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ТЕХНІЧНИЙ ПОТЕНЦІАЛ ПІДПРИЄМСТВА: ПОНЯТТЯ ТА ОЦІНЮВАННЯ

У статті розглянуто питання визначення поняття «технічний потенціал підприємства», досліджуються сили технічного потенціалу, види його впливу, сформовано вимоги до технічного потенціалу та розроблено принципи його оцінювання. Розроблено модель оцінки технічного потенціалу окремого засобу праці, яка представляє собою функцію від вартості нового технічного ресурсу (об'єкту-аналогу) та індексу споживчих якостей засобу праці. Останній визначається як функція від кількісної оцінки технічної, соціально-екологічної та економічної характеристик засобу праці на певний момент часу.

Ключові слова: технічний потенціал підприємства, принципи оцінювання технічного потенціалу, модель оцінки технічного потенціалу засобу праці.

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TECHNICAL POTENTIAL OF AN ENTERPRISE: CONCEPT AND EVALUATION

In this article we define the concept "technical potential of an enterprise", analyze the forces of technical potential, types of its influence, as well as form requirements to technical potential and develop principles of its evaluation. We developed the model for performance potential evaluation for a particular instrument of labour, which represents function from value of the new technical resource (analogues object) and consumer index of the labour instrument. The latter is defined as a function from qualitative assessment of technical, socio-environmental and economic parameters of the labour instrument in the definite moment of time.

Keywords: technical potential of an enterprise, the principles of evaluation of technical potential, model for evaluation of technical potential of a labor instrument.

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ТЕХНИЧЕСКИЙ ПОТЕНЦИАЛ ПРЕДПРИЯТИЯ: ПОНЯТИЕ И ОЦЕНКА

В статье рассматривается вопрос определения понятия «технический потенциал предприятия», исследуются силы технического потенциала, виды его влияния, сформированы требования к техническому потенциалу и разработаны принципы его оценивания. Разработана модель оценки технического потенциала отдельного средства труда, которая представляет собой функцию от стоимости нового технического ресурса (объекта-аналога) и индекса потребительских качеств средства труда. Последний определяется как функция от количественной оценки технической, социально-экологической и экономической характеристик средства труда в определенный момент времени.

Ключевые слова: технический потенциал предприятия, принципы оценивания технического потенциала, модель оценки технического потенциала средства труда.

Formulation of a general problem and its connection to important scientific and practical tasks. Development of enterprise strategy and also decision-making in the context of providing financial and economic results of the activity specifies design of information basis in relation to the condition and efficiency of using resource potential of the enterprise considering its quantitative and qualitative parameters.

Efficiency of an enterprise activity is created in chain: resources – production and technological process – financial and economic results, hence it is very important to assess the resource support of economic activity of enterprises.

Resource support evaluation in generation of financial and economic results of the enterprise in this Article is made through the prism of a notion "resource potential", which includes not only different types of the resources but also capabilities and possibilities of the enterprise, its human staff, to effective exploitation of obvious resources.

One of the most important constituents of resource potential of the enterprise is its production capacity which is qualitative reflection of material and technical resources. It generates their rational exploitation to meet the needs of consumers, and its main feature is possibility to provide quantitative and qualitative parameters of production growth. The elements of an enterprise production potential are as follows: technical potential, innovation and technology potential; potential of maintenance staff (human power). The concept "technical potential of an enterprise" and also principles and methods of its evaluation have been described in this Article.

Analysis of recent research in which problem solution had been started. Different aspects of resource support of a business entity activity are in the attention focus of scientists and economists from times of economics formation as a science. For now resource range of problems is being developed by foreign and native scientists such as: J. Pfeffer and D. Salancik [1], J. Akerlof [2], B. Wernerfelt [3], J. Barney [4**Ошибка! Источник ссылки не найден.**, 5], R. Grant [6, 7], K. Prahalad, G. Homeland [8], D. Teece [9], D. Kolliz, S. Montgomery [10, 11], I. Vovk, Yu. Vovk [12, 13], Yu.O. Mazin [14], S.Y. Polovnikova [15], I. N. Sotnik [16], N. V. Shevchuk [17] and etc.

Purposes of the Article. Objectives of this Article are to examine different approaches to definition of the notion "technical potential of an enterprise", its evaluation, development of technical potential evaluation principles on the basis of activity of mining and beneficiation companies of Ukraine and development of the model technical potential evaluation of a particular labour instrument.

Presentation of main material of research with full explanation of scientific results. Summary of scientific sources allows providing the following notion of "technical potential of an enterprise" (TP) which reflects best the essence of this category: technical potential of an enterprise is explicit and implicit possibilities of capital assets which can be used to achieve required production capacity in order to satisfy demand of society, and its elements create technical and technological basis of the enterprise.

The notion of the economic category "technical potential" is defined through the prism of carriers of its possibilities – forces, resources and instruments. The forces of technical potential are presented by main production assets of an enterprise which creates production by technology and labour force in connection with current capital, intangible assets and potential of land and natural resources. In accordance with nature of influence of technical potential forces on the system product we can differentiate various types of forces: active, functional and passive, or system making that is the forces which provide conditions for development of active forces. Active forces of performance potential are featured by the fact that they directly take part in transformation of the resources of the enterprise into production and goods.

Passive or system making forces are a part of main production funds which create conditions for making transformation process, this is the main means which make protective functions against environment, creating internal production climate, provide connection with environment. The above mentioned division is provisional because transformation is possible in some cases. According to the direction of influence of technical potential on the whole system the progressive and fundamental types can be distinguished. Fundamental performance potential is defined by accumulation of main assets which create conditions for activity of production

enterprise (system) within project capacity for providing financial stability and independence of the enterprise. It is such size of main production assets which provides critical production volume and minimal level of profitability. Progressive technical potential is a part of forces of the enterprise which create the basis for further development of the enterprise providing increasing of the resource level and production and economic potential of an enterprise. Such potential creates possibilities for getting unlimited profit and corresponds to the most prospective strategic goal of each enterprise.

Changes of the market priorities in a certain interval of time require transformation of technical potential. Let us identify demands which shall be made in order that the defined level of technical potential of the enterprise is sufficient to modern conditions as a guideline for supporting its level and background of financial and economic results generation. Firstly the notion "technical potential of an enterprise" in the market conditions cannot be static due to dynamism of focused evaluator of its efficiency which is the provided level of goods manufacturing. Hence we need to determine the value of the noted potential in accordance with the strategic purpose of an enterprise development. Secondly, the value of technical potential of the enterprise greatly depends on various external and internal factors which shall be considered at its calculation. Thirdly due to the fact that demand and offer, production and financial potential are measured in money equivalent in market conditions the value of TP also can be defined in such equivalent. It creates a number of inconveniences which are typical for the indicators that show development of social and economic phenomena but give big opportunities for its comparison and assessment within the branch and country.

The analysis of the literature sources showed that some authors admit that technical potential outlines first of all the obtained level of development of the social production system, however the other authors think that obtained and prospective potential shall be differed. The obtained technical potential is a combination of possibilities of technical and technological basis which is formed at actually obtained organizational level of development of production forces and degrees of using potential possibilities of production and administrative apparatus. Prospective technical potential opens maximum possibilities of economic system which present maximum level of the condition of technical and technological basis which will provide maximum allowable production volume of material assets and services and can be achieved at ideal conditions of economic and optimal exploitation of available scientific, technical, and financial resources.

One of the most advanced methods of defining technical potential of an enterprise is the method of defining total user value of labour means which create potential of the enterprise. This is the market method meaning that it applies real data of actual condition of the phenomenon. User value of labour means is shown in their ability to support human labour in production of material assets, in saving human labour and in increasing of its effectiveness. Social benefit of labour means is opened through the influence which they cause for creation of better conditions of labour, for its nature and content, for providing environment protection.

Scientists-economists of 60-80-ties of the previous century made efforts to determine accurate definition of the notion "user value" or "value" and calculate this value of labour means in a number of researches. The grounds of quantitative evaluation of user value of consumer goods were laid in the research of such scientists as G.G. Azgaldov, S.I. Andreev, P. Pavlov, S.G. Strumilin. They outlined the scope of application of the given economic theory, developed the basic principles of the theory of its quantitative evaluation and outlined some factors that characterize user value.

Systematization of scientific research and practice of Iron Ore Enrichment Works functioning allows creating basic principles of TP evaluation. Principle 1: Accounting of quantity and quality. Technical elements of TP as a useful object have also user value, hence

calculation formula shall reflect at least indirectly these two main features of the user value. Principle 2: common methodology. Defining of user value of all elements of technical potential shall be based on the same methods. Principle 3 - promptness. The ability to measure user value of useful object can be an effective tool of planning and management. It means that the method of TP measurement for user value shall provide effective obtaining of quantitative indicators characterizing consumer properties of labour means.

By implementing the derived principles and considering the fact the user value of any labour instrument is defined by its quantitative and qualitative characteristics, we can design the model of evaluation of technical potential of a certain labour instrument using the following formula:

$$TP = f(X,Y), \quad (1)$$

where *TP* is the value of technical potential of the means of labor by the method of determining the total level of consumer properties, *X* - value of quantitative characteristics of the user value; *Y* - value of quality characteristics of the user value; *f* is the model parameters dependence function.

Quality can be defined as a certain complex characteristic that evaluates in general all the features of the subject which specify its ability to satisfy some individual and social needs. It means that quality is not absolute, but relative characteristic by its essence which can change in relation to one and the same subject depending on changing social need in it and changing conditions of its use. Considering the fact that quantity is absolute characteristic, depending neither on the value of need, nor the conditions of use we can come to the only conclusion that the user value of the subject is the same dynamic characteristic as quality and it is defined not only by total natural (physical, chemical and biological) features of this subject but the value of social need in these features and also conditions of its use.

We suggest using one of the value assessments of main assets of the enterprise as a quantitative characteristic at assessment of the user value of labour means. This assessment must comply with certain needs. It shall consider in full volume all costs of the enterprise for purchasing, transportation, mounting and launching of a labour instrument and also be flexible in order to comply with the market situation. As a quantitative characteristic we need to take value of purchasing the best in class labour instrument that corresponds to all leading technical needs and progressive technologies considering costs that are included into calculation of initial cost.

While been exploited or simply changing phases of the product lifecycle the labour instrument is changing its user value. The indicator leveling down the quantitative characteristic of the user value is a quality ratio of the labour instrument. This is the relative factor which implies a complex change of different quantitative characteristic of labour means exploitation directly at the enterprise and depending on the market situation i.e. action of price and non-price factors, development of social relationships, scientific and technical progress, and subjective consumers evaluations. The indicator which fully satisfies the listed conditions is the index of consumer qualities. We denote it CQI, then the formula (1) becomes as follows:

$$TP = f(C,CQI), \quad (2)$$

where *C* – cost of a new technical resource (analogues object), which is determined by the current goals and objectives of the enterprise management;

The coefficient of user value and, consequently, the quantification of the most useful means of labor are the subject to a number of factors, among which are the following groups:

1) technical (performance of work equipment, service life, exploitation life, compliance with technical standards, conditions, and technical processes, maintainability);

2) socio-environmental (safety, compliance with environmental regulations and standards, the level of pollution);

3) economic (operating costs per unit of output).

The found maximum level of user value of the means of labor in the current socio-economic conditions, expressed in a number of conventional monetary units of market value to be adjusted by the index of quality - the coefficient of the user value. In its turn, this value is a function of the mentioned three groups of factors:

$$CQI_t = \varphi\left(T_t, S-El_t, Ec_t\right), \quad (3)$$

where CQI_t – coefficient of user value at time *t*; T_t, $S\text{-}El_t$, Ec_t – quantitative assessment under technical, socio-environmental and economic characteristics of the means of labor at time *t*.

Technical potential is not constant, it depends on the situation and the conditions that have been established in the public production now (defined) time. This means that each element of formula (3) depends on a parameter t. It provides an implementation of the principle of efficiency. Each component of the coefficient of user value should be calculated for a particular point in time t. At the same time they are all functionally dependent on the factors included in the appropriate group (Fig. 1).

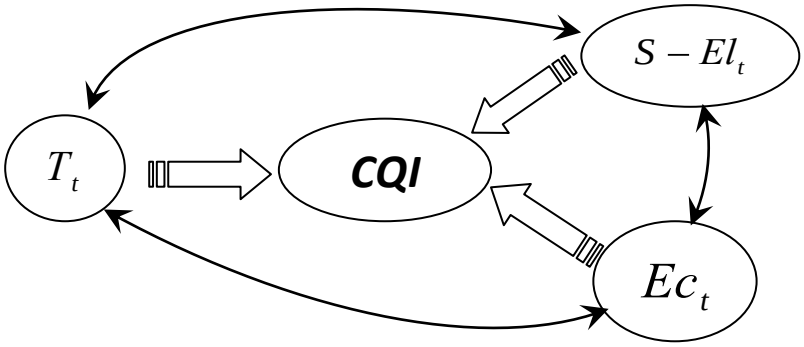

Fig. 1. Connection and interaction of values forming the current level of technical potential

Nature of functional dependencies (1) and (2) for technical, socio-environmental, economic components of the user value coefficient can be determined by the economic and mathematical statistics, econometrics, qualimetry (quality assessment methods), and expert methods.

Conclusions. Objectives set in the beginning of this article are achieved. Based on the study of different approaches to the concept of "technical potential of an enterprise" we give its generic definition as "explicit and implicit possibilities of capital assets which can be used to achieve the required production capacity". We investigated the forces of technical potential, types of its impact, as well as formed the requirements for technical potential and developed the principles of its assessment based on the study of activity of mining and processing enterprises of Ukraine.

One of the most prospective methods for determining the technical potential of an enterprise as considered is the method for determining the total user cost of labor resources, which form the potential of an enterprise. Based on this method and developed principles we made a model for assessing the technical potential of an individual instrument of labor, which is a function of the cost of a new technical resource (analogues object) and the CQI of the instrument of labor. The latter, in turn, is a function of the quantitative evaluation of technical, social, environmental and economic characteristics of the instrument of labor at time t. We suggest determining the nature of functional dependencies by the methods of economic and mathematical statistics, econometrics, qualimetry and expert methods.

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