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RISK-ORIENTED APPROACH TO THE DEVELOPMENT OF AN INDUSTRIAL ENTERPRISE AS AN ELEMENT OF AN OPEN SOCIO-ECONOMIC SYSTEM

РИЗИК-ОРІЄНТОВАНИЙ ПІДХІД ДО РОЗВИТКУ ПРОМИСЛОВОГО ПІДПРИЄМСТВА ЯК ЕЛЕМЕНТА ВІДКРИТОЇ СОЦІАЛЬНО-ЕКОНОМІЧНОЇ СИСТЕМИ

Summary. The article presents a conceptual framework for a risk-oriented approach to the development of an industrial enterprise as an element of an open socio-economic system. The authors investigate the dynamic operational environment of modern enterprises, marked by high uncertainty, growing economic risks, globalisation challenges, innovation pressure, and external instability. In this context, risk is viewed not only as a threat but also as a catalyst for change, driving adaptation, transformation, and strategic development. The article explores the dialectical interconnection of the categories of development, sustainability, and risk, arguing that economic progress is inherently linked to destabilising factors that trigger internal changes and improvement processes. Contemporary approaches to risk management are analysed, with a focus on integrating risk factors into strategic planning and highlighting innovation as both a risk enhancer and a source of strategic advantage. Particular emphasis is placed on the synergetic approach, where the enterprise is conceptualised as an open, dynamic system undergoing constant evolution due to internal and external contradictions. These contradictions – between stability and variability, between functioning and development, and between the goals of the system and its components – are seen as the core drivers of transformation, generating internal tension and enabling the transition to higher efficiency states. The authors propose a conceptual model of risk-oriented enterprise development, based on adaptive management, balanced integration of endogenous and exogenous risks, and dynamic equilibrium between continuity and change. Risk is considered a vital component of innovation capacity and long-term competitiveness. The study offers a rethinking of sustainable development as a process of continuous rebalancing through strategic contradiction management and adaptation mechanisms. Thus, risk emerges as not merely a hazard but a functional and integral force of enterprise evolution, necessitating new approaches to strategic planning and sustainable development in open systems.

Keywords: economic risk, strategic development, open system, adaptive management, innovation resilience.

Formulation of the problem. Modern industrial enterprises operate in an environment of high dynamism and uncertainty, driven by globalisation processes, technological transformations, political and economic instability. In such circumstances, economic risk is not only an external threat, but also an internal impetus to find flexible and adaptive mechanisms for managing enterprise development. Of particular relevance is the need to consider an enterprise as an open socio-economic system that constantly interacts with the changing external environment. Ignoring the risk-oriented approach in strategic management makes it impossible to ensure sustainable development of an enterprise, reduces its competitiveness and innovation potential. Despite the growing scientific attention to the problem of risks in the industrial sector, the issue of integrating risk management into the systemic development of enterprises as open structures with social responsibility and economic adaptability remains insufficiently researched. This necessitates the

substantiation of modern approaches to managing the development of industrial enterprises based on the assessment and consideration of economic risk in a broad systemic context.

Analysis of recent achievements and publications. In recent years, considerable attention has been paid to the problem of risk management in the activities of enterprises, especially in the context of an unstable macroeconomic environment, growing exogenous threats and the need to increase the adaptability of the industrial sector. The research of such scholars as H. T. Kleindorfer [6], Y. Lu [10], D. Simchi-Levi [7], emphasise the importance of developing integrated risk management models focused on the systematic consideration of external and internal factors affecting production processes. In the works of T. Aven [8] and E. Hollnagel [9] emphasise the importance of the transition from reactive to proactive risk management, which is especially relevant for open socio-economic systems where the enterprise operates in interdependence with the environment. Ukrainian researchers, in particular S. Lipych [4], O. Kuzmin [3], I. Savchenko, pay attention to the issues of strategic management of enterprise development in conditions of turbulence, the need for adaptive planning and the formation of risk-oriented mechanisms. The publications of O. Gudzynsky [2] and L. Shaulska [5] reveal the role of risk as an integral element of the modern management paradigm, which should be integrated into the system of strategic development, innovative renewal and organisational transformation. At the same time, although the issue of economic risk is being actively studied, a comprehensive approach to integrating risk management into the development system of an industrial enterprise that functions as an open socio-economic system remains insufficiently developed. Insufficient attention is paid to interdisciplinary aspects that take into account the interaction of economic, social and organisational factors in the formation of a risk-oriented development strategy.

The purpose of the article is to substantiate a risk-oriented approach to the development of an industrial enterprise as an open socio-economic system, taking into account the impact of external and internal risks, to identify the key determinants of effective management under conditions of uncertainty and to form a conceptual model of integrating risk management into strategic planning.

Presentation of the main material. According to the paradigm of economic development in an unstable economy, one of the goals of enterprises is to improve the mechanism of sustainability. And development management is the highest goal of managing socio-economic systems at all levels. The concepts of economic development, sustainability and risk are categories that have a complex, multilevel and contradictory content. The evolution of views on the problem of development has led to its understanding today in a broader sense than that of the Keynesians and neoclassics. Development is considered in the context of the trinity of the categories of «growth», «change» and «improvement», not only as an object of study, but also as an object of management of the country, industry, region and individual enterprise. There is a close relationship between the level of development of productive forces in society and the specific meaning of the categories of «risk», «sustainability» and «development». It is a postulate of economic theory that with the development of productive forces, the forms of their interaction in the creation of a social product evolve. At the current stage of economic functioning, such a form is an enterprise, which is considered as an open socio-economic system. Management of development processes, increase of the level of sustainability, and consideration of risk factors are associated with the consideration of enterprises as open, complex, dynamic socio-economic systems consisting of a large number of elements that interact with each other in a complex manner. The peculiarities of their functioning and development, performance parameters and the state of the internal environment depend on the state and dynamics of the external environment. The openness of the system is determined by its connection with the external environment, which is realised through the adaptation function.

Risk is an attributable characteristic of any reasonable activity. There is no economic behaviour that is risk-free. The essence of risk is a deviation from the expected course of events under the influence of various factors. Economic risk is the possibility of failure to achieve the planned, targeted performance results.

Risks are a function of the establishment and development of the following basic principles of the market economy: freedom of enterprise and freedom of consumer choice. The consequence of risk is the natural rotation of enterprises, which, in extreme cases, lose their stability and cease to be integral systems (bankruptcy, vertical and horizontal integration strategies, mergers and acquisitions).

There is a high correlation between efficiency and risk. Risk and competition are the main drivers of economic development. Economic progress is ensured by various «risk stratification». Risk is a regulator of the economy, performing a protective (analytical) function. Risk accounting helps to ensure the most rational development of

microeconomic entities, which are the basis of the market, and the entire system achieves the necessary balance, stability and crisis prevention.

The absence of risk is ultimately detrimental to the economy, as it loses the incentive to improve the management system and, as a result, development comes to a standstill. Risk is one of the motivating factors for the intensification of business development. Risk is an incentive for innovation, performing a constructive (innovative) function and acting as an engine of economic development.

The implementation of development strategies, especially innovative ones, is accompanied by increased risk, and both their success and the reliability of performance assessments are possible only when risk-based management systems are implemented.

Compliance of the parameters of internal processes with the changing requirements of the external environment guarantees the fulfilment of target functions. Dynamic sustainability and development are functions of the adequacy of internal changes occurring at the enterprise to external changes that allow achieving higher-order goals (qualitative and quantitative). Innovation is the essential basis for development, dynamic sustainability and strategic competitiveness. Innovation processes are accompanied by increased risk, which, on the one hand, leads to a decrease in economic sustainability and efficiency at the moment, and, on the other hand, allows achieving sustainable competitive advantages and ensuring high efficiency when using special management approaches aimed at ensuring sustainability.

The concepts of economic sustainability, risk and development are categories that have a complex, multilevel, multidimensional and contradictory content. Risk and sustainability are interrelated economic categories, characteristics of systems in the process of activity (functioning) and in the process of development. In an increasingly unstable environment, the production, financial, and investment activities of an enterprise become much more complicated, and the risk of not achieving the set goals increases, which leads to the need to find new management methods aimed at ensuring sustainability. It is particularly noteworthy that sustainability is no longer the opposite of volatility, but rather complements and determines it. Thus, to maintain resilience in response to the impact of risk factors, an enterprise, as an open system, must change. In addition, when considering sustainable development, it is necessary to emphasise that the sustainable state of the economy at any level is always relative, since sustainability is in dialectical unity with the category of variability, which is primary to it. While the external form of any process is dominated by the moment of stability, the internal content of processes and their essential aspects is dominated by instability and disequilibrium, which are expressed in the following [3]:

The disequilibrium increases as the system develops due to different rates of change of its individual elements and their acquisition of new qualities. When studying systems with a complex, dynamic structure (including manufacturing enterprises), it is necessary to consider the concept of equilibrium of individual elements and the relationships (proportions) between them. At each stage of its development, an enterprise is characterised by the composition and quality of its elements, the form of their organisation and interconnection. At a certain time interval, these indicators are in relative harmony (equilibrium state), which creates conditions for the effective functioning of the enterprise. However, since each element is in continuous motion and development, and the pace and direction of this development do not coincide due to the different nature of the elements (the rate of moral and material depreciation of equipment, changes in the consumer properties of products, the level of qualifications and competence of personnel, etc.), entropy accumulates in the system, harmony is disturbed, and efficiency decreases.

Restoring balance requires taking into account and coordinating the emerging changes, contradictions and imbalances in time and space. It should be noted that «imbalances and contradictions, objectively inherent in matter, are the source and driving force of its development. The leading social contradictions in terms of the role and impact on the dynamics of social development are economic contradictions» [8]. Imbalances and imbalances in enterprises can be considered as internal and external contradictions that are sources of development. Recall that according to the second law of Hegel's dialectic, the driving force of development is the unity and struggle of opposites [8].

Considering the contradictions of the enterprise as a system, the most significant sources of development include the following types of contradictions [1]:

– contradictions between the function and purpose of the system;

– contradictions between the system's resource needs and the ability to meet them;

– contradictions between the changing quantity and the previous quality;

– contradictions between the old and the new;

– contradictions between the desire for order and chaos;

– contradictions between the system's desire to establish a sustainable state and the means of achieving it;

– contradictions between the system's goals and the goals of its components;

– contradictions between the processes of functioning and development;

– contradictions between functioning and structure.

A fundamentally important feature is that the contradictions of micro-level system components, accumulating, are reflected at the macro level. In turn, the contradictions of the macro-level inevitably affect the contradictions and development of lower-level systems.

There are three ways to resolve contradictions:

– variability (adaptation);

– heredity (reproduction);

– selection, which occurs in the process of competition.

Let us consider the importance of the environment for the development of an enterprise in accordance with the synergistic approach. The environment plays an important role in the entropy- non-entropy exchange, which is as follows:

– the environment can be a generator of strong fluctuations for the system;

– the environment can also act as a factor of order, since the same fluctuations, increasing, bring the system to the threshold of self-organisation;

– the environment can cause an outflow of entropy from the system;

– the environment can contain systems, the cooperative exchange of entropy with which allows to increase the level of orderliness [5]

Summarising the above, we can name the most significant points that characterise the unity of the categories of risk, development and sustainability.

Imbalance serves as a source of contradictions that, on the one hand, reduce the efficiency of the system, and, on the other hand, create an objective basis for its development and transition to a new level of efficiency. Development destroys many processes of functioning, creating conditions for their more sustainable course in the future. Understanding how an economic system exerts the force that constantly changes it is of great importance. When the system loses its stability, self-organising processes develop to create new compositions of elements and qualitatively change the former steady state.

Both stability and instability are equally necessary in the development of any system. An absolutely unstable system cannot withstand disturbing influences, lacks the ability to adapt and quickly collapses, while a super-stable system, suppressing any influences, is unable to change qualitatively, hence is deprived of the possibility of development, and its destruction becomes only a matter of time. The difference between absolutely stable and absolutely unstable systems lies in the timeframe of their existence. The category of economic sustainability is closely associated with a certain state of economic dynamics, with a positive orientation.

The concepts of equilibrium as a characteristic of functioning and variability as a characteristic of development, transition from one stable state to another form a dialectical unity. To maintain sustainability, a system must be changeable. Dynamic sustainability is achieved through constant disturbances of equilibrium, periodic change of equilibrium states by following the cyclic laws of evolution.

The main goal of enterprises in the long term is to achieve sustainable, managed development, which involves the use of the principles of adaptation and elimination of risk situations. Sustainable development is based on maintaining an equilibrium economic situation (conditions for effective functioning) and creating a mechanism for managing sustainability in the implementation of development strategies.

The processes of development of manufacturing enterprises are accompanied by increased risk, which, on the one hand, leads to a decrease in economic sustainability and efficiency at the moment, and, on the other hand, allows achieving strategic competitive advantages and high efficiency when using special management methods, including preventive accounting of risk factors that deflect impacts.

Conclusions. An important distinguishing feature of enterprises operating in the open systems mode is high uncertainty and poor predictability of the nature of organisational relations. Interacting with the environment, an enterprise constantly changes both inputs (consumed resources) and outputs (nature of the result, type of system product). Consideration of enterprises as open systems makes it possible, on the one hand, to use the results of systemic research, which studies the patterns of development and sustainability of systems of different genesis, and, on the other hand, necessitates the development of new concepts, approaches, mechanisms and management models. The complex phenomena of self-organisation, transition from chaos to spatial and temporal order, creation of new, diverse compositions of elements and qualitative changes in the former stationary state determine the feasibility of using a synergistic approach. A distinctive feature of the concept of

'sustainability' in relation to an enterprise as a system is that it reflects the ability to maintain its integrity (i.e., to function continuously as a single entity) and simultaneously develop (progress) despite deviating influences. Hence, the sustainability of an enterprise as a system is a state in which both the correspondence between the elements that form it and the processes and the compatibility of internal parameters of functioning and development with changing environmental conditions are ensured and maintained. The sustainability of an enterprise characterises both the parameters of its functioning and development.

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Анотація. У статті розглядається концепція ризик-орієнтованого підходу до розвитку промислового підприємства в умовах відкритої соціально-економічної системи. Автори аналізують динамічне середовище функціонування підприємств, яке характеризується високим ступенем невизначеності, зростаючими економічними ризиками, глобалізаційними викликами, інноваційним тиском і нестабільністю зовнішніх факторів. У цьому контексті ризик постає не лише загрозою, але і джерелом змін, що стимулюють розвиток, адаптацію і трансформацію підприємств. У роботі розкрито діалектичну єдність таких категорій як розвиток, сталість і ризик, підкреслено, що економічний розвиток неможливий без певного рівня дестабілізуючих чинників, які запускають процеси внутрішніх змін та самовдосконалення. Узагальнено сучасні наукові підходи до ризик-менеджменту, включаючи інтеграцію ризикових факторів у стратегічне планування, визначено роль інновацій як ключового чинника, що зумовлює одночасно як підвищення ризику, так і стратегічні переваги. Особливу увагу приділено синергетичному підходу, відповідно до якого підприємство розглядається як відкрита динамічна система, що змінюється під впливом як внутрішніх, так і зовнішніх суперечностей. Встановлено, що саме ці суперечності – між стабільністю та варіативністю, між функціонуванням і розвитком, між цілями системи та її елементів – є джерелом внутрішньої напруги, яка забезпечує рух уперед і формування нової якості. Автори формулюють концептуальну модель ризик-орієнтованого розвитку підприємства, що базується на адаптивному управлінні, врахуванні ендогенних і екзогенних ризиків, динамічному балансі між стабільністю і змінами, орієнтації на стале функціонування в умовах невизначеності. Висвітлено важливість ризику як елемента інноваційної активності та стратегічної конкурентоспроможності. Запропоновано бачення сталого розвитку підприємства як процесу, що супроводжується періодичним відновленням рівноваги шляхом усвідомленого управління протиріччями та адаптаційними механізмами. Отже, ризик виступає не лише як загроза, а як невід'ємний рушій трансформації, що потребує переосмислення управлінських підходів до стратегічного планування й розвитку підприємства в умовах відкритих систем.

Ключові слова: економічний ризик, стратегічний розвиток, відкрита система, адаптивне управління, інноваційна стійкість.