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FORMATION OF COMPETITIVE ADVANTAGES OF IRON-ORE MINING ENTERPRISES

The formation of competitiveness mining and processing enterprise including reserves, technological and economic factors ditch increase its competitive advantage in the sales of final products on the domestic and foreign market of iron ore raw materials in conditions of uncertainty.

The problem and its relation to scientific and practical tasks. Global iron ore production is growing and now exceeds 1 billion tons per year with average iron content in the ore output of 55%. The development of iron ore deposits is carried out in 50 countries. However, over 91 % of global iron ore production is concentrated in ten countries (Fig. 1). Ukraine ranks seventh iron ore place producing 5 % of world commodity iron ore products. Iron ore industry occupies an important place in the economy of Ukraine, as it gives over 20% of export revenues to the state budget.



Fig. 1 The world market division of iron ore products

In Ukraine balance reserves of iron ore, which are taken into account, is estimated at 32.2 billion tons, forming about 20 % of world reserves. Operating reserves of iron ore can provide stable enterprise works till 60 years. Comparison of quantitative and qualitative indicators of proven iron ore reserves demonstrates the leading position in Ukraine. At the same time, in countries with stable market economy expected lifetime of mining companies doesn't exceed 30 years. From over 50 explored iron ore deposits in Ukraine only 23 ones are exploited, others are reserve ones or are

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not planned for the development soon.

In such circumstances, the competitiveness increase of the final product and hence competitive advantage of the mining company is important strategic goal. Achieving this goal affects the factory efficiency, determines its competitive position in national and global markets, and thus reflects on the economy as a whole. Therefore, the ensuring competitiveness problem of ore companies requires scientific substantiation of management decisions using a set of modern assessment methods, analysis and modeling, detection engine production reserves, using all resources with regard to their efficiency in terms of the transformation economy. The solution are required of the identify problem of production reserves effective use with taking in account of the external environment effect and adaptation mechanism development of enterprise production – economic system to the real business.

Realized studies indicate the need of a scientific base for competitiveness management, involving the development and use of theoretical, methodological and practical aspects. Solution application of competitiveness improving, including the involvement of unused production reserves, provides economic benefit, which is significantly more than the additional cost for the development, justification and implementation of technological, economic and institutional arrangements specific to the mining sector enterprises.

The concept of "competitive enterprise" is used in science of competitive economic system management as basic economic category definitions competitiveness of businesses, industries, cluster and country. Creating competitive products is carried out in a complex production system enterprise, which integrates a set of interacting components – sub– units or industrial enterprise. In this regard, we consider as admissible using the term "industrial and economic systems of industrial enterprise", which we understand as a complex dynamic manufacturing enterprise system in which an economic activity realized by experts is directed to produce competitive products.

In nowadays dynamically changing environment conditions the most urgent question is the practical implementation of adaptive control production principles under uncertainty. So it is advisable to use a synergistic approach to the operation of enterprise industrial – economic systems in creating and evaluating the competitive product advantages that will create an effective organizational and economic mechanism for improving the implementation efficiency of science – based solutions to ensure the competitiveness of Ukrainian iron industry enterprises. Unstable economic conditions and high energy component in the price of the final product rise further fate uncertainty of domestic producers in foreign and domestic iron ore markets. Therefore, both producers and consumers require a comprehensive evaluation method of product competitive advantages, which takes into account the uncertainty factor.

Analysis of existing methods for assessing competitiveness showed that its complex index is calculated with taking in account the property importance, especially its quality and characteristics of iron consumable products based on the survey of customers, while in the calculations practically is not involved probabilistic characterization of the market choice uncertainty.

Analysis of research and publications. The article importance is determined by development of methodical approaches to determining the factors and reserves increase competitive advantage of country ore mining companies in difficult financial and economic environment uncertainty. Analysis of the literature revealed a studying lack of the competitiveness assessment problem of mining and processing enterprises, which leads their stable development and further production improvement within the adoption of technically and economically reasonable measures of production modernization. Competitiveness is rate of interest for both producers and consumers. The study of economic competitiveness as a generalized problem, should consider the following factors:

- quantification of economic matters that are the bearers of properties competitiveness, without which support its desired level and its increase is subjective;
- lack of universal common notions of the enterprise competitiveness;
- the main parameters that determine the level of competitiveness are multi versions, relative and specificity ;
- competitiveness is determined by using the results of comparisons as companies and their main products ;
- comparison of economic matters in the competitiveness analysis must satisfy the requirements of completeness and correctness.

In academic works famous scientists observed different approaches to the assessment and analysis of competitiveness at different levels: on the level of commodity businesses, industries, and finally the level of the national economy as a whole.

Efficient use of reserves competitiveness requires their systematic and well-founded detection. Therefore, the estimation of product competitiveness must be made at the company continuously with the help of the modern information base, because the product attractiveness degree can be reduced simultaneously and turning the market position is not always possible.

J.J. Lamben understands the firm competitiveness as an opportunity to satisfy the needs of customers better than the competitors. In its analysis the most important is to determine the competitive advantage type that is provided by three groups of factors: excellent quality, which is the highest customer value, lower costs, key "competencies" that create unique value for consumers. [1] Extensive research search problems, the creation and realization of competitive advantages as well as the competitiveness of enterprises belonging to G.A Azoyev, by whom a prerequisite for the emergence of competitive advantage is the efficient use of the enterprise resources [2].

In its turn, the competitiveness of the product (service) is based on competitive advantages in quality which, according to M. Porter's theory, are the low cost or differentiation. [3,4].

Problem formulation. All above things considered, it is necessary to closely examine the formation of ore enterprise competitiveness indicators based on technical, technological and economic factors and reserves to increase its competitive advantage in the implementation of the final products in country and foreign iron ore mar-

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ket in the uncertain conditions.

Presentation of the material and results. Competitiveness is determined by many factors, which are formed at different movement stages of the material and information flows from product suppliers to consumers while creating consumer properties, thus it is possible to assume that the process approach in the product formation prevails. Since in the process approach competitive edges are formed in the process of moving work items, it is useful to consider the concept of the value chain (Value chain). In labor objects moving in the value chain (in aggregative representation – the system value chain) occur productive actions that affect on the creation and provision of products that have value for customers. And there are indirect and direct correlation between the effectiveness of the various levels of the value chain and value chain system suppliers, manufacturers and customers. From the standpoint of the value chain formation, competitiveness can be decomposed into its basic components: competitiveness provider, companies, consumer, infrastructure (storage, transportation brokers, financial institutions, etc.), the relationship between the value chain systems. The main factors that determine the competitiveness in mention aspects, are presented in the table. The importance of taking into account each of the factors that determine the competitiveness of a particular chain member, is great, but in terms of the integration approach, the primary role belongs to the interconnections between the partners in the value chain system.

Thus, the advantage of the current approach to assess the production feasibility on the basis of the value chain, contributes to the flexibility of the enterprise develop, its competitive advantage and hence competitiveness in difficult financial and economic conditions. The impact of factors that increase the competitiveness iron containing product is defined by:

$$K = K_3 K_O K_c K_i K_B K_\delta, \quad (1)$$

where K – the integral index of competitiveness, K_3 – the competitiveness of the supplier chain (provider), K_O – producer competitiveness (research object); K_c – competitiveness in the consumer chain, K_i – competitive market infrastructure; K_B – competitiveness of relationship with partners; K_δ – coefficient reflecting the effectiveness of the government economic policy impact.

In its turn, the value of each parameter can be calculated as the product of factors that assess the impact of each factor (see table). Suppose, in the presence of a positive influence factor value is $K_{fi} = 1,1$, in the absence one is $K_{fi} = 1,0$, in the presence of negative influence it's $K_{fi} = 0,9$.

The system of personal relationships is determined by all interested participants in implement, for example, the pit reconstruction project, on the basis of cooperation, for which a significant role play such factors as adaptability, durability, investments, quality, extras and goodwill.

Table 1

Factors of competitiveness	
Name of the component	Factors
Supplier	Price, range and quality of resources, provider's distance, performance level of contractual obligations, the service system.
The company	Strategy of mining companies, resource, technical, technological, organizational and innovation factors, market share, industry specifics, costs, availability of intangible assets, image, quality level, service, etc.
Infrastructure	Sophistication transport networks in the region, the availability of business intermediaries, cooperative relationships with contractors, investment policy, information support, the level of industry competition in the region.
Consumer	Demand level, the differentiation of prices, availability of substitutes, the consumer state
The relationship between members of value chain	Sustainability, reciprocity, solidarity, flexibility, relationship monitoring, information support, opportunity development, opportunity of conflict regulations, quality relationship (satisfaction, trust, commitment)
Country	Economic policy: tax, financial, investment, innovation, priorities, etc.

Today the designs of subsequent stages of reconstruction and technical re-equipment of many iron ore pits significantly compounded due to failure its previous planed factors (particularly for volume of overburden operations, overburden ratio) against the background of significant mine transports equipment deterioration. Resolving referred issues directly related to the duration and volume of insufficient investment in mining production, including the acquisition of modern technology and the introduction of modern technologies in conditions of limited own financial means of most country enterprises. So, in implementation conditions of reconstruction, modernization and technical upgrading of iron ore pits there must be taken into account the value chain of mine transport basic equipment provider. Under the present economic conditions let's assume competitiveness provider as $K_3 = 0,9$.

The competitiveness of the customer can be taken as a unit ($K_{II} = 1$), since the industry demand level defines the state of economy and market conditions.

Infrastructure competitiveness is measured by adequacy development criterion of the region compared to some standard. If we evaluate this indicator in a particular region and industry, it is approximately the same for all participants. For mining companies let's take value of this index as $K_{II} = 0,9$, because in Ukraine the process of cluster formation in the mining industry only begins.

Complicated relationship seems to be participant competitiveness of the value chain where the most important criteria are the satisfaction, trust, commitment of partners, resulting in the duration and reliability of connections. In such circum-

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tances, the indicators of contractual obligations and duration of cooperation are used.

Thus, we can create competitiveness and a value chain for modern dressing company:

a) main activities: mining and capital projects ; dressing work, mining work (drilling and blasting , excavation , transportation of rock mass), mineral processing (ore crushing, grinding and dressing) , production of agglomerate or pellets;

b) organization of mining : procurement of resources, research and development activities, management of quality and staff , maintenance and operation of buildings, areas , automation and computerization , legal support , ancillary activities.

Conducted study of dressing enterprises in Ukraine allow suggesting that to improve and strengthen their position in the global market it is necessary to pay particular attention to the structural provisions of the competitive advantages that are in ancillary activities.

In the first place they are:

– Investments in fixed assets recovery , development and acquisition of modern technology, creating automated systems, which should lead to an increase in depreciation component in the cost structure of enterprises, but at the same time – to reduce the laboriousness;

– Investments in RA & EED (research activities and experimental– engineering development) for the timely implementation of modernization and technology restoration that reduce energy intensity of production iron contenting products;

– Production improvement that will reduce overhead and general running costs of the time factor;

– Development of labor potential, it's more concerned involvement, training and motivation of production workers.

This measure realization should have a positive impact on competitiveness indicators ore dressing company, which is proposed to calculate of the following formula:

$$K_o = \prod_{i=1}^k k_{\phi.o_i} = k_{TC} k_d k_t , \quad (2)$$

where k_{TS} – competitiveness in mining production costs , particularly in terms of resource efficiency ; k_d – competitiveness by volume of ore production, which can be measured by the growth rate of output and mineral processing ; k_t – competitiveness over time, which can be measured by the implementation of treaty commitments obligations in compliance with the content of useful components and contaminants in iron ore production.

Conclusions and directions for further research. Thus, a substantial indicator analysis of competitiveness ore enterprise market allows us to predict the consequences of certain actions, makes it possible to adjust the strategy of market interaction and successfully compete in the market. Risk factors presenting in the market struggle, requires constant monitoring and development of ways to reduce the threat of adverse events that bring to market share loss as a result of aggressive actions of

competitors.

The research of ore dressing factory activities in Ukraine showed that risk affects on the provision of competitive iron contenting products, and which minimization allows the product marketability rise. Besides, for calculating the index of enterprises competitiveness it must be considered the uncertainty of market choice for each of the final product properties.

So, integration or disintegration are proposed to be the primary mechanism to ensure the desired level of competitiveness ore dressing companies, and they allow achieving the necessary competitive advantages in both main business – vertical integration and in the additional – the integration of resources (public– private partnerships , innovative joint ventures , etc.).

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