DOI: https://doi.org/10.30525/2256-0742/2019-5-4-122-129

FORMING THE CONDITIONS OF INNOVATIVE DEVELOPMENT OF ENTERPRISES IN THE TRANSFORMATION ECONOMY

Iryna Kreidych¹, Alla Bielova², Gheorghij Olijnyk³

Abstract. The aim of the article is to study the innovative capabilities of a production enterprise, it is determined that the inefficient use of innovative ideas by enterprises results from the need to increase the economic development of industrial enterprises and the introduction of innovative ideas and projects, as well as the development of a model of innovative development of the corresponding type. The subject of the study is: factors of generating signs of innovation, the influence of scientific and technical developments on the industrial enterprise is determined. The analysis of the existing structure allows us to determine precisely the priority directions of innovative development in the conditions of global changes and integration into the world economic space of post-socialist enterprises, taking into account constructive and key factors ensuring their resultant effect. In addition, a closed scheme of the formation of a system of strategic innovation development, which will allow the verification of the adequacy of predictive values and ensure the achievement of strategic innovative performance of the business entity, is proposed. Methodology. The article uses classical methods of scientific research, among which are: observation, scientific abstraction and comparison, analysis and synthesis. Results. The conducted research is based on the thesis that structural and dynamic shifts within the production enterprise and their transition to a qualitatively new level of economic growth are only possible if active development of innovative resources of different nature will increase the ability of the enterprise to self-development, improve competitive positions, and make it possible to become an equal partner in the world community. Practical implications. Explains the complex causes of the current state of industrial enterprises, namely, former socialist enterprises, their problems were identified, and the ways of the enterprises' exit to the new level of development are proposed taking into account the constitutive and key factors of ensuring the effectiveness of the innovation activity itself. The closed-loop scheme of strategic innovation development of a production enterprise is suggested in the practice of management that will protect an enterprise from the inefficient use of innovative resources and innovative opportunities on the basis of a counter-check on the adequacy of the constructed forecasts and the feasibility of carrying out innovative changes and attracting investment resources. Value/originality. This research was carried out within the framework of the scientific work of the Department of Theoretical and Applied Economics of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" (№ 0112U007817) on the theme: "Globalization of the directions of formation of industrial potential in conditions of post-industrial transformation".

Key words: innovative potential, strategic innovation development, innovative capacity, innovative opportunities, innovative development of economic processes.

JEL Classification: O30

1. Introduction

Under the new modern conditions of the development of the economy of any country and its orientation into the world economic space, the activation of innovation activity becomes increasingly important, since without significant changes and fundamentally progressive structural changes with the renewal of fixed assets and improvement of the structure of capital, it is impossible to effectively ensure the socio-economic development of a business entity and the state as a whole.

In developed countries, the scientific and technical policy tends to change to an innovative one since it

Corresponding author:

¹ National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Ukraine.

E-mail: kreidichin@gmail.com

² Institute of Innovative Education of

Kyiv National University of Construction and Architecture, Ukraine.

E-mail: allal64@ukr.net

³ Open International University of Human Development "Ukraine", Ukraine.

E-mail: oleynikunvukraina@gmail.com

has expanded capabilities in addressing the tasks of modernizing the economy, creating new knowledge and implementing them in operational processes that are conditioned by the economic benefits of both the business entity and the economy of the country in general.

Market economic conditions and integration in the global European space force the economic actors to fully realize the necessity of transition to an innovative way of development that implies a number of practical measures of implementation of this course. But, despite all taken measures, a significant number of productionindustrial complexes still did not show activity in questions of innovative development and change in the direction of continued existence in an unstable market environment and development.

2. Theoretical base of research

Theoretical and applied aspects of innovation development of industrial enterprises are devoted to the development presented in the writings of such scholars as J. Schumpeter, V. Medinsky, S. Ildemenov, P. Zavlina, A. Kazantseva, L. Mindeli, and others. Studies show that the most significant results based on theoretical and practical studies have been achieved by countries with a developed market economy. It is also worthwhile to note that approaches to the definition of innovation as such and its impact on enterprise development vary, which is explained by different approaches to the definition of an object and the peculiarities of its implementation. However, at the moment, further systematic and universal questions regarding the expediency of forming an effective organizational and economic model of innovative development of an industrial enterprise that will ensure its functioning in a changing market environment with the provision of competitive advantages and long-term existence will require further study and solution.

3. Identification of urgent problems hindering active innovation

Innovative development around the world is conditioned by the necessity of constantly increasing and maintaining competitive advantages while the active involvement of innovative ideas, innovative technologies enables enterprises to operate effectively in the market, feeling themselves a full participant in the market process, stimulating the interest of attracting new consumers, improving the performance of the latter. The level of competitiveness of an economic entity depends to a large extent on its innovative potential, the activity of perceiving new ideas, the ability to develop new technologies and adapt to market conditions in a timely manner.

It is worthwhile emphasizing that taking into account the depth of innovation processes, the breadth of application and utility from an innovative product from the consumer's point of view is the driving argument of an entrepreneurial structure since not all innovations lead to the growth of competitiveness, but those that are oriented towards new markets and are accompanied by original ideas and developments.

Many researchers in the subject are discussing the time, place, and conditions of innovation, as unsuccessful research focused on a narrow segment of the market can level innovation as such.

It is worth pointing out that the experience of developed countries on the basis of radical reforms shows that the innovative development of economic processes without understanding the ultimate goals of transformational change and the goals of their achievement could threaten a serious failure.

Many researchers note the lack of interest in national enterprises in the development of innovation as such. And the reason in our view lies in the fact that in the conditions of constant threats to the national statebuilding, innovation is not given enough attention (Sviridova, 2016).

The low level of corporate expenses is often associated with the imperfection of the process of technological modernization, that is, enterprises must first modernize production and replace the fixed assets in structural subdivisions/shops, and then move on to innovations based on the original ideas embodied in the development. However, practice shows that large investments and innovations do not compete with each other, but rather they are accompanying each other. Moreover, it is those enterprises that have been actively investing in recent years, carrying out innovations of high quality, but have a significant share of enterprises that have never mastered investments, but did not engage in research and development, and did not implement new technologies and did not produce new goods/services.

One can distinguish the urgent problems hindering active innovation, in particular, Ukrainian enterprises:

1. Lack of current legislation regulating innovation activity at the enterprise, the Law "On Innovation Activity" has not been passed, etc. This is the cause of many controversies and misunderstandings between the government, academics, and enterprises about the very concept of innovation development, and the definitions of innovation products, innovation processes, etc.

2. Insufficient financing of innovative activity by enterprises due to the high cost of implementation and development of innovations, as well as long-term investments. Enterprises do not have their own funds to finance research, and the possibility of attracting funds from external sources is too limited. Lenders do not have guarantees to repay loans and receive dividends, as innovation activity is exposed to a much greater number of risks than investment activity.

3. Also, domestic enterprises are characterized by the lack of a modern base for the implementation of

scientific developments due to significant depreciation of fixed assets or their absence. A large number of industrial, construction and engineering enterprises are characterized by high resource intensity and energy intensity of production, which is already aggravated by the level of wear and tear of production equipment. Due to the backwardness of the capital stock of enterprises, the economy as a whole is unacceptable for financial investments in conducting research and practical developments.

4. Presence of the phenomenon of resistance to innovations, which is most often due to two reasons:

- from the point of view of a business entity – a person is fearful of everything new, not inherent in the current state, which manifests itself, as a rule, in transitional moments, especially crisis, military-economic, sociopsychological instability, when the introduction of something new is perceived as a threat to the existing;

- from the perspective of the investor, the emergence of a new, more progressive technology, usually built on new principles, creates a threat to the existing. Therefore, investors are trying to keep it for a while, at least until then, as long as the previous investment resources will not bring a beneficial effect.

5. Lack of highly skilled personnel capable of effectively managing the innovation process and the personnel problem is felt at all levels of management, both country as a whole, and separate economic entities.

6. The expense of conducting marketing researches of innovative goods/services makes it impossible to carry them out at an appropriate level, and in case of an unstable economic situation, the predicted estimation of demand for innovative products, even in the shortterm period, becomes complicated.

7. Innovation and production activity requires the company to have an adequate management structure aimed at the innovative effect with new requirements and living conditions.

8. Low estimation of human capital, which is not taken into account when determining the authorized capital, neither in substantiating innovation-investment decisions nor in choosing the appropriate strategy for innovative development of a business entity, while the worldwide practice has gained wide popularity and actively used systems on the development of intellectual human potential.

According to the latest statistics, in Ukraine, the most active innovations are large enterprises with a population of more than 1,000 people, characterized by the possibility of financing and lobbying their own interests, which determines the success of the competition. According to foreign experience, innovative development is more convenient for large enterprises and corporations.

It is worthwhile to note the need to form an effective system for managing innovative activities and mastering innovative management technologies at those enterprises that have the opportunity to innovate. Innovative development in a large industrial enterprise can be effectively implemented with the active inclusion of a special organizational structure that can be called the centre of innovation and technological support, and the creation of units at enterprises that would be directly responsible for innovation and innovation can accelerate the process where the merger is allowed in such divisions the functions of strategic and innovative development, which are closely interrelated and provide an effective innovative development of a business entity (Sviridova, 2016).

It is worth pointing out that the modern type of sectoral economic development depends on the realization of potential competitive advantages, stimulation of innovation development, which is connected with the intensification of the processes of increasing the innovation and information potential, as well as the practical use of intellectual technologies that allow the processing of databases and optimize not only production processes, but also management technology.

Innovative activity varies according to regional levels with their own infrastructure, their own level of development, specific approaches to the development and attraction of innovative and investment resources.

One of the most important problems of the present and the development of the economy of innovation type is to ensure the effectiveness of the introduction of new forms of entrepreneurial activity where the formation and development of adequate innovative systems capable of effectively implementing innovative ideas of a higher level on the basis of high organization, effective use of resources of different nature that will ensure the achievement of balance their functioning and elimination of destructive consequences in the process of innovations from the Regional Committee effective strategy for innovation.

We consider it worthwhile to note that the inefficient use of innovative ideas by enterprises is due to the need to improve the efficiency of the implementation of the problems of the economic development of industrial enterprises and the implementation of targeted innovative projects, which is why the increasing priority is the question of determining the priority directions of strategic development in the conditions of global changes and integration of the country's economy before European dimension, taking into account the constructive and key factors ensuring their resultant effect. Hence, the solution to this task is urgent, which will enable the development and substantiation of theoretical and conceptual foundations for the formation of the basis of strategic innovation development of enterprises and the introduction of the organizational and economic mechanism of strategic development of the latter for the purpose of securing a whole-oriented innovation development of industrial enterprises.

4. Classification and structuring of innovations and innovation development of a production enterprise

Classification and structuring of innovations are shown in Figure 1. Characterizing the classification features of innovation presented in the figure, where it is expedient to distinguish between the six types of innovations, namely, the basic innovation based on scientific discoveries, inventions and aimed at the development of new products, new technology, and new types of services.

Improving innovation is based on the improvement of manufactured goods and the introduction of advanced technologies.

As for industrial innovation, they are implemented based on the introduction of new developments in the production process and are characteristic of primary production activities.

Management of the same innovations will strengthen managerial technologies with new knowledge and directly affect the production activities of the entrepreneurial sector.

The product innovation to meet the needs of highquality new products according to customer's request and process – introducing new elements in the key processes of the entity, namely, management, production, marketing and internal factors determined, which is based on the effectiveness of the resulting performance.

If the first stage of the innovation process begins with basic research, the second – research of their practical application, the latter provides just the production of a new product with unique properties.

Innovation process covers the development cycle of a scientific and technical idea before its realization, where successful innovative activity involves determining the conditions for its implementation, namely:

- technological advantage of the goods offered to the consumer;

- the desire to produce qualitatively new products;

- favourable competitive environment;

- adequate organizational and managerial structures (the effectiveness of the marketing and sales system, which interacts with innovative active enterprises with consumers to identify and meet the new requirements of buyers to the proposed goods). In the event that the producer-innovator orients the activity not to the needs of the consumer but to the basis of new knowledge, the percentage of innovation success is significantly reduced, because the consumer is interested not in a new product but in new benefits from it;

– availability of innovative potential of enterprises actively introducing innovative ideas and innovative developments. For this purpose, the company must possess intellectual, material, financial, personnel, and other resources.

The above characteristics of the innovative development of the construction company are interdependent and complementary; they can be defined as a key factor in making innovative decisions for the effective development of the business structure in the spatial-temporal aspect, taking into account the factors of the macro and micro-environment.

It is advisable to form the classification structure of the production enterprise, taking into account both the signs and the types of innovative development of the latter (Figure 2).

The author's above calculations and justification determine the probability of the process of purposeoriented management of the formation, growth and use of the innovative potential of the manufacturing enterprise by attracting the optimal composition of methods, instruments, and application tools in the context of improving the technology of management of innovation development in relation to the resources available in the company, reserves and opportunities of different nature.

It must be admitted that the formation of an organizational model for the management of the activity of production enterprises is, at present, a priority methodological task, which, in the event of its solution, will determine the regularities of their goal-oriented movement through the use of the established theoretical approaches and reveal the most general connections and representations of reality (Mikitenko, 2009).

As an abstract object of economic research, we consider the process of management of a production enterprise in the context of achieving its dynamic equilibrium and performance. Hence, for the formation of the organizational model of the innovation enterprise, it is necessary to distinguish the basic characteristics and the composition of the regressors incorporated into the generalized model, the target functions, and the area of definition of this function with a set of constraints and

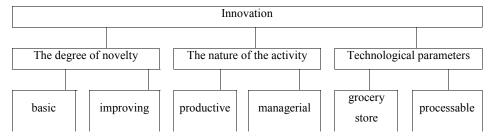


Figure 1. Classification of innovations by signs of structuring

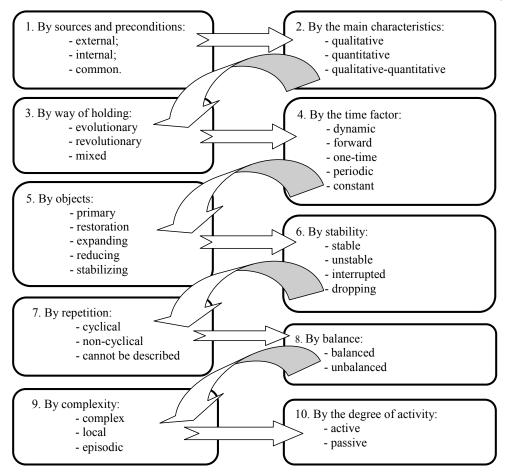


Figure 2. Classification of innovation development of a production enterprise

conditions that determine the degree of abstraction of the future model.

Organizational and economic models are designed to reduce the degree of uncertainty, increase the level of informative value, in order to reduce risks, improve competitiveness, and increase profitability.

Prominent scholars-economists deduct different interpretations of receiving rewards - profits. At the same time, profit maximization is seen as a measure of its successful functioning as a target function, which is determined by the volume of production, the level of prices and the minimization of production costs: in addition, those firms that did not increase profits disappeared as a result of market competition. The objection to the implementation of in-depth analysis of processes within the firm and the explanation of its behaviour through the parameters of the importance of the impact of the market without taking into account its type and features - leads to abstracting the enterprise, as such, and allows considering it as a model of implementation of the "black box" dominant by input flow, which one can predict the output parameters and determine the results of the activity.

Such a basic model of innovation development ensures the implementation of profitability management functions of the enterprise; at present, it allows describing its behaviour in a competitive market environment and provides many opportunities for receiving and processing the necessary information flow from the external environment.

In order to choose the most effective and rational form of organization of innovation activity, it is necessary to have an idea of the scale and future prospects of the innovative development of the enterprise.

The study of world economic processes shows that a whole-oriented policy in support of the development of innovative entrepreneurship provides significant economic growth, and state support for innovative entrepreneurship provides the realization of potential opportunities of the enterprise with the development of strategic perspectives.

Hence, it is possible to recognize that in modern conditions, the functioning of an industrial enterprise, when innovations become a priority in the system of measures of public administration, a comprehensive study of quantitative measurements of innovative development of the economic category and the material basis of the production complex becomes the most relevant. Its results would more accurately determine the vector of development of the industrial market and the enterprises they serve, to substantiate and offer

alternative ways of constructing an adequate model of innovation development, which will be based mainly on the use of internal sources and will significantly increase their efficiency. In connection with this, the problem of determining a new paradigm - firstly, clustering of modern production enterprises - is being actualized, and secondly, identification of their measurements with the delimitation and grouping of specific functions of correlates concerning the implementation of an effective technology of innovation development of the industrial sector, which determines the processes of formation and development of methodology of effective management, corresponding concept, mechanism, and models of purpose-oriented management of formation, increase, and use of innovative potential in the system of the coordinates of the production complex.

5. The policy of the strategic innovation development of a production enterprise

Construction of an optimal macroeconomic model of innovative development of industrial production, the implementation of which is based on the synchronicity of the principles of systematic, integrated and process approaches for safe high-performance innovative development strategy, which in turn will promote sustainable development.

The company has a focus on the information space and verify that information provision – an opportunity to

get constantly updating information on the effectiveness of the formation, increase and now use the innovative capacity and efficiency of its use.

It makes sense and it should be stressed that: not always ensuring the operational processes of innovation development, it will operate as an enterprise manufacturing industrial and economic system of innovation and information type. Because unbalanced enterprises consist of a certain number of elements and can be interconnected by showing only the innovation-information patterns.

Consequently, the formation of the modern model of innovation development of the manufacturing enterprise will ensure the purpose-oriented innovation, structural and dynamic changes, and will eliminate the imbalance of the operation of the business entity (Mikitenko, 2009).

At present, it is necessary to identify the strengths, weaknesses of the enterprise, as well as the opportunities and threats for strategic innovation development, which will promote sustainable balanced economic growth by creating conditions for the formation of intellectual capital, innovation infrastructure, stimulation of the activity of innovative processes and consumer interest.

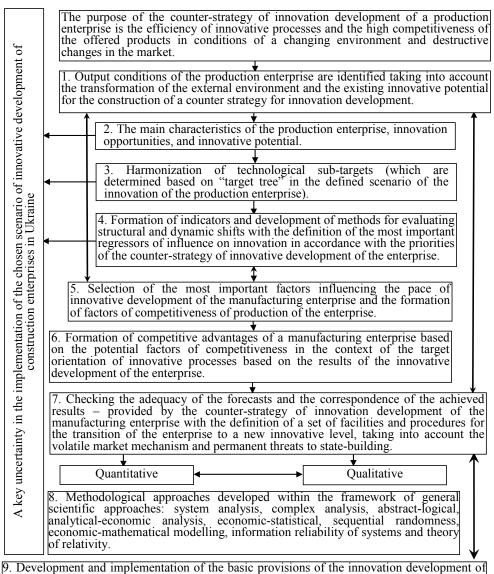
Hence we recognize that the formation of a model of strategic innovation development of a construction company is a common feature of purpose-oriented implementation of structural shifts in a construction enterprise based on the dominant components of the integration-alarm concept of the corresponding

STRENGTHS	WEAKNESSES
– a powerful material base	– lack of state support
– effective resource potential	– lack of state incentives
– highly skilled and cheap labour	– low productivity
- cheap access to raw materials	- ineffective distribution of income
– the availability of intellectual capital	 low interest in innovative development
- availability of scientific achievements	– staff inactivity
- availability of production achievements	– inconsistency with organizational and management structure
– availability of industrial potential	– large dependence on importing energy resources
– branch structure of production	– low wages
– ramification and development of innovation infrastructure	– unscheduled connections from the subsystem
 developed marketing system 	– low level of innovation
	– set-aside of equity for the introduction of innovations
	 inefficient production structure
	– significant aging of fixed assets
	- insufficient provision of information resources
	– improper development of innovation infrastructure
OPPORTUNITIES	THREATS
- the direction of the authorities on the innovative way of development	– shortage of labour force
– the excellent economic and geographical position	– delayed knowledge update
 appropriate use of the intellectual potential 	– low socio-economic development (industry, state, region)
 development of own high-tech and high-tech industries 	– reduction of working capacity (low labour cost)
 development of innovative clusters 	- inadequate state financing of scientific developments
- opportunities to enter the external market	– dependence on legislative acts
– visual cooperation with foreign partners/investors	– the low share of scientific workers (offset of adequate funding)
– increasing funding for research and innovation activities through	 insufficient opportunities for domestic enterprises to access
non-state funding	external sources of financing
- increasing the competitiveness of industrial products	– reduction of demand for high-tech products of domestic industry
- increase the share of high-tech products in the structure of exports	- the relevant level of protection of intellectual property
 development of innovation infrastructure 	

type, the use of which allows ensuring the density of interconnections between elements of strategic innovation development, which form and develop priority for a certain enterprise production-organizational, socio-ecologicaleconomic and techno-technology tech relationships and interdependence forming a certain integrity and achieve innovative orientation of the production company.

Hence, taking into account relationships and interdependencies, we can identify and distinguish the target functions on the basis of which we propose the structural and logical structure of a closed scheme for the formation of the policy of innovation development of production enterprises in order to provide a strategy for its innovative development and increase the competitiveness of the latter (Figure 3). We recognize that the introduction of the proposed closed-loop scheme of strategic innovation development of a manufacturing enterprise will allow the determinants to be effective in terms of resource constraints and unstable environments, and is a specific means of counter-checking the adequacy of built-up forecasts and the feasibility of carrying out innovative changes and attracting investment resources.

Consequently, in the practice of management, a closed scheme of formation of the system of strategic innovation development, which will be ensured by the formation of organizational and economic conditions, the generation of the driving force in the context of achieving their innovative performance, is proposed.



9. Development and implementation of the basic provisions of the innovation development of the manufacturing enterprise to ensure their reliability, competitiveness, and transition to a new quality level of development through the implementation of the original system of innovation development.

Figure 3. Closed scheme of formation of strategic innovation development policy of a production enterprise in order to ensure its reliability and competitiveness

Only the formation of such an optimization complex will ensure the achievement of innovative goals of the development of a production enterprise aimed at the adaptive activation of innovation. So, we recognize that innovative projects are a key element in managing the scientific and technological development of the economic entity.

6. Conclusion

The conducted study shows that under the new modern conditions of the development of the economy of any country and its orientation to the world economic space, the activation of innovation activity becomes increasingly important since without significant changes and fundamentally progressive structural changes with the renewal of fixed assets and improvement of the structure of capital, it is impossible to effectively ensure the socioeconomic development of a business entity and the state as a whole. The article presents the solving the issue of defining a new paradigm: clustering of modern production enterprises; identification of their measurements with the delimitation and grouping of specific functions of correlates concerning the implementation of an effective technology of innovation development of the industrial sector, which determines the processes of formation and development of the methodology of effective management, corresponding concept, mechanism and

models of purpose-oriented management of formation, increase and use of innovative potential in the system of the coordinates of the production complex.

The analysis of the existing structure allows determining precisely the priority directions of innovation development in the conditions of global changes and integration into the world economic space of post-socialist enterprises, taking into account constructive and key factors ensuring their resultant effect. In addition, a closed scheme of formation of a system of strategic innovation development, which will allow the verification of the adequacy of predictive values and ensure the achievement of strategic innovative performance of the business entity, is proposed.

From the above, we state that it cannot be excluded that innovation activity should be a part of a more general management system, and systematic innovation in manufacturing enterprises can be secured by the consequences of the implementation of the fundamental principles: organizational and legal management; technological; ecological economics; financial complex, which direct and secure the production and economic system to increase the competitiveness of industrial products and the efficiency of the operation of the enterprise as a whole.

Further research will be aimed at determining the impact of innovative activity on the level of socioeconomic development of the country.

References:

Khudoliy, V. Y., Alymov, O. M., Dragan, I. V., & Lytsur, I. M. (2013). *Systemno-kompleksna otsinka potentsialu staloho rozvytku Ukrainy* [System-complex evaluation of sustainable development potential of Ukraine]. Kyiv: Institute of Environmental Economics and Sustainable Development of NAS of Ukraine. (in Ukrainian)

Alymov, O. M., & Mikitenko, V. V. (2003). Metodolohichni pidkhody do vyvchennia ta prohnozuvannia prohresyvnykh tekhnolohichnykh system v promyslovosti [Methodological approaches to study and forecasting of progressive technological systems in industry]. *Economy industries*, 4(22), 48–57. (in Ukrainian)

Mikitenko, V. V. (2009). Korektsiia ekonomichnoi polityky v umovakh transnatsionalizatsii svitovoi ekonomiky [Correction economic policy in terms of transnationalization of the world economy]. *Bulletin of Economic Sciences of Ukraine*, 2(14), 110–117. (in Ukrainian)

Sviridova, S. V. (2016). *Strategija innovacionnogo razvitija predprijatij: teorija i metodika* [Strategy of innovative development of enterprises: Theory and methods]. Voronezh: Scientific book. (in Russian)

Nesterova, T. Yu., & Šviridova, S. V. (2011). Sistemnaja koncepcija upravlenija promyshlennym predprijatiem v razvitii informacionnyh tehnologij [System concept of management of industrial enterprise in the development of information technologies]. *Innovative Bulletin Region*, 2, 46. (in Russian)

Stokes, B. (2011). *Deep Cuts: What the Age of Austerity Means for Global Public Goods (electronic resource)*. Available at: http://www.gmfus.org/publications/deep-cuts-what-age-austerity-means-global-public-goods

Andrushkiw, B. M., Kyrych, N. B., & Pohaydak, O. B. (2012). Upravlinnia protsesom restrukturyzatsii promyslovykh pidpryiemstv v umovakh ekonomichnykh reform [Managing the process of restructuring of industrial enterprises in the economic reforms]. *Journal of economics of Ukraine*, 1(21), 3–5. (in Ukrainian)

Modernization of state support of business entities in Ukraine: analytical note (2013). Available at: http://www.niss.gov.ua/catalogue/7/0/3/

Sukhorukov, A. I., & Harazishvili, M. (2013). *Efektyvnist sotsialno-ekonomichnoho rozvytku ta ekonomichnoi bezpeky rehionu* [Efficiency socio-economic development and economic security of the region] (electronic resource). NISS under the President of Ukraine. Available at: http://www.niss.gov.ua/content/articles/files/rozvyt reg-77b7d.pdf

Pinchuk, A., & Alymov, S. A. (2012). Investytsii v osnovnyi kapital yak osnovnyi faktor pidvyshchennia innovatsiinoi spromozhnosti natsionalnoho rynku [Investments in fixed capital as the main factor in improving innovative capacity of the national market]. *Triada natsionalnoho vidrodzhennia: nauka – osvita – vyrobnytstvo, 2,* 17–20. Kyiv: Vyshemyrskyy. (in Ukrainian)