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Production Strategy Selection Based on Diagnostics of the Economic Potential of an Industrial Enterprise

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Abstract: The article presents indicators for assessing the marketing and innovation, technical and technological, organizational, personnel and investment and sales potentials of an industrial enterprise, developed by the authors based on generalizing existing approaches to the interpretation of elements of economic potential and taking into account the challenges of neo-industrialization. A technique for measuring economic potential, which is based on the aggregation of expert assessments, is proposed. A mechanism has been developed for determining the production strategy of an enterprise and choosing directions for prospective investment based on estimates of the components of economic potential. The results presented in the article (method and mechanism) were tested at mechanical engineering enterprises. Their practical use allows comparing the strategic positions of enterprises and choosing the optimal vector of their development. The scientific and methodological provisions developed in the article can be used by industrial enterprises of various sectors of the economy in production management and researchers of production management problems for the development of the theory and practice of strategic planning and analysis of the resource potential of enterprises.

Keywords: enterprise potential; economic potential; production strategy; enterprise resources; investment strategy.

INTRODUCTION

At the beginning of the 21st century, many developed countries realized the need to reindustrialize their economies, which were previously oriented towards the growth of services and the withdrawal of production capacities of manufacturing enterprises to foreign territories with a relatively lower cost of resources. In Russia, industrial policy is currently also in the focus of government attention, and the imperative for development is considered to be a high-tech industry with a high share of an innovative product in the production of goods. Strengthening the competitiveness of industry, the diffusion of modern technologies, and an increase in the innovative productivity of manufacturing industries have a multiplicative effect on the acceleration of economic development.

Meanwhile, Russian industrial enterprises in all industries operate in an era of accelerated change, when not only consumer habits are no longer stable, but competitive behavior and regulatory conditions are becoming less predictable. In such conditions, the competitive advantages of the enterprise are determined by the complexity of the strategic diagnostics of production activities and the rationality of the choice of production strategy.

Theory

Since the choice of the production strategy is based on an assessment of the internal capabilities of the enterprise, it is first of all necessary to generalize the existing approaches to determining the economic potential to clarify them in the context of the research tasks, and then present the author's methodology for assessing the economic potential and develop a mechanism for determining the production strategy.

The predominant approach to the interpretation of economic potential is the resource approach, within which it is understood as a set of resources shared in the production process to achieve a certain economic result, often endowed with the property of synergy (Nadvornaya et al., 2016; Shamanska, 2009). Scientists and differently emphasize their studies of the economic potential of industrial enterprises. In particular, it is possible to

highlight the strategic emphasis (Kaletnik et al., 2011), the emphasis of state influence on the formation of the economic potential of the industrial complex (Savchenko, 2015), the emphasis on measuring the regional economic potential (Shcherbakova, 2018), but this does not change the general resource vision of the studied category.

In modern conditions of neo-industrialization, the prospects for the growth of the economic potential of industrial enterprises are associated with:

- An increase in the effectiveness of partnerships, including with participation in industrial clusters (Lis, 2020; Rastvortseva, 2014; Tinyakova et al., 2020), with an increase in the level of concentration of production in the region (Nurlanova, 2017), with an increase in the productivity of interaction of industrial enterprises with universities (Johnston and Wells, 2020), anchor entrepreneurs (Ferriani et al., 2020) and other subjects of the innovation environment (Doroshenko et al., 2019), with an increase in the degree of integration of enterprises in supply chains and an increase in the satisfaction of partners (Minovski et al., 2021), with the intensification of export activities (Cai et al., 2020) and import substitution (Smirnov et al., 2019), with an increase in the integration climate of countries (Starikova et al., 2018);
- An increase in the efficiency of the use of resources, including non-renewable ones (Ferrannini et al., 2020), which is achieved based on digital transformation (van Tonder et al., 2020), the introduction of technological innovations into production (Li et al., 2020), improving the quality of higher professional education (Hariharan and Biswas, 2020), improving human capital (Hu, 2021), lean, computer-integrated production, socially-oriented and production with high added value (Hitomi, 1997).

The methods used in scientific works to assess the economic potential of an industrial enterprise are based on the aggregation of private indicators, which are converted to an index, point, or rank form to ensure comparability. Significant differences in the methods of different authors (Jalolov, 2019; Sycheva et al., 2018; Usmanov, 2017) are in the selection of the components of the economic potential of the enterprise. Among the components of the economic potential, there are production, personnel, scientific and technical, material, marketing, sales, managerial types of potentials of a lower order.

The disadvantage of the private assessment indicators proposed in the existing methods is the weak consideration of the modern challenges of globalization. It is possible to eliminate this drawback by expanding the list of indicators of economic potential by adding those that take into account the importance of introducing innovations and differentiating the manufactured product solutions; inclusion of enterprises in modern formats of cooperation in the innovation and educational spheres, as well as at the level of the supply chain; import substitution and intensification of export activity; digitalization and modernization of production.

As a result of generalizing the works of scientists studying the resources of an industrial enterprise (Albu et al., 2015; Ishmuradova et al., 2019; Shamanska, 2012; etc.), as well as taking into account the modern challenges of neo-industrialization, we consider it expedient to include such elements as:

- Marketing and innovation potential (MIP): reflects the ability of an enterprise to adapt to market conditions and shape them by creating and using new products and technologies, unique selling propositions, and differentiated competitive advantages;
- Organizational and personnel potential (OPP): characterizes the state of the human capital of the enterprise, the competence, and qualification level of personnel and management, the level of use of the concept of continuous learning (Longtime learning), the social policy of the enterprise, the presence of connections with the subjects of the innovation environment, including within the framework of clusters;
- Technical and technological potential (TTP): shows the degree of progressiveness and the state of the main production assets and technologies of the enterprise;
- Investment and sales potential (ISP): indicates the state of financial and economic resources, the network of sales channels, export activity of the enterprise.

METHODS

The paper proposes to rely on a systematic and integrated approach when assessing the economic potential of an industrial enterprise. As a tool for obtaining data, it is advisable to use a survey of enterprise managers participating in the assessment.

Let's consider the stages of the proposed technique:

1. Organization of experts surveys, in the role of which are managers of industrial enterprises, filling out the proposed form of the questionnaire containing indicators of economic potential (Figure 1) and recommendations for their scoring according to the proposed scale (Table 1), as well as for assessing the weight coefficients indicating relative importance marketing and innovation, investment and sales, technical and technological and organizational and personnel potentials in the structure of economic potential (the sum of the weights is equal to one).

Table 1: Assessing indicators scale of an enterprise economic potential

Quantitative assessment, points	1-2	3-4	5-6	7-8	9-10
Linguistic assessment	Worst values in the industry	Below industry averages	Industry averages	Values above the industry average	Industry-leading values

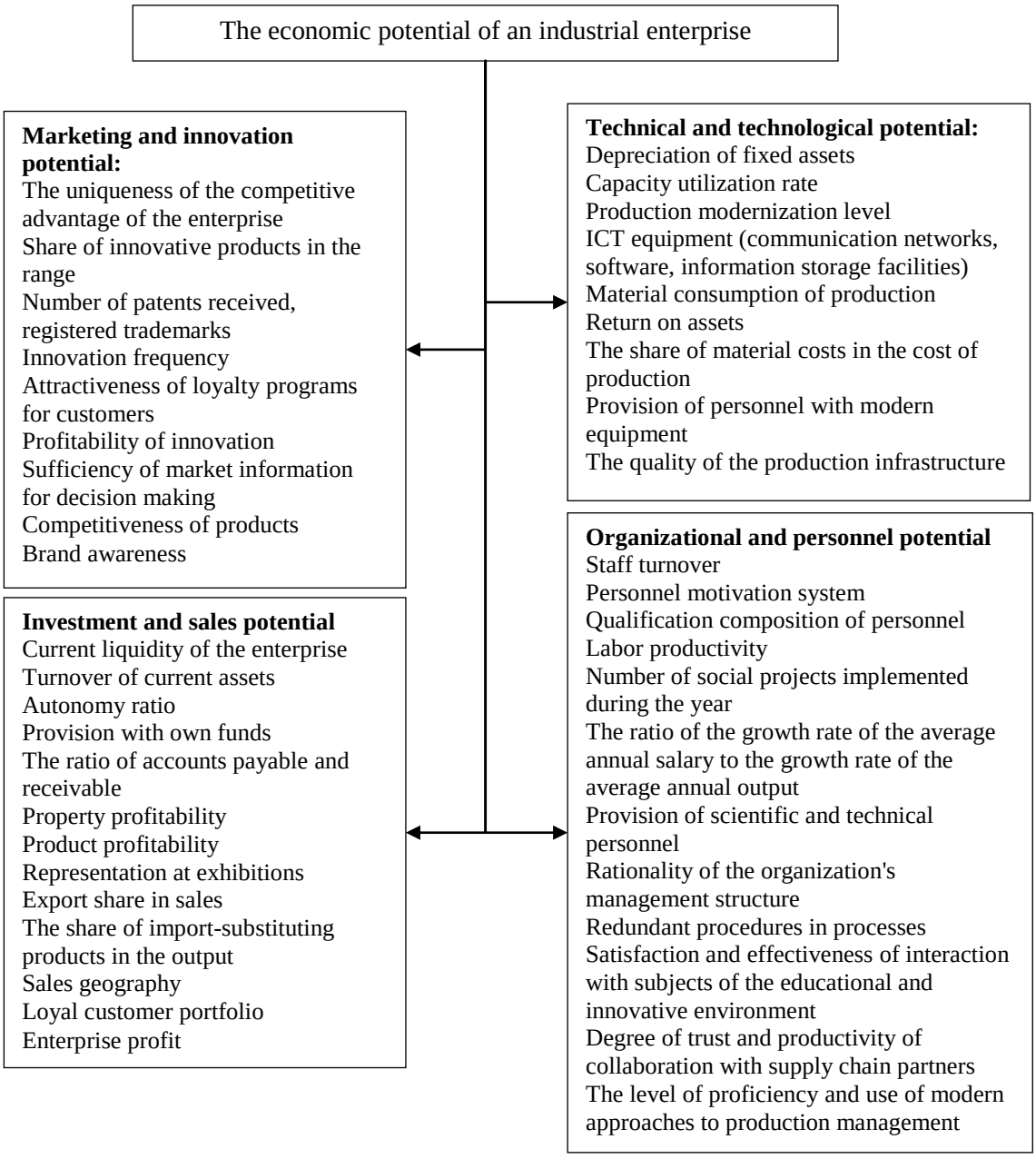

Fig.1: The economic potential components of an industrial enterprise

2. Data processing and aggregation is carried out using the weighted average formula:

$$EP = \sum_{n=1}^{i} \frac{Imip_i}{n} \cdot \alpha_{mip} + \sum_{m=1}^{j} \frac{Ittp_j}{m} \cdot \alpha_{ttp} + \sum_{r=1}^{k} \frac{Iisp_r}{k} \cdot \alpha_{isp} + \sum_{s=1}^{l} \frac{Iopp_s}{l} \cdot \alpha_{opp},$$

$$\alpha_{mip} + \alpha_{ttp} + \alpha_{isp} + \alpha_{opp} = 1$$

Where:

$Imip_i$ – assessment of a private parameter of marketing and innovation potential by the i expert;

$i=1,\ldots,n$, $Ittp_j$ – assessment of a particular parameter of technical and technological potential by the j expert

$j=1,\ldots,m$, $Iisp_r$ – assessment of the private parameter of the investment and sales potential by the r expert
$r=1,\ldots,k$, $Ittp_s$ – assessment of a particular parameter of organizational and personnel potential by the s expert
$s=1,\ldots,l$, α_{mip}, α_{ttp}, α_{isp}, α_{ttp} – the relative importance of the integrated marketing and innovation, technical and technological, investment and sales, investment and sales potential as part of the economic potential.

3. Determination of the type of production strategy. The principle of choosing the production strategy of an enterprise is based on taking into account relatively more developed elements of economic potential (Figure 2).

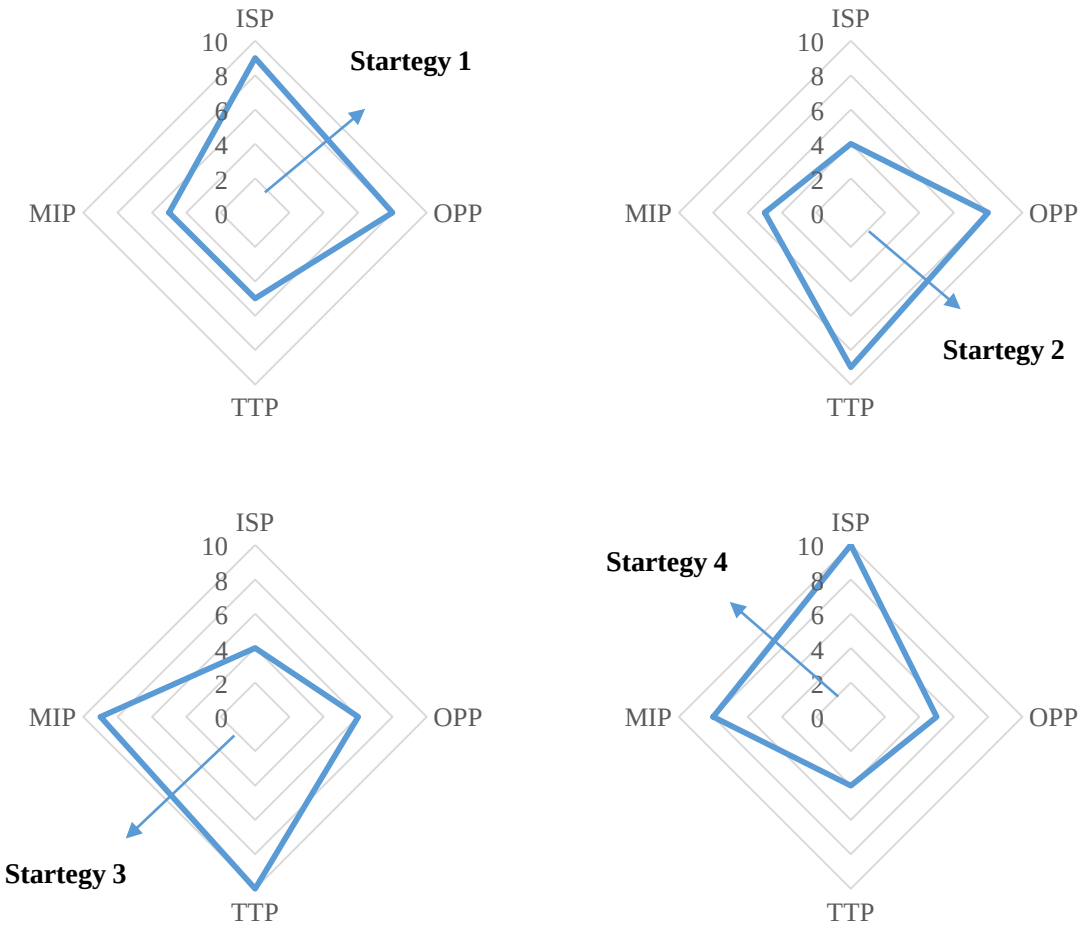

Fig.2: Graphic rule for choosing a production strategy for an industrial enterprise

The selected types of production strategies of the enterprise are described in Table 2.

Table 2: Typology of production strategies according to the characteristics of the economic potential of an industrial enterprise

Strategy number	Current production strategy	Prevailing elements of economic potential
1	Competency Benefit Strategy	Investment and sales and organizational and personnel potential
2	Superior quality strategy	Organizational, personnel and technical and technological potentials
3	Innovative and technological excellence strategy	Marketing and innovation and technical and technological potentials
4	Customer Orientation Strategy	Marketing and innovation and investment and sales potential

RESULTS

The proposed technique was tested at the enterprises of the machine-building complex of the Belgorod region (Russian Federation). The results are shown in Figure 3.

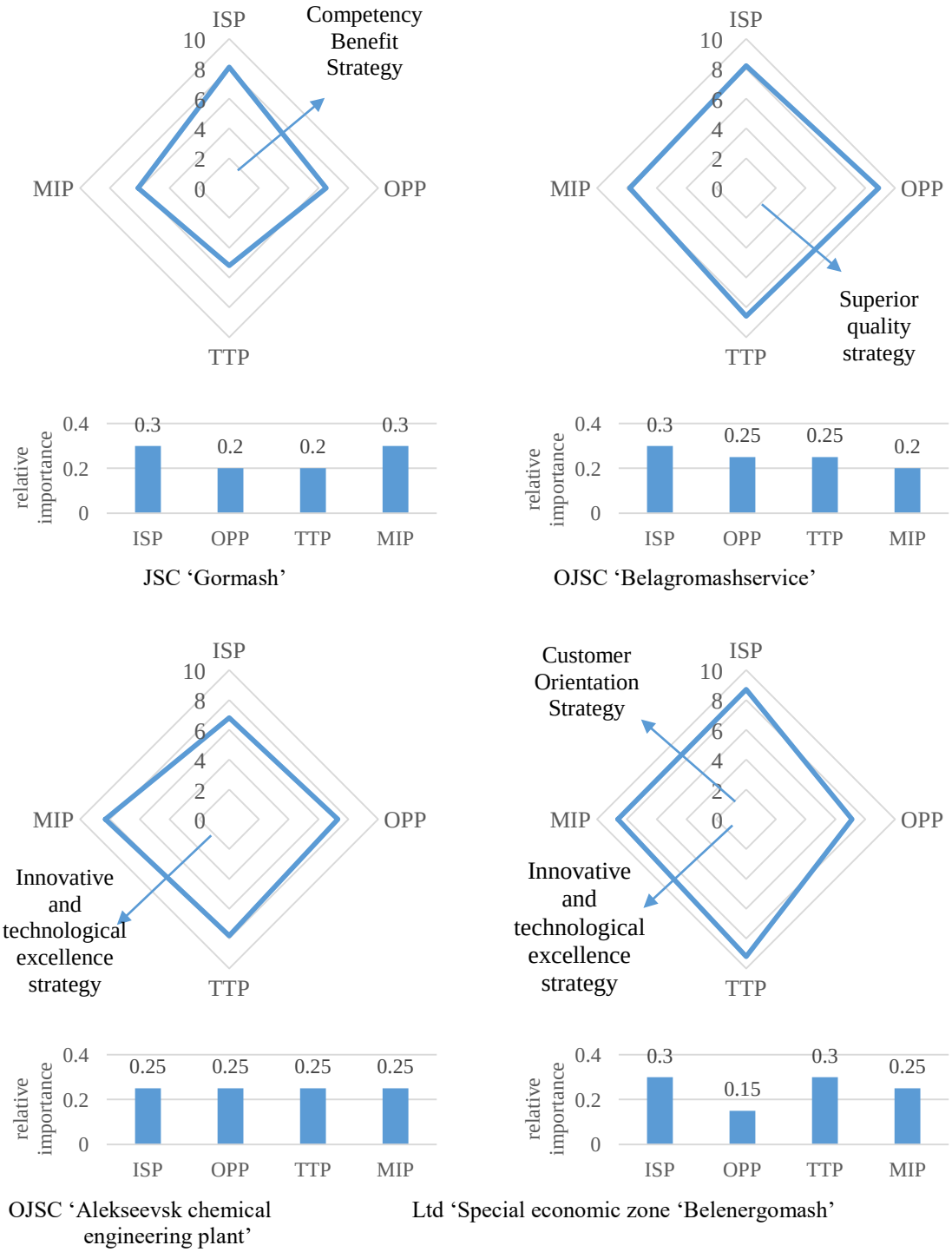

Fig.3: Types of production strategies used by machine-building enterprises of the Belgorod region (RF)

The diagnosed enterprises belong to different segments of the mechanical engineering market. Assessment of the current production strategy allows you to develop directions for promising investment for them (Table 3).

Table 3: Directions of promising investment for mechanical engineering enterprises of the Belgorod region

Industrial plant	Market segment	Economic Potential Assessment (EP), points	Direction of promising investment
JSC 'Gormash'	Mining engineering	6.6	Investing in innovative

			development
OJSC 'Belagromashservice'	Agricultural engineering	8.4	Experience capitalization
JSC 'Alekseevskiy plant of chemical engineering'	Chemical engineering	7.6	Scaling technology leadership
LLC 'Special economic zone 'Belenergomash'	Power engineering	8.6	Scaling technology leadership and Technological modernization

Considering that the development of mechanical engineering is a priority task of the Russian economy, the strengthening of the underdeveloped components of the economic potential of the enterprise serves as a guideline in the implementation of promising production strategies. The task of increasing production activity and the competitiveness of industrial enterprises is a strategic priority not only for corporate management but also for management at the level of regional and national governments.

It should be noted that business support in improving activities related to import substitution, expanding the export component of sales, increasing labor productivity is carried out by the Industrial Development Fund, which, during the period of its operation, provided loans to enterprises of the Belgorod region (8 enterprises, including 2 machine-building enterprises) for the amount of 1.5 billion rubles, which made it possible to create 119 new jobs. Also, the Strategy for the Socio-Economic Development of the Belgorod Region for the period up to 2025 and related planning documents provide for stimulating demand for innovative products, introducing a regional export standard, developing the infrastructure necessary for industrial development, and creating a zone of advanced development 'machine-building complex', within the framework of which will be possible for network interaction of enterprises.

CONCLUSION

The production strategy of an industrial enterprise must now meet the challenges of neo-industrialization. The key tasks of Russia's industrial policy at present are to increase the contribution of high-tech industries to the domestic national product, increase the share of innovative products in industrial output, increase labor productivity, increase the output of import-substituting products and increase the competitiveness and export orientation of industrial goods.

The production strategy of an industrial enterprise is based on the available economic resources. The existing approaches to understanding the structure of the economic potential of an enterprise as a set of resources used in the production process need to be modernized in terms of taking into account the challenges of neo-industrialization and national industrial policy.

The methodology for measuring the economic potential of an enterprise proposed in the article eliminates the shortcomings of existing approaches in terms of accounting for the parameters necessary in modern management analysis. Based on the assessment of the components of economic potential, the author's approach to determining the type of product strategy is proposed. The approbation of the author's methodological provisions at industrial engineering enterprises made it possible to clarify their economic potential, the type of production strategy they use, and to choose for them the direction of promising investment.

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