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SUBSTANTIATION OF MANAGERIAL DECISIONS FOR ENSURING SUSTAINABLE FUNCTIONING OF ENTERPRISE

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The perspectives of the sustainable functioning and development of Ukrainian enterprises depend on the management decision efficiency. The article substantiates the necessity to lay the scientific groundwork for the management decisions aimed at ensuring the sustainability of an enterprise as a multifunctional system. The research is based on the concepts of the theory of management and general systems theory and uses the methods of comparison, generalization, systematization and grouping along with the systems approaches. It has determined that changes in the enterprise structure and operation are a result of the impact of internal and external sustainability destabilizers. The research proves that the sustainability of an enterprise is determined by its maintenance within the limits of the homeokinetic plateau and achieved by the controlling effect on the elements and components of an enterprise as a system. The indicators describing a particular component (technical and organizational, social and labour, ecological, financial and economical), a constituent (anthropogenic, natural), and the overall sustainability of a coal mining enterprise have been specified. The paper substantiates the need to make management decisions according to the enterprise position in relation to the homeokinetic plateau. The bounds of the homeokinetic plateau are determined as a relationship between the total product cost and the level of the enterprise sustainability taking into account that product price should cover total production costs. The consistency between the enterprise sustainability level change and the costs required for management decision implementation ensures efficiency and objectivity of decision making in terms of maintaining the enterprise within the homeokinetic plateau limits.

Keywords: management decisions, sustainable functioning of enterprise, factors of sustainability, homeokinetic plateau, coal-mining enterprise.

Statement of problem. The process of making and implementing managerial decisions in modern enterprises is marked by a variety of challenges that have been a subject of research of many foreign and Ukrainian scientists. These challenges include the necessity to make decisions under the uncertainty of enterprise operation conditions and information deficit, strict deadlines for finding, analyzing and selecting alternatives, enterprise management inability to change decision-making principles and criteria or the lack of management awareness of probable variations. Moreover, enterprise management is mainly focused on finding the fastest solutions to local problems and, therefore, getting a limited effect in a particular business segment or a functional subsystem rather than achieving the overall sustainability of an enterprise. As a result, most decisions are mainly declarative and do not meet the real-life implementation conditions. Another actual problem is the use of traditional theoretical and methodological decision-making approaches, which have proved to be successful for some enterprises, without their adaptation to the needs of a particular company or, at least, a specific industry.

Analysis of recent papers. Theoretical and practical aspects of decision-making have been described in a numerous research works in economics, management, cybernetics and management psychology. Herbert A. Simon [1, 2]

and James G. March (March & Simon) [3] investigated an individual decision-making process and first specified the limited potential of an individual in making a rational choice among several alternatives. The consistency of an individual preference and a group choice was studied by Kenneth J. Arrow [4] who described the impossibility to formulate a social preference that satisfies all the individual preferences of people involved in decision-making.

In addition, P. Fishburne [5] developed the utility theory based on the hypothesis of utility values as the criteria for making individual decisions. The problems of making effective managerial decisions in terms of creativity development, performance management and interpersonal communication of project participants were described in the research works of M. Nolike [6]. Y. Khol [7] and R. Battrik [8]. Some specific aspects of managing an enterprise as a social system were investigated by Thomas J. Peters and Robert H. Waterman [9], who underlined the crucial role of human resources and company culture development, as well as creativity and initiative support for decision making efficiency.

Various aspects of decision-making have also been a subject of research of former Soviet and modern Ukrainian economists. Thus, R. Lepa [10], I. A. Bersutskii et al. [11], V. Kihel [12] devoted their researches to the development of decision-making techniques and models for economic objects.

However, most studies mainly developed theoretical and methodological concepts and failed to consider all the specific features of an enterprise in a changing environment. Therefore, it is necessary to lay the scientific groundwork for substantiation of the management decisions aimed at ensuring the sustainability of an enterprise.

Aim of the paper. The aim of this research is to develop theoretical principles and methodological provisions for the management decisions aimed at ensuring the sustainability of an enterprise.

Materials and methods. The research is based on the conceptual foundations of the theory of management and general systems theory. In addition, the systems approach, the graphical method and the methods of comparison, generalization, systematization, and grouping have been used.

The role of an enterprise management in a modern changing business environment directly depends on understanding the nature of the enterprise operation and development as the ways of complex economic system movement. Ye. A. Yerokhina [13, p.11] emphasizes that the enterprise as a system encounters constant transformations of its states during the life circle, therefore, the system behavior and functioning are reflected in the dynamics of its state changes. However, the alternation of the enterprise states is goal-oriented, not chaotic, and it must advance the system to the desired condition marked by the specific outcome parameters – a particular set of indicators.

An enterprise, like any other system, undergoes quantitative and/or qualitative changes of its operation mode and system structure, and these transformations indicate the system progress. The mentioned changes are a result of the internal and external destabilizers effect causing a constant alternation of stable and unstable states of the system. If the system loses stability, it moves to another operation level which can be either progressive or regressive.

The study of the common patterns of the economic and biological system development, started by Cardon I. A. S. et al. [14] in the 20th century, made it possible to claim about the insufficiency of the «homeostasis» concept (a stable condition within the system) for describing a self-maintaining system behavior. Indeed, homeostasis is unable to explain a system deterioration as a logical stage of its life circle, as the system is developing (progressively or regressively) constantly being in the state of dynamic equilibrium called homeokinesis. Referring to I. A. S. Cardon, J. P. Van Gigch [15, p.617] underlines that, hypothetically, every system is able and tends to be in the stable state of dynamic equilibrium which can never be achieved. However, the necessity to ensure the required level of main indicators, as a demonstration of homeostasis, has been highlighted in the research works of many scientists. L. G. Melnik [16, p.28], in particular, specifies homeostasis as an essential condition for a system existence in its initial state.

Homeokinesis, as a process of maintaining dynamic equilibrium in the system, is aimed at preventing the movement of the sys-

tem to the state with higher entropy by means of energy input and information processing. Owing to homeokinesis, the system reaches a certain area of an unstable state, when it is focused on self-regulation, that is within the «homeokinetic plateau». A graphical description of the homeokinetic plateau, which is formed under a proper amount of controlling effects on the system and depends upon the system resistance to these effects, is presented in John P. Van Gigch's book «Applied general systems theory» [15, p.618]. He also demonstrates left and right positive feedback regions where the system is under the threat of expiry.

To be within the region of the homeokinetic plateau for the longest possible period, an enterprise has to be under a proper amount of control that can maintain the system in the state of temporary equilibrium. J. P. Van Gigch [15, p.619] has noted that each state of an equilibrium is characterized by a negative feedback. When a negative feedback exceeds a positive feedback causing the demise of fluctuations, the system is maintained within the bounds of the homeokinetic plateau. A positive feedback dominates beyond the lower and upper thresholds of a negative feedback causing the system instability and demise.

According to L. N. Rodionova and L. R. Abdullina [17], a position and size of the homeokinetic plateau can change under various conditions during the period of the system viability. In addition, changes in the balance of dynamic equilibrium elements cause changes in the structure of the steady area. Therefore, it is impossible to specify the bounds and ensure the maintenance of a system in the steady region.

However, L. G. Melnik [16, p.23] points out that the sustainability of the enterprise as a fixed system can be achieved by the system self-organisation and self-development. According to H. Haken's [18, p. 226–264; 19, p. 28–62] definition of self-organisation, it is the evolution of a system into an organised structure emerging from the numerous consistent interactions of the system elements. H. Haken also underlines [19, p. 28–29] that a system is self-organising if it acquires a special spatial, temporal, and functional structure without any specific interference from the outside. In other words, the system is not vulnerable to the external pressures that could change its structure or function.

L. G. Melnik [16, p. 23–24] adds that self-organisation is a ground for structuring both the system and its material, energy and information streams. In this case, a system structuring is stimulated by the regulation mechanisms of the system called feedback mechanisms. While self-organization ensures sustainability of a system, self-development refers to its transformations caused by the system internal conflicts. Taking into account the dialectic nature of contradictions between self-development and self-organisation of the system, L. G. Melnik emphasizes that the system sustainability is a result of self-organisation according to which the system is able to accumulate the energy required for further transformations.

Therefore, the necessity to ensure the sustainability of an enterprise as an open system requires the development of scientific and methodological foundations for local management decisions aimed at maintaining the enterprise within the bounds of the homeokinetic plateau. This task is complicated as each enterprise uses a specific combination of resources under the changing environmental conditions. That is why this paper only focuses on the underground coal mining companies. In Ukraine, most of these companies are state-owned and operate in the mode of contracted reproduction. Moreover, Ukrainian state-owned coal mines have always been inefficient because of the outdated technology, high level of equipment depreciation and a wide network of underground workings. Their operation is subsidized by the state that partly covers the output costs and provides low capital investments in equipment upgrading.

In terms of the systems approach, sustainability of an enterprise derives from the operational stability of its subsystems, which are called components (or constituents, elements) of sustainability. Current management decisions are usually focused on these subsystems. Identification of the specific components is directly connected with the factors determining the enterprise functioning sustainability and based on one of the following scientific approaches:

– a financial approach (supported by I. O. Blank [20] and S. Ya. Jeletsjkykh [21]) that

specifies operational, investment and financial components according to the type of a company activity but highlights the role of the financial element;

– a functional approach (described by I. V. Bryantseva [22], V. L. Ivanov [23], O. V. Korchagina [24]) that identifies technical and organisational (or operational, industrial and technological), social (or human resource, intellectual), environmental, economic and financial components that are treated as a system of equal elements of the enterprise internal environment interacting with the external environment.

The above functional approach has become the most popular among scientists. In addition, this approach also distinguishes a marketing component for the companies operating under market conditions and, therefore, constantly adapting to the changes in consumer preferences. However, distinguishing the marketing component for Ukrainian state-owned coal-mining companies is unnecessary, because coal trading is controlled by the State Enterprise «Derzhvuhlepostach», an operator of the Ukrainian wholesale coal market.

On the other hand, the functional approach does not take into account a mineral as a type of a labour subject, specific for mining enterprises. While other industrial companies do not often consider the influence of climatic conditions on their operation sustainability, mining enterprises have to consider both climatic (especially in open cast mining) and geological conditions of mineral occurrence.

To understand the effect of the local managerial decisions on the sustainability of a particular component and other elements, it is necessary to analyze the type of interaction between the concurrent and consecutive production processes of the coal mining enterprises and management functions.

Let us consider the type of relations between natural (mining and geological) conditions and other factors in detail. The geological and mining conditions of bituminous coal occurrence, which are necessarily taken into account in coal mine design and operation, include dip angle, seam thickness, continuity and depth of formations, relative position in the rock formation, strength and deformation properties of minerals, rock water yield, rock mass gas content and others.

Such factors as dip angle, seam thickness, depth of formations and the relative position in the strata directly influence the methods of mining and accessing the mine that cannot be changed throughout the entire period of the mine operation. However, while creating a plan for the development of mining operations, it is possible to modify the order of preparation and development of mine workings within a coalfield in order to simultaneously develop the areas of different depths and continuity. In the development of adjacent coal seams, the optimized sequence of extraction may contribute to the significant reduction of development and maintenance costs; and the use of interaction between adjacent seams and the one being underworked \ overworked in order to prevent unexpected coal and gas outburst and rock bumps. The above measures would make technical and organizational, as well as financial and economic components more sustainable.

The thickness of coal seams directly influences the place length and the choice of equipment for preparation and excavation works. The seam thickness on the state-owned coal mines of Lviv-Volyn and Donetsk coal basins ranges from 0.5 to 1m, while the mining equipment stope width is 0.8 m. Therefore, low thickness seam development entails out-of-seam dilution. Consequently, the quality of the coal decreases (because of ash content rise), especially taking into account originally high ash content in raw coal. The coal of this type is not suitable for energy generation at thermal power stations so it is necessary to reduce the ash content to the requirement demands by means of mineral processing. In result, a mining company incurs extra costs for transportation and mineral processing that negatively affects the financial and economic component. What is more, large amounts of minerals left over in tailings after mineral processing have a negative effect on the environment and decrease the level of the ecological component sustainability.

Strength and deformation properties of host rocks determine a method of extraction, a type of face support and a working area security service. Managerial decisions aimed at decreasing the negative effect of the rock mass

pressure and poor ground conditions directly influence the labour input and the costs of mine working support, production process and labour safety.

Another specific mining and geological factor affecting the coal mine sustainability is a rock water yield. It is a property of a mineral to return water under the force of gravity and a particular impact on the rock mass (dewatering, vacuuming, etc). The yield of water of rock differs within one coalfield because of random distribution and variable nature of the aquifers, as well as seasonal fluctuations of the precipitation level. Consequently, any mining enterprise requires a permanently operating mine dewatering system. Its power and maintenance costs depend on the depth of mine workings and a water collecting system. In addition, mine waters increase coal humidity and negatively influence the equipment that result in labour efficiency and coal price decrease.

A rock water yield also negatively impacts the functioning of the mine subsystems and the environmental conditions. The environmental consequences are caused by mechanical, chemical and bacterial contamination of mine waters and their high level of mineralization. The disposal of the contaminated mine waters into the hydrographic system is prohibited by the law, so mining enterprises must take specific measures to decrease the mine water level of pollution. However, these measures are cost-consuming, and the state-owned companies often do not have enough financial resources for their implementation. As a result, the coal mining enterprises are penalized for the polluted water disposal lowering the sustainability of the ecological component.

Coal seams, coal interlayers, and host rocks are gas containing, they may bear carbon dioxide, hydrogen sulphide, sulphur trioxide and methane. In fact, methane emissions are the largest and the most dangerous. In the process of a coal seam and the adjoining rock development, gas emits from the extracted minerals and the developed area, where it is accumulated after releasing from the coal seams and broken-down rocks. Gas emissions increase the volume of gas in a mine working and mainly depend on the geological conditions, the volume of gas release under rock metamorphosis, gas pervasion, and gas capacity of host rocks and coal seams. However, the increase of coal extraction volume, achieved due to the higher load on the mine face, provokes additional methane emissions from the developed and binding seams. Therefore, mining enterprises have to drain and capture methane by means of degassing and ensure the continuous operation of mine ventilation and drainage systems to maintain a permitted safe concentration of gas in the air. Thus, management decisions aimed at ensuring the continuous ventilation system operation are of high priority despite the other component impact on the enterprise.

The volume of mine gas affects not only the stability of the technical and organizational components but also makes a negative impact on the environment. Methane-rich air mixture from the shafts escapes into the air, which is believed to cause the greenhouse effect. It happens because of the obsolescence and functional depreciation of the mine ventilation equipment that plays a crucial role in keeping the safe level of pollutants in the mine air. Therefore, environment protection measures aimed at the methane emission decrease would increase the sustainability of the ecological component but, unfortunately, they is limited by the lack of financial resources of the state-owned enterprises.

A specific feature of underground coal mines is the necessity to continuously maintain the operation of the mine water drainage and ventilation systems even if the coal is not being extracted. Thus, management decisions aimed at the maintenance of the water drainage and mine ventilation systems must be of vital importance for the mine functioning despite its positive or negative effect on the sustainability of other components.

In Ukraine, coal mining is characterized by gradual mineral extraction within a large area in rather favourable mining and geological conditions. Thus, underground mining companies gradually extend the depth of coal seam development that complicates the conditions of mining. The first problem is the increase in the volume of gas in the coal seams and host rocks, which consequences have been outlined above. Secondly, the deposit development depth increase entails higher rock pressure that may

cause unexpected gas, coal and rock outbursts. Moreover, the temperature in mine workings is growing lowering the productivity of the mine extracting and sinking equipment and labour efficiency. Under these conditions, ensuring the stable amount of the coal output might be possible only under substantiation and implementation of technological, technical, organizational and economic management decisions. For example, cost-consuming shaft sinking operations and mine hoist system replacements are of a primary importance in the mines with the working depth of over 800 m. At the same time, most mines also require the most efficient management decisions concerning unexpected gas, coal and rock outbursts and mine ventilation.

However, the best decisions for ensuring the technical and organizational component stability can cause another component (for example, financial and economic or ecological) stability loss. In some cases, while making decisions about extension of the coal development depth, it is recommended to consider the development of non-commercial, non-conditional, left out of work upper-level coal reserves.

The choice of mining methods, equipment and manufacturing practices depends on the deposit characteristics received during the geological prospecting. On the other hand, managerial decisions about the order of deposit development within the coalfield boundaries will also influence the conditions of mining. Therefore, mining and geological conditions become the internal factors of the overall sustainability of the enterprise. At the same time, they are also the key components of the sustainability of the company subsystems.

The necessity to extract mineral resources under difficult mining and geological conditions requires conscious managerial decisions regarding the technical process, equipment, manufacturing and labour control, the methods of management etc. Therefore, a coal-mining enterprise should be considered as an open natural and anthropogenic system in the changing environmental conditions (Fig. 1).

In this system, the functional sustainability of the technical and organizational, social and labour, ecological, financial and organizational components depends on management decisions. Decision makers must evaluate the results of their managerial decisions not only as a balance between costs and economic benefits of the decision implementation but also taking into account the changes of the indicators describing a particular component or constituent and the overall sustainability of an enterprise.

The absence of such integrated indicators as profitability (Fig. 1), profit and total cost of 1 ton of saleable coal products among the selected characteristics of a coal-mining enterprise can be explained by the unprofitability of the majority of enterprises under investigation. Under such conditions, price-cost ratio should not be considered as one of the numerous factors indicating the level of the sustainability of a coal mining enterprise, but it must be taken into account as a specific quantitative indicator defining the bounds of the homeokinetic plateau and the enterprise position within these bounds along with the overall indicator of the system sustainability.

So, the bounds of the homeokinetic plateau and the position of the enterprise in relation to these bounds should be determined with the help of the indicators demonstrated in Fig. 1, also taking into account the price and cost of 1 ton of saleable coal products. The mentioned parameters describe the specific elements of the coal mining enterprise sustainability. In this case, a taxonomic approach is used to synthesize the partial indicators of sustainability according to some levels: the technical and organizational, social and labour, ecological, financial and organizational components of the anthropogenic constituent along with the natural constituent and environmental factors. The use of a taxonomic approach is determined by the need to compare a current level of each estimation value with the reference value (indicating an absolutely sustainable state of an enterprise) and to adjust the heteronymic and different-scale indicators to a unified non-dimensional scale within 0 to 1 interval. A taxonomic approach also requires considering the dynamics of the indicators being selected and combined according to the principle of objects and periods.

Secondly, the use of the geometric middling causes further reduce of the partial indicators in order to determine the level of sustainability of the anthropogenic constituent (according to its particular components) in a combination with the internal factors (evaluation of the

anthropogenic and natural constituent sustainability), as well as the level of sustainability of the enterprise according to the specific overall indicator.

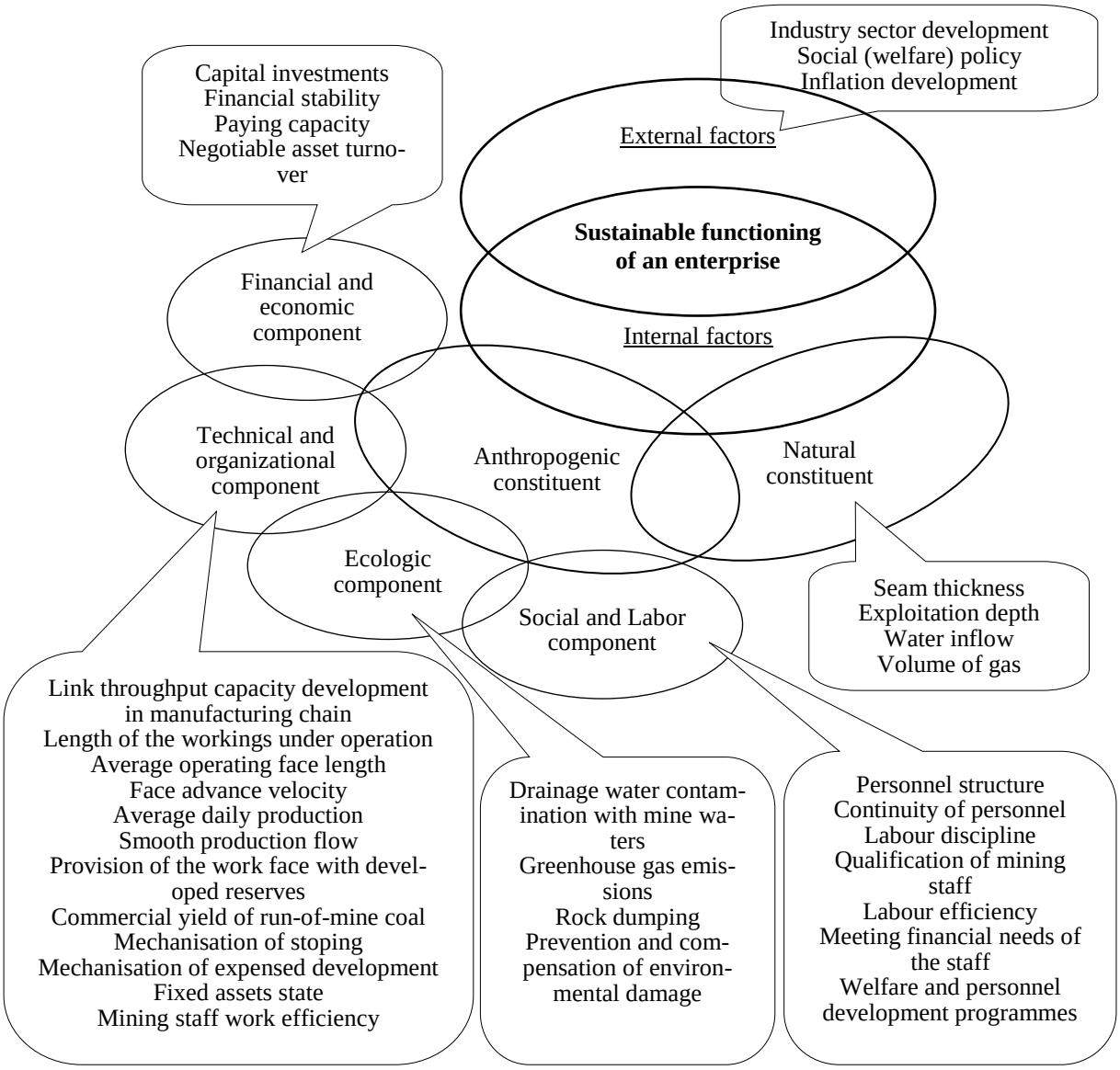

Fig. 1. Factors of sustainability of the coal-mining enterprise constituents and components

The obtained overall indicator of the coal-mining enterprise sustainability gives a static measure of an enterprise state but it does not specify whether the enterprise is within or outside the homeokinetic plateau. So, the next step is to define the bounds of the homeokinetic plateau by means of determining the regressive dependence between the total cost of 1 ton of saleable coal products and the level of the enterprise sustainability, and to use the graphical and analytical method for outlining the homeokinetic plateau taking into account a price for a ton of saleable coal products.

The area of the homeokinetic plateau, determined by this method, will vary due to the specific nature of dependence between the cost and level of the enterprise sustainability along with the level of coverage of total production expenditures by the product price. As for Ukrainian enterprises, the main reason why they are outside the bounds of the homeokinetic plateau is a constant domination of cost over price as a result of a long-term inefficient operation in the mode of contracted reproduction. Therefore, while analyzing the alternatives for ensuring the sustainable functioning of the par-

ticular enterprise constituents and components, a company management should focus on the measures advancing the enterprise to the homeokinetic plateau.

Conclusions. To make adequate managerial decisions regarding the sustainable functioning of an enterprise, it is important to evaluate what state an enterprise will achieve as a result of these decisions, and to analyse how this state will be improved in comparison with its initial state – whether it will advance an enterprise to the homeokinetic plateau or distance from it. Consequently, managerial decision-making should focus on ensuring the sustainability of an enterprise in terms of certain constituents and components and be based on the consistency of the costs required for their implementation with the changes in the enterprise sustainability.

The constituents and components of the coal mining enterprise sustainability are determined according to the enterprise specific activity conditioned by the gradual development of a mineral deposit in rather favourable mining and geological conditions and mining operations within a large area. The latter factor makes a negative impact on the anthropogenic component stability (which also comprises technical and organizational, social and labour, financial and economic, and ecological components of a mine), because of the significant complication of production process management and labour conditions, water drainage, ventilation systems, and underground transport; increase in production equipment depreciation; the need to support the wide network of mine openings, and the increase of the related costs in result. However, the above mentioned theoretical and methodological foundations of decision-making can help ensure the efficiency and objectivity of the managerial decisions for maintaining the enterprise within the homeokinetic plateau.

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ОБГРУНТУВАННЯ УПРАВЛІНСЬКИХ РІШЕНЬ ЗАДЛЯ ЗАБЕЗПЕЧЕННЯ СТІЙКОГО ФУНКЦІОНУВАННЯ ПІДПРИЄМСТВА

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Перспективи стійкого функціонування та розвитку підприємств України залежать від ефективності прийнятих управлінських рішень. У статті обґрунтовується необхідність формування наукових засад прийняття управлінських рішень, орієнтованих на забезпечення стійкого функціонування підприємства як багатофункціональної системи. В процесі дослідження використані концептуальні основи теорії управління та загальної теорії систем, а також такі методи дослідження: системний підхід, методи порівняння, узагальнення, систематизації та групування. Визначено, що зміни режиму функціонування підприємства та його структури зумовлюються впливом внутрішніх та зовнішніх дестабілізаторів стійкості. Виявлено, що стійке функціонування підприємства можливе в разі його перебування на гомеокінетичному плато та забезпечується керуючим впливом на складові та компоненти підприємства як системи. На прикладі вугледобувних підприємств визначено комплекс показників, що характеризують певну компоненту (техніко-організаційну, соціально-трудову, екологічну, фінансово-економічну), складову (антропогенну, природну) та загальну стійкість функціонування підприємства. Обґрунтовано доцільність прийняття управлінських рішень, виходячи з наближення підприємства до гомеокінетичного плато. Запропоновано визначати площу названого плато на основі залежності між повною собівартістю товарної продукції та рівнем стійкості функціонування підприємства та з урахуванням ступеня покриття повних витрат на виробництво товарної продукції її ціною. Узгодження зміни рівня стійкості функціонування підприємства із витратами, необхідними для реалізації управлінських рішень, забезпечують ефективність та об’єктивність прийняття рішень щодо утримання підприємства на гомеокінетичному плато.

Ключові слова: управлінське рішення, стійке функціонування підприємства, фактори стійкості, гомеокінетичне плато, вугледобувне підприємство.

ОБОСНОВАНИЕ УПРАВЛЕНЧЕСКИХ РЕШЕНИЙ ДЛЯ ОБЕСПЕЧЕНИЯ УСТОЙЧИВОГО ФУНКЦИОНИРОВАНИЯ ПРЕДПРИЯТИЯ

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Перспективы устойчивого функционирования и развития предприятий Украины зависят от эффективности принимаемых управленческих решений. В статье обосновывается необходимость формирования научных основ принятия управленческих решений, ориентированных на обеспечение устойчивого функционирования предприятия как многофункциональной системы. В процессе исследования использованы концептуальные основы теории управления и общей теории систем, а также такие методы исследования: системный подход, методы сравнения, обобщения, систематизации и группировки. Определено, что изменения режима функционирования предприятия и его структуры обусловлены влиянием внутренних

и внешних дестабилизаторов устойчивости. Выявлено, что устойчивое функционирование предприятия возможно в случае его пребывания на гомеокинетическом плато и обеспечивается управляющим воздействием на составляющие компоненты предприятия как системы. На примере угледобывающих предприятий определен комплекс показателей, характеризующих определенную компоненту (технико-организационную, социально-трудовую, экологическую, финансово-экономическую), составляющую (антропогенную, природную) и общую устойчивость функционирования предприятия. Обоснована целесообразность принятия управленческих решений, исходя из приближения предприятия к гомеокинетическому плато. Предложено определять площадь указанного плато на основе зависимости между полной себестоимостью товарной продукции и уровнем устойчивости функционирования предприятия и с учетом степени покрытия полных затрат на производство товарной продукции ее ценой. Согласование изменения уровня устойчивости функционирования предприятия с затратами, необходимыми для реализации управленческих решений, обеспечивает эффективность и объективность принятия решений по удержанию предприятия на гомеокинетическом плато.

Ключевые слова: управленческое решение, устойчивое функционирование предприятия, факторы устойчивости, гомеокинетическое плато, угледобывающее предприятие.

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РОЗРОБКА ІНФОРМАЦІЙНОЇ СИСТЕМИ АНАЛІЗУ ТОВАРНОЇ ПОЛІТИКИ ПІДПРИЄМСТВА

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У статті розкрито актуальність дослідження задачі аналізу товарної політики. Виявлено відсутність у відкритому доступі програмних продуктів, здатних вирішувати дане питання. Необхідність створення інформаційної системи для аналізу товарної політики обумовлена тим, що наявні інформаційні системи відрізняються або високою вартістю, або багатофункціональністю.

Обґрунтовано використання методу портфельного аналізу для вирішення задачі аналізу товарної політики підприємства – матрицю BCG. Даний метод дозволяє продумати теоретичну основу, об’єктивно оцінити параметри, зменшуючи суб’єктивізм. Відрізняється від інших методів і моделей тим, що результати обчислень є наглядними та зрозумілими. Представлено етапи алгоритму, який покладено в основу інформаційної системи. Перший етап передбачає збір даних і побудову вихідної таблиці, на другому та третьому етапах розраховуються темп зростання та відносна частка ринку відповідно, на четвертому – будується матриця BCG та надаються рекомендації щодо товарів, які виявилися в різних квадратах.

Розроблено інформаційно-програмну систему аналізу товарної політики з використанням об’єктно-орієнтованої технології, яка базується на успадкуванні, інкапсуляції та поліморфізмі. Наведено концептуальну модель інформаційної системи, що визначає структуру системи, властивості її елементів і причинно-наслідкові зв’язки. Представлено діаграму класів, що являє собою множину класів, інтерфейсів та відносин між ними. Для кожного класу задано атрибути та операції. Наведено інтерфейс проектованої інформаційної системи, що відрізняються доступністю та зрозумілістю.