

UDC 330.341.1:334.716]:004

DOI <https://doi.org/10.26661/2414-0287-2024-4-64-02>

FORMATION OF AN APPROACH TO ENSURING INNOVATIVE-DRIVEN PROGRESSION OF INDUSTRIAL ENTERPRISES UNDER THE CONDITIONS OF DIGITALIZATION AND SUSTAINABLE DEVELOPING

Korotaieva O.V.

Zaporizhzhia National University

Ukraine, 69011, Zaporizhzhia, Universytetska str., 66

Key words:

innovative development, innovation cycle, innovation activity strategy, innovation activity, innovation, digitalization, digital technologies, market environment, sustainable development goals, industrial enterprises.

It has been established that under the conditions of digitalization of the economy, sustainable development, industrial enterprises have faced the issue of increasing competitiveness, improving performance indicators due to the intensification of competition. The emergence of digital innovative technologies preconditions their research and implementation at enterprises. It has been determined that the prerequisite for intensification of innovation processes is the formation of trend-setting activity through the introduction of a strategy for ensuring innovative activity. It has been proven that the establishment of innovative activity processes will make it possible to increase the efficiency of innovative activity, will contribute to the development of innovations and the innovative development of the enterprise as a whole. It was found that the innovative development of an enterprise affects the formation of competitive advantages, rationalization of resource use and cost reduction, coverage of new product sales markets, increasing investment attractiveness, adherence to the principles of sustainable development, financial indicators, profitability. The importance of ground-breaking development is proven, since industrial enterprises that do not develop and implement pacing technologies may lose competitive positions. The approach to ensuring the ground-breaking development of industrial enterprises has been improved, which defines a sequence of stages, the implementation of which will allow restoring innovative processes, contributing to the activation of innovative development, and will also allow achieving financial and innovative effects, ensuring sustainable growth in the conditions of digitalization of the economy. An innovation cycle has been formed, which includes a set of elements that affect the innovative development of industrial enterprises. The specified innovation cycle makes it simple to establish a close relationship between impact factors, the strategy of innovative activity, the level of innovative activity, innovative practice and innovation management, as well as to determine their impact on achieving financial and innovative effects.

ФОРМУВАННЯ ПІДХОДУ ДО ЗАБЕЗПЕЧЕННЯ ІННОВАЦІЙНОГО РОЗВИТКУ ПРОМИСЛОВИХ ПІДПРИЄМСТВ В УМОВАХ ЦИФРОВІЗАЦІЇ ТА СТАЛОГО РОЗВИТКУ

Коротаєва О.В.

Запорізький національний університет

Україна, 69011, м. Запоріжжя, вул. Університетська, 66

Ключові слова:

інноваційний розвиток, інноваційний цикл, стратегія інноваційної активності, інноваційна активність, інновації, цифровізація, цифрові технології, ринкове середовище, цілі сталого розвитку, промислові підприємства.

Встановлено, що в умовах цифровізації економіки, сталого розвитку перед промисловими підприємствами постало питання підвищення конкурентоспроможності, покращення показників діяльності через загострення конкурентної боротьби. Виникнення цифрових, інноваційних технологій обумовлює потребу до їх дослідження, впровадження на підприємствах. Визначено, що передумовою активізації інноваційних процесів є формування інноваційної активності через запровадження стратегії забезпечення інноваційної активності. Доведено, що налагодження процесів інноваційної активності дозволить підвищити ефективність інноваційної діяльності, сприятиме розробці інновацій та інноваційному розвитку підприємства в цілому. З'ясовано, що інноваційний розвиток підприємства впливає на формування конкурентних переваг, раціоналізацію

використання ресурсів та скорочення витрат, охоплення нових ринків збуту продукції, підвищення інвестиційної привабливості, дотримання принципів сталого розвитку, фінансові показники, прибутковість. Доведено важливість інноваційного розвитку, оскільки промислові підприємства, які не розробляють, впроваджують інновації, можуть втратити конкурентні позиції. Удосконалено підхід до забезпечення інноваційного розвитку промислових підприємств, в якому визначено послідовність етапів, реалізація яких дозволить відновити інноваційні процеси, сприятиме активізації інноваційного розвитку, а також дозволить досягти фінансового, інноваційного ефектів, забезпечить стійке зростання в умовах цифровізації економіки. Сформовано інноваційний цикл, який включає набір елементів, що впливають на інноваційний розвиток промислових підприємств. Означений інноваційний цикл дозволяє встановити тісний взаємозв'язок між факторами впливу, стратегією інноваційної активності, рівнем інноваційної активності, інноваційною діяльністю та управлінням інноваціями, а також визначити їх вплив на досягнення фінансового, інноваційного ефекту.

Statement of the problem

Within the framework of digitalization of the economy, sustainable development, industrial enterprises have an urgent need to maintain competitive positions, increase competitiveness, establish competitive strengths, which is possible through the implementation of digitalization trends, information technologies, development and use of innovations. Consequently, an important issue is to determine the areas, improve innovative development, which is possible through the formation of innovative activity. The above confirms the need to improve the approach to ensuring the innovative development of industrial enterprises, which will contribute to increasing innovative activity. There is also a need to develop an innovation cycle, which will allow establishing the relationship between impact factors, innovation activity strategy, level of innovative activity, innovative activity and innovation management.

Analysis of recent studies and publications

Many scientists have studied the issue of innovative development of enterprises, in particular: Bohashko O. L. [1, p. 86-91]; Gonchar O. I., Berdychevskiy A. V. [2, p. 25-26]; Horiashchenko Yu. [3, p. 35-36]; Doroshkevych K., Kolinko N., Dzvonyk R. [4, p. 9-12]; Durbalova N. I. [5, p. 133-135]; Kashchena N., Chmil Ye. [6]; Kutsyk V. I., Maiboroda V. M. [7, p. 50-53]; Maiboroda V. M. [8, p. 65-69]; Nahachevska T., Pryhara O. [9, p. 34-35]; Petrenko L. A. [10, p. 7-10]; Sieriebriak K. I. [11]; Toropova V. I. [12, p. 148-151]; Cherep A., Cherep O., Shvets Y. [13, p. 378-382]; Cherep O., Cherep A., Ohrenych Yu., Helman V., Gorbunova A. [14, p. 472-481]; Shamanska O. I. [15, p. 20-22].

The research conducted gives the possibility to note that there is no multidimensional approach to ensuring the innovative development of industrial enterprises, which would contribute to increasing innovative activity; there is no model of the innovation cycle, which would allow establishing the relationship between the impact factors, the strategy of innovative activity, the level of innovative activity, innovative activity and innovation management.

Objectives of the article

The objective of the article is to improve the scientific and theoretical approach to ensuring the innovative development of industrial enterprises, the model of the innovation cycle.

Presentation of the main material

The impact of the digitalization of the economy, sustainable development on the work of industrial enterprises confirms the importance of introducing innovations and ensuring innovative development, which affects the level of competitiveness, the formation of competitive advantages, optimization of resource use, cost reduction, financial performance, investment attractiveness and profitability of work. Along with this, an important issue is to establish the prerequisites for innovative development, i.e. determining the relationship between innovative operation, innovative activity, innovations, innovation management and, accordingly, development.

The study of the approaches of scientists to the determination of mechanisms, models of innovative development, and management of innovative development provides an opportunity to confirm the non-availability of a multidimensional approach to ensuring the innovative development of industrial enterprises. Therefore, the non-availability of a universal approach to innovative development vigorously requires its implementation.

We have improved the scientific and theoretical approach to ensuring the innovative development of industrial enterprises, which contains a model of the innovation cycle, includes a set of interrelated stages, the implementation of which permits to determine the sequence of arrangement, formation, activation of innovative development, which will contribute to the achievement of financial, innovative effects, and ensure sustainable growth in the conditions of digitalization of the economy.

The scientific and theoretical approach identifies the relationship of the elements reflected in the model of the innovation cycle (Fig. 1): market environment factors influence the development, formation, and implementation of the strategy of innovative activity of industrial enterprises, as well as innovative operation and the outcomes

of innovative activity; the strategy of innovative activity of industrial enterprises forms innovative activity; innovative activity determines the readiness of the enterprise for innovations, ensures the increase of innovative activity; innovative activity is a process that results in the creation, development of innovations; innovations are the result of innovative activity and include the production of new products, goods; the synergistic effect is the result of a comprehensive approach to the implementation of the strategy of innovative activity of industrial enterprises, the formation of innovative operation, the implementation of innovative activity, the development of innovations and is reflected in the form of improved financial performance, increased competitiveness; innovation management provides the possibility to adjust innovative processes, monitor the achievement of the anticipated results.

It is worth mentioning that in this scientific and theoretical approach, the innovative development of an enterprise is considered as a dynamic system in which there is a close relationship between the impact factors, the strategy of innovative activity, the operation of enterprises, the effectiveness of innovative activity and innovation management. The integration of the specified elements will make it possible to obtain the maximum economic effect, that is, it will promote innovative development, ensure sustainable growth against the background of digitalization of the economy.

Furthermore, the scientific and theoretical approach includes the following components (Fig. 2).

The objective of the scientific and theoretical approach to ensuring and increasing the innovative development

of industrial enterprises is the use of methodological, informational and technical, organizational, regulatory, financial, and personnel support for the development of a sequence of stages, an innovation cycle for the purpose of innovative development, which will guarantee the achievement of innovative, economic, and social effects. The prerequisite for achieving the specified objective is the fulfillment of the following tasks: collection, research of information on the impact of the environment, the state of innovative development; assessment of the status of resource provision; preparation of information based on the results of strategic planning for decision-making; determination of the sequence of stages of ensuring and increasing innovative development; generation of an innovation cycle; taking into consideration the relationship, establishing interdependencies with the strategy of innovative activity, innovative operation; identification of opportunities for innovative development and its arrangement; analysis of the enterprise’s capabilities to develop innovations; justification of the role of innovative development management; forecasting scenarios for the enterprise’s innovative development; monitoring of outcomes, identification of current outcomes of innovative development; assessment of the effectiveness of innovative development through the achievement of innovative, economic, and social effects; analysis of the drawbacks, risks of innovative development and establishment of the enterprise’s capabilities to overcome them; generalization of the outcomes of innovative development and generation of conclusions; determination of the areas of innovative development in the long-run period.

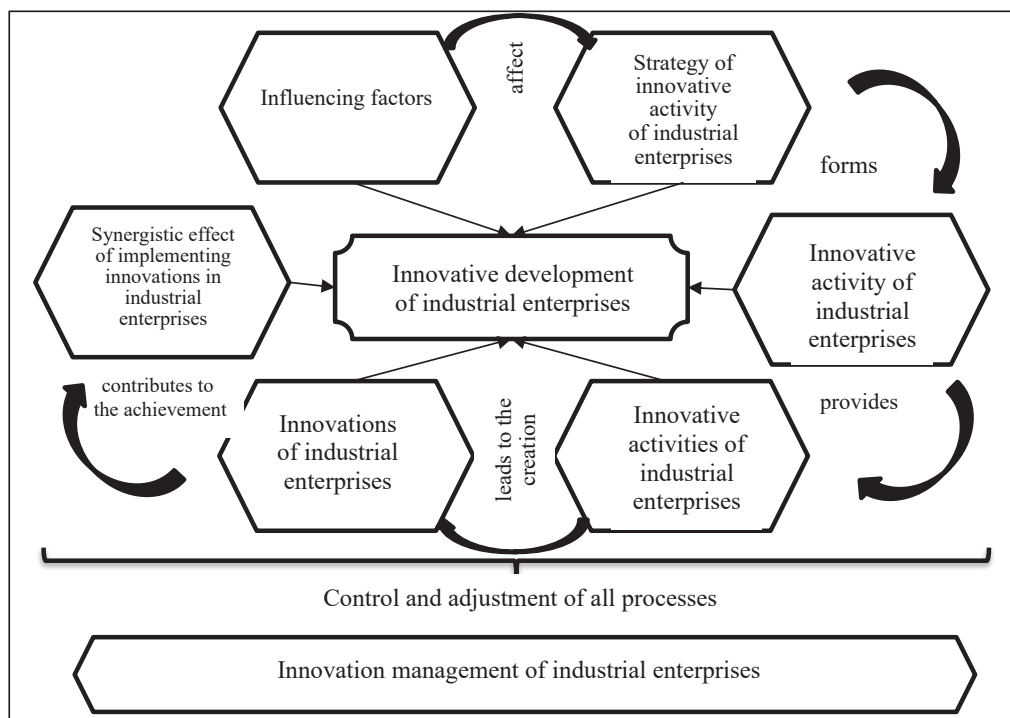


Fig. 1 – Diagram of the interconnection of elements that influence the innovative development of industrial enterprises
Source: generated by the author

A set of support components is of great importance for the formation and improvement of innovative development: methodological – formation of a set of tools, methods, approaches to ensuring and improving innovative development, assessing the state of innovative development; information and technical – setting up the process of collecting, processing, analyzing data, exchanging information, ensuring information protection, information security, implementing software products, digital technologies, and equipment to ensure the effectiveness of innovative development; organizational – arranging the innovative development of an enterprise, which involves forming a unit for innovative development, ensuring innovative activity, developing innovations, assessing anticipated outcomes, risks, and launching a pilot project for implementing innovations; regulatory – focused on studying the legislative framework in the area of innovative development, organizing innovative activity, developing and implementing innovations at the enterprise, as well as the innovation policy of the state, region, district, existing tax benefits and support programs for innovative activity; financial – focused on analyzing and assessing the level of financial support, available investment resources for implementing innovative activity, determining opportunities for attracting additional sources of financing through lending, grant assistance; staff – focused on assessing the innovative potential of employees, determining the level of their innovative activity, establishing the reasonability of forming a separate department that will deal with issues of innovative development, hiring employees.

Taking into account the outcomes of the study, it is confirmed that the scientific and theoretical approach to

ensuring innovative development should include a set of stages:

1. Analysis of impact factors and establishing the necessity for innovations at the enterprise. The first stage includes the following substages: analysis, taking into consideration external and internal impact factors of influence on innovative development; analysis, identification of risks for the innovative development of the enterprise; identification of the need for innovations at the enterprise; identification of market needs for innovations of the enterprise; assessment of the resource potential of the enterprise to ensure innovative development.

2. Implementation of strategic planning for the innovative development of the enterprise. The second stage includes the following substages: analysis of existing strategies at the enterprise and assessment of their orientation towards ensuring innovative development; determination of priorities, areas of the innovative development of the enterprise; establishment of the enterprise’s readiness to implement innovations, the level of its involvement in innovative development; decision-making on the innovative development of the enterprise.

3. Arrangement of innovative development of the enterprise. The third stage includes the following substages: formation of a unit for innovative development of the enterprise; taking into consideration the experience of innovation centers, universities, institutions in ensuring innovative development of the enterprise; ensuring innovative operation of the enterprise; development of innovative projects, innovations at the enterprise; design of scenarios for the implementation of innovations and anticipated

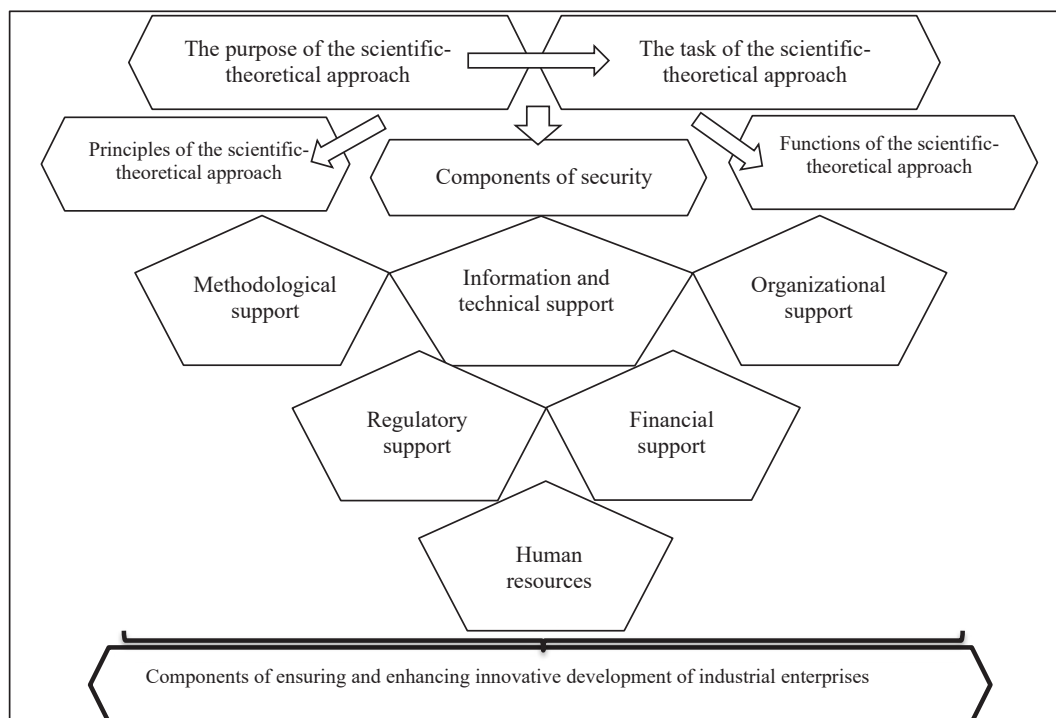


Fig. 2 – Diagram of components for ensuring innovative development of industrial enterprises

Source: formed by the author based on [2, p. 25-26; 6; 8, p. 65-69; 15, p. 20-22]

results; pilot implementation of innovations at the enterprise and risk assessment.

4. Implementation and use of innovations at an industrial enterprise. The fourth stage includes the following substages: training of personnel in the use of new technologies at the enterprise; integration of innovations into the operation of the enterprise; attraction of investments in the innovative activity of the enterprise.

5. Assessment of the effectiveness of the innovative development of the enterprise, reflected in the outcomes of the implementation of innovations, performance indicators. The fifth stage includes the following substages: analysis of the level of effectiveness of the innovative development of the enterprise; assessment of the synergistic effect obtained; monitoring the outcomes of the implementation and application of innovations.

6. Monitoring the innovative development of the enterprise. The sixth stage should be carried out constantly, that is, throughout the entire period of innovative development, which will make it possible to identify weaknesses, risks and identify proposals for overcoming them. The substages of the sixth stage include: formation of criteria for controlling innovative development; collection, processing, analysis, comparison of data on the implementation of innovations; identification of the drawbacks in innovative development and assessment of the enterprises capabilities to overcome them; development of measures to improve the innovative development of the enterprise; reporting on the results of the innovative development of the enterprise.

7. Scaling the innovative development of an industrial enterprise. The last stage involves the further development of the enterprise in the direction of introducing innovations, expanding sales markets, developing long-term partnerships, and disseminating information to potential investors. For another thing, this stage is a confirmation that the enterprise is interested in conducting new research,

forming new developments, and competitive technologies. The substages of the seventh stage include: forming a culture of innovation among employees; establishing long-term partnerships with innovation centers; forming directions for the innovative development of an industrial enterprise.

Consequently, according to the outcomes of the study, a scientific and theoretical approach to ensuring the innovative development of industrial enterprises has been improved, the application of which will make it possible to activate innovative development, achieve financial and innovative effects, and ensure sustainable growth in performance indicators. Furthermore, there is a necessity for industrial enterprises to implement an improved approach in order to systematize the processes of ensuring innovative development through the formation of innovative operation.

Conclusion

Present conditions, active processes of digital transformation, the importance of achieving sustainable development objectives, and increased competitiveness determine the necessity for innovative development of industrial enterprises, which is possible provided that innovative activity is formed. The conducted research provides an opportunity to improve the scientific and theoretical approach to ensuring the innovative development of industrial enterprises, the implementation of which will make it possible to systematize the process and ensure the triggering of innovative development. The scientific and theoretical approach defines a model of the innovation cycle, which reflects the relationship between impact factors, the strategy of innovative activity, the level of innovative activity, innovative activity and innovation management. The implementation of a scientific and theoretical approach will permit to achieve financial and innovative effects, and will ensure sustainable growth.

References

1. Bohashko O. L. (2022). Osnovni aspekty innovatsiinoho rozvytku pidpriemnytstva v suchasnykh umovakh tekhnolohichnoho rozvytku [Entrepreneurship in modern conditions of technological development]. *Economic Horizons*, no 2 (20), pp. 83–93. Available at: <http://eh.udpu.edu.ua/article/view/263346>.
2. Gonchar O. I., Berdychevskiy A. V. (2024). Innovatsiyni rozvytok pidpriemstv sfery posluh [Innovative development of enterprises in the field of services]. *Herald of Lviv University of Trade and Economics. Economic Sciences*, no 78, pp. 22–27. Available at: <http://journals-lute.lviv.ua/index.php/visnyk-econom/article/view/1615>.
3. Horiashchenko Yu. (2021). Upravlinnia innovatsiynym rozvytkom pidpriemstv v umovakh tsyfrovizatsii [Management of innovative development of enterprises in the conditions of digitalization]. *Pidpriemnytstvo ta innovatsii*, Vol. 17, pp. 34–38. Available at: <http://ei-journal.in.ua/index.php/journal/article/view/419>.
4. Doroshkevych K., Kolinko N., Dzvonyk R. (2024). Innovatsiyni rozvytok pidpriemstva: sutnist, znachennia ta vizualizatsiia skladovykh [Innovative development of the enterprise: the essence, meaning and visualization of the components]. *Ekonomichnyi prostir*, no 190, pp. 8–14. Available at: <https://prostir.pdaba.dp.ua/index.php/journal/article/view/1447>.
5. Durbalova N. I. (2021). *Stratehichne upravlinnia innovatsiynym rozvytkom pidpriemstv khlibopekarskoi haluzi* [Strategic management of innovative development of enterprises in the baking industry]: dys. ... doktora filosofii: 073. Odesa: Odeska natsionalna akademiia kharchovykh tekhnolohii, 228 p.
6. Kashchena N., Chmil Ye. (2022). Teoretyko-metodychni zasady analizu innovatsiinoho rozvytku pidpriemstva [Theoretical and methodological principles of the analysis of the innovative development of the enterprise]. *Ekonomika ta suspilstvo*, Vol. 43. Available at: <https://economyandsociety.in.ua/index.php/journal/article/view/1746>.
7. Kutsyk V. I., Maiboroda V. M. (2022). Teoretychni aspekty innovatsiinoho rozvytku pidpriemstv sfery posluh [Theoretical aspects of innovative development of enterprises in the field of services]. *Herald of Lviv University*

- of Trade and Economics. *Economic Sciences*, no 67, pp. 49–54. Available at: <http://journals-lute.lviv.ua/index.php/visnyk-econom/article/view/1147>.
8. Maiboroda V. M. (2024). *Zabezpechennia ekonomichnoi efektyvnosti na zasadakh innovatsiinoho rozvytku pidpriemstv sfery posluh* [Ensuring economic efficiency based on innovative development of service sector enterprises]: dys. ... doktora filosofii: 051. Lviv: Lvivskiy torhovelno-ekonomichnyi universytet, 251 p.
 9. Nahachevska T., Pryhara O. (2018). Model innovatsiinoho rozvytku suchasnoho pidpriemstva [Model of innovative development of a modern enterprise]. *Visnyk Kyivskoho natsionalnoho universytetu imeni Tarasa Shevchenka. Ekonomika*, no 5(200), pp. 33–41.
 10. Petrenko L. A. (2021). *Upravlinnia innovatsiinym rozvytkom pidpriemstva* [Management of innovative development of an enterprise]: avtoref. dys. ... d-ra. ekon. nauk: 08.00.04. Kyiv: DVNZ «Kyivskiy natsionalnyi ekonomichnyi universytet imeni Vadyma Hetmana», 35 p.
 11. Sieriebriak K. I. (2016). Systema zabezpechennia innovatsiinoho rozvytku pidpriemstv sfery posluh [The system of innovative development providing of services sphere enterprises]. *Efektyvna ekonomika*, no 3. Available at: <http://www.economy.nayka.com.ua/?op=1&z=5228>.
 12. Toropova V. I. (2023). *Zabezpechennia innovatsiinoho rozvytku pidpriemstv zaliznychnoho transportu v umovakh tsyfrovoy ekonomiky* [Ensuring innovative development of railway transport enterprises in the digital economy]: dys. ... doktora filosofii: 051. Kharkiv: Ukrainskiy derzhavnyi universytet zaliznychnoho transportu, 370 p.
 13. Cherep A., Cherep O., Shvets Y. (2018). Teoretyko-metodychni osnovy rozrobky modeli innovatsiinoi diialnosti pidpriemstv mashynobuduvannia shliakhom vykorystannia ekonomichnoho mekhanizmu [Theoretical and methodological backgrounds of the innovation activity model's development in the machine-building enterprises using economic mechanism]. *Financial and Credit Activity Problems of Theory and Practice*, Vol. 2, No. 25, pp. 375–384. Available at: <https://fkd.net.ua/index.php/fkd/article/view/1748>.
 14. Cherep O., Cherep A., Ohrenych Yu., Helman V., Gorbunova A. (2024). Improvement of the management mechanism of the strategy of innovative activities of enterprises. *Financial and credit activity: problems of theory and practice: publication of scientific papers*, Vol. 1 (54), pp. 471–484. Available at: <https://fkd.net.ua/index.php/fkd/article/view/4295>.
 15. Shamanska O. I. (2018). Formuvannia systemy innovatsiino-oriantovanoho rozvytku ahrarnykh pidpriemstv [Formation of a system of innovation-oriented development of agricultural enterprises]. *Investments: practice and experience*, no. 19, pp. 17–23.