potential [10]. The logic of identifying the levels of economic potential and its components is presented in Table 1.

TABLE 1 - THE LOGIC OF DETERMINING THE LEVEL OF POTENTIAL

The level of the economic potential of the enterprise or its component	Corresponding combinations of levels of indicators assigned by the results of rapid assessment
High level (A)	all three indicators have level A
	two indicators have a level A, one indicator - level B
The average level of the component of the economic potential of the enterprise (B)	two indicators of level A, one indicator of level C
	one indicator of level A, one indicator of level B, one indicator of level C
	two indicators of level B, one indicator of level A
	all three B-level indicators
	two indicators of level B, one indicator of level C
Low level of the component of the economic potential of the enterprise (C)	two indicators of level C, one indicator of level A
	two indicators of level C, one indicator of level B
	all three levels of level C

It is necessary to detail the system of indicators proposed to evaluate the production, financial and intellectual components of economic potential.

For the rapid assessment of the level of production potential, the following indicators were chosen: change in capital productivity, change in material output, change in output per worker, and expertly determined their threshold values.

The index of capital productivity does not speak about efficiency of the use of production assets, but only shows how the volume of the products received from the sale (i.e. revenue) correlates with the value of the means of labor available to the organization [5]. It is possible to draw conclusions about efficiency of the use of production assets by comparing the rate of return on investment in dynamics over a number of years, or by comparing it with the same indicator for other similar enterprises in the same industry.

The indicator of capital productivity in this methodology will be considered in dynamics, i.e. the change in capital productivity (ΔCp) as the ratio of the level of capital productivity at the end of the period (Cptn) to the level of capital productivity at the beginning of the period (Cpt0) is calculated:

$$\Delta C_p = C_{p_{tn}} \div C_{p_{t0}} \qquad (1)$$

An indicator of the material component in this methodology was the change in material return (ΔMr) [12, p. 96], which is calculated as the ratio of the level of material output at the end of the period (Mrtn) to the level at the beginning of the period (Mrt0) according to the formula (2):

$$\Delta M_r = M_{r_{tn}} \div M_{r_{t0}} \qquad (2)$$

Development per worker is measured by the number of products produced per unit of working

time or per one average worker or worker per year (quarter, month). This is the most common and universal indicator of labor productivity.

The change in output (ΔDp) is calculated as the ratio of output at the end of the period (Dptn) to output at the beginning of the period (Dpt0) according to the formula:

$$\Delta D_p = D_{p_{tn}} \div D_{p_{t0}} \qquad (3)$$

Table 2 presents the threshold values of production indicators and their correspondence to the levels of production potential.

TABLE 2 - EXPERT EVALUATION OF PRODUCTION INDICATORS (EXPERT EVALUATION OF PRODUCTION INDICATORS)

Indicator name	High level (A)	Average level (B)	Low level (C)
Capital productivity	> 1,2	0,7 – 1,2	< 0,7
Material return	> 1,2	0,7 – 1,2	< 0,7
Development per employee	> 1,2	0,7 – 1,2	< 0,7

To assess the financial component of the economic potential, a rapid assessment is carried out on the main indicators characterizing the liquidity, solvency and financial stability of the enterprise.

The coefficient of financial independence (the coefficient of autonomy) characterizes the ratio of equity to the total amount of capital (assets, currency of the balance) of the organization. The ratio shows how the organization is independent of creditors. The lower the value of the coefficient the more the organization is dependent on borrowed sources of financing the less stable is its financial position. Both the numerator and denominator of the formula are reflected in the balance sheet of the organization, where the amount of assets is always equal to the amount of the organization's own and borrowed capital.

The growth in the coefficient of financial independence indicates that the organization increasingly relies on its own sources of financing.

The total liquidity ratio (CT.L.) is calculated as the ratio of the amount of Cash, short-term financial investments (ShFI), receivables (AR) and inventories (H) to short-term liabilities (ShL):

$$C_{T.L.} = \frac{Cash + ShFI + AR + H}{ShL} \qquad (4)$$

This ratio characterizes the adequacy of the company's current assets to cover its short-term liabilities. The higher the value of the total liquidity ratio the higher is the liquidity of the company's assets.

The profitability of all assets (Pa.a) is defined as the ratio of the net profit (NP) to the average annual value of the total assets (VTAa.a.) of the enterprise in percentage terms and is found by the formula (5):

$$P_{a.a.} = \frac{NP}{VTA_{A.A.}} \times 100\% \qquad (5)$$

As a result of the calculation the net profit is calculated from each ruble invested in the organization's assets. For each of the listed financial indicators you should determine the average value for the analyzed period using the following formula:

$$MVI = \frac{IV_{t0} + IV_{tn}}{2} \qquad (6)$$

where MVI (for the period) - the average value of the analyzed indicator for the period under study;

IVt0 - the value of this indicator at the beginning of the period;

IVtn - the value of this indicator at the end of the period.

Table 3 presents the threshold values of financial indicators and their compliance with the levels of financial capacity.

TABLE 3 - RATING OF THE FPP FOR FINANCIAL INDICATORS

Indicator name	High level (A)	Average level (B)	Low level (C)
The average value of coefficient of financial independence	> 0.5	0.3 – 0.5	< 0.3
The average value of total liquidity ratio	> 2.0	1.0 – 2.0	< 1.0
The average value of profitability of all assets	> 15%	10 – 15 %	< 10%

IV. ANALYSIS OF EFFECTIVENESS OF INTANGIBLE ASSETS

Analysis of effectiveness of intangible assets, which is an integral part of analysis of efficiency of the use of company resources, is necessary in the current economic conditions. The main objective is to determine the reserves to increase efficiency of using intangible assets of the enterprise [13].

As an indicator of effectiveness of involvement of enterprise intellectual property in the process of economic activity, the level of in-production returns (LPP) was chosen [14]. The change in the level of in-production returns (ΔLPP) is calculated as the ratio of LPP at the end of the period (LPPtn) to LPP at the beginning of the period (LPPt0) [15]:

$$\Delta LPP = LPP_{tn} \div LPP_{t0} \qquad (7)$$

The coefficient of intellectualization of labor. This indicator can be regarded as new integral, statistical, probabilistic and macroeconomic quantitative measure of the "informatization" of the complex evolving system that functions as a self-organizing set of interactions of varying degrees of effectiveness between the elements of this system.

The change in the level of the intellectualization of labor (ΔCil) [16] is calculated as the ratio of the indicator at the end of the period (Ciltn) to the indicator at the beginning of the period (Cilt0):

$$\Delta C_{IL} = C_{IL_{tn}} \div C_{IL_{t0}} \qquad (8)$$

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Profitability of intangible assets (Pia) - characterizes the amount of profit received from each ruble of intangible assets [17].

The change in profitability of intangible assets (ΔPia) is calculated as the ratio of the indicator at the end of the period (Piatn) to the indicator at the beginning of the period (Pia$_{t0}$):

$$\Delta P_{IA} = P_{IA_{tn}} \div P_{IA_{t0}} \qquad (9)$$

V. RESULTS AND DISCUSSION

Using the methodology described above. Economic potential of the industrial enterprise of PJSC "Nizhnekamskshina" was analyzed. The results of the analysis are given in Table 4.

TABLE 4 - KEY INDICATORS OF THE ECONOMIC POTENTIAL OF THE ENTERPRISE

Indicator name	Value			
	2014	2015	2016	2017
Indicators of production potential				
Rate of growth capital productivity	0,80	0,82	1,11	0,88
Rate of growth of material return	0,47	0,54	0,55	0,54
Rate of growth development per employee	0,91	0,95	1,32	1,04
Indicators of financial potential				
Coefficient of financial independence	0,046	0,046	0,047	0,05
Coefficient total liquidity ratio	0,49	0,47	0,47	0,53
Coefficient of profitability of all assets	0,81 %	-0,21 %	0,10 %	0,81 %
Indicators of intellectual potential				
The growth rate of the level of intra-productive return of intangible assets	0,56	0,56	2,38	0,84
The growth rate of coefficient of intellectualization of labor	1,64	1,69	0,56	1,24
The growth rate of profitability of intangible assets	0,54	0,63	3,04	0,86

Next it is necessary to determine the levels of indicators of the production potential corresponding to data presented in Table 4, taking into account the threshold values and visualize them in the form of a histogram (Fig. 1).
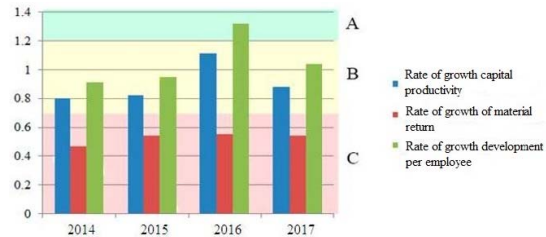

Fig.1 Levels of indices of production potential of the Public Company "Nizhnekamskshina" for 2014 - 2017.
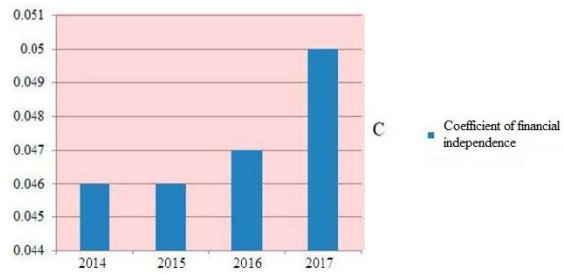

Fig.2 Levels of the coefficient of the financial independence of the Public Company "Nizhnekamskshina" for 2014 - 2017

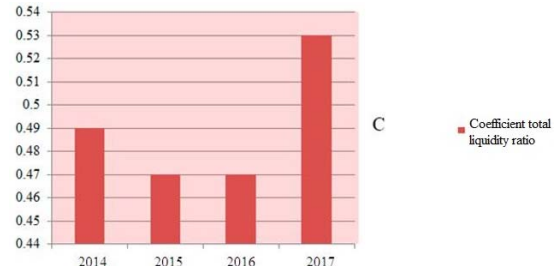Figure 3 illustrates the levels of the general liquidity ratio.

Fig. 3 Levels of the total liquidity ratio of the Public Company "Nizhnekamskshina" for 2014 – 2017
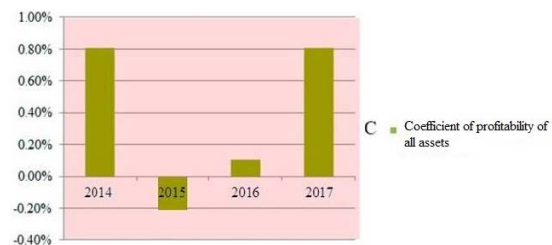

Fig. 4 Levels of the coefficient of profitability of all assets of the Public Company "Nizhnekamskshina" for 2014 – 2017
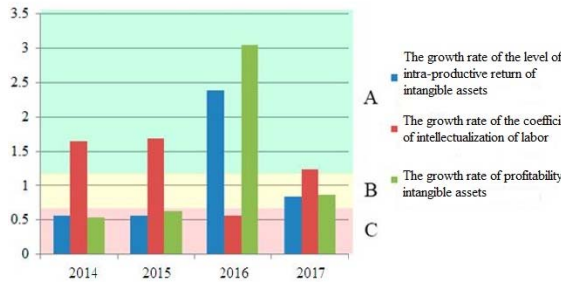
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Fig. 5 Levels of financial independence of the company "Nizhnekamskshina" for 2014 - 2017.

Figure 6 illustrates the levels of the components of the economic potential: production capacity, financial capacity, intellectual potential.
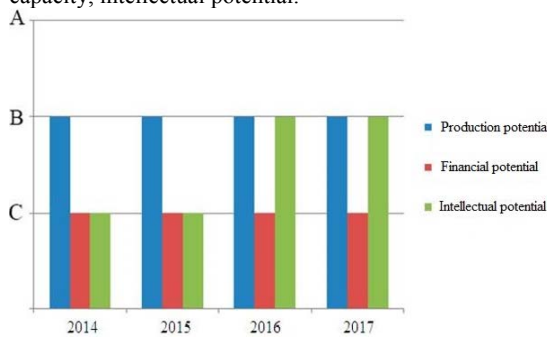

Fig. 6 Levels of indicators of the economic potential of the Public Company "Nizhnekamskshina" for 2014 - 2017.

Based on the levels of components it is necessary to determine the integral levels of the economic potential of PJSC "Nizhnekamskshina" for the period 2014-2017. To this end, it is necessary to reduce the levels of the components of the economic potential in Table 3.2, and also to identify integral levels of economic potential in it [14].

TABLE 5 - LEVELS OF ECONOMIC POTENTIAL OF THE PUBLIC COMPANY "NIZHNEKAMSKSHINA" FOR 2014 - 2017

Indicator name	Levels of indicators				Levels of intellectual potential			
	2014	2015	2016	2017	2014	2015	2016	2017
Production potential	B	B	B	B				
Financial potential	C	C	C	C	C	C	B	B
Intellectual potential	C	C	B	B				

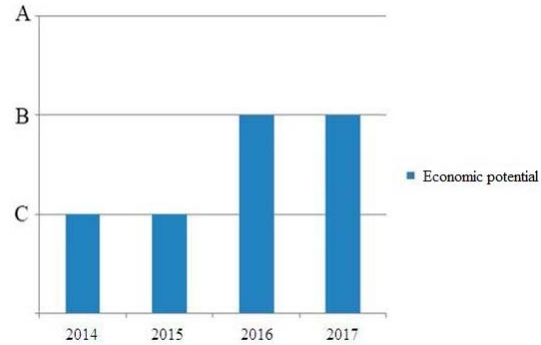Figure 7 illustrates the levels of the enterprise's economic potential for the analyzed period.

Fig.7 - Levels of economic potential of the Public Company "Nizhnekamskshina" for 2014 - 2017.

VI. CONCLUSION AND RECOMMENDATIONS

The carried out approbation of the developed technique allowed to make a number of analytical conclusions concerning the economic potential of PJSC "Nizhnekamskshina":

- in 2014, the economic potential of the enterprise was characterized by a low level, due to the low levels of financial and intellectual potential of PJSC "Nizhnekamskshina." The production component was characterized by an average level;

- the level of economic potential of PJSC "Nizhnekamskshina" in 2015 is low. Components retained the rating of the previous year;

- In 2016, the level of the company's economic potential was raised to an average level due to the growth of intellectual potential to the average level, which in turn was achieved by increasing the return on intangible assets. This trend is very favorable;

- In2017 the overall level of the economic potential of the enterprise has not changed, i.e. preserved the average level, which can be said about its components.

Thus the enterprise of PJSC "Nizhnekamskshina" during 2014-2015 was characterized by an average level of economic potential, in it 2016 increased this indicator to an average level and in 2017maintained an average level of economic potential.

The main problematic side of the enterprise identified in the analysis is a low level of financial potential, which is primarily due to low current liquidity ratio (0.53) and financial independence ratio (0.05). This indicates that the current assets of the enterprise are sufficient only to cover 53% of short-term liabilities and in the capital structure own only 5% share. The indicated values characterize the critical insolvency of the enterprise and strong dependence on borrowed sources of financing. Accordingly, capital restructuring is one of the priority strategic tasks of PJSC "Nizhnekamskashina" and the main reserve of growth of financial and economic potential.

In addition to financial component, the growth factors of the company's economic potential are to the increase in the levels of production and intellectual potential.

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The most problematic aspect of the production potential of PJSC "Nizhnekamskshina" is the growth rate of material output, as it was revealed that the material output of the enterprise during the analyzed period is more than 30% each year. This testifies to the urgency of finding directions for rationalizing the use of material resources. Other reserves of growth in productive capacity include an increase in the rate of growth of capital productivity and production to a high level. Experts believe that the high level of production potential corresponds to a growth of more than 20% per year.

As for the intellectual potential, the levels of its indicators during the analyzed period had very unstable dynamics. In 2017 coefficient of intellectualization of labor was high, profitability and level of intragroup output of intangible assets were characterized by an average. This indicates the availability of reserves for the growth of economic potential of the enterprise by increasing efficiency of the use of intellectual property, in other words, through the intensification of innovative development [15].

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REFERENCES

[1] Efimova O.V. Financial analysis / O.V. Efimova. - 4 th ed., Pererab. and additional. - Moscow: publishing house "Accounting", 2015. - 528 p.

[2] Fomin N.Yu., Dyrdonova AN, Andreeva E.S. Economic potential of the enterprise: methodical approach // Management of sustainable development. - 2017. - No. 1 (08). - P. 31-36.

[3] Fomin P.A., Starovoitov M.K.. Features of an estimation of industrial and financial potential of the industrial enterprise // Average vocational training. - 2013. - No. 11. - P. 24-37.

[4] Glazyev S. Prospects for economic growth in 1996. / / Issues of economics. - 1996. - №5.

[5] Ishmuradova I.I., Ishmuradova A.M. Stochastic modeling of economic activity of costs on Innovation of the organization of the Republic of Tatarstan, in the formation of business processes // Revista Publicando – 2017. – Vol. 4 – No 12. (1) P. – 545-559.

[6] Ishmuradova I.I., Shinkevich A.I. The state of modeling business processes in the Republic of Tatarstan in the conditions of an innovative economy // Science of Krasnoyarsk. 2016.-. Issue 6-2 (29). - p. 98-103.

[7] Parushina N.V. The basic directions of the analysis and forecasting of the analysis of a financial condition according to the data of the accounting (financial) reporting of the organizations // International accounting. - 2012. - № 2. - P. 55-63.

[8] S.Yu. Glazyev. Management of development is a factor of sustainable economic growth // Economic Policy: Strategy and Tactics. - 1999. - №4.

[9] Sheshukova T.G., Kolesen E.V. The economic potential of the enterprise: essence, components, structure // Bulletin of Perm University. - 2011. - №4. - P. 118-127.

[10] Wojciechowska I.A. Potential of the enterprise as the basis of its competitiveness // Problems of modern economy. - 2010. - №1. - P.27-35.

[11] Ohlson J. The Theory of Value and Earnings, and an Introduction to the Ball–Brown Analysis // Contemporary Accounting Research. 1991. 7(1): P. 1 — 19.

[14] Shinkevich A.I., Galimulina F.F., Moiseyev V.O., Avilova V.V., Kuramshina K.S., Ishmuradova I.I. (2016). Features of Integrative Relations between Science, State and Industry in Russia and Abroad, International Review of Management and Marketing, 6(S2), 142-148.

[15] Shinkevich M.V., Shinkevich A.I., Chudnovskiy A.D., Lushchik I.V., Ishmuradova I.I. (2015). Formalization of Sustainable Innovative Development Process in the Model of Innovations Diffusion, International Journal of Economics and Financial Issues, 6(1), 179-184