

INNOVATION-INVESTMENT MECHANISM OF THE ECONOMIC ENTITIES DEVELOPMENT IN THE CONDITIONS OF TRANSFORMATIONAL CHALLENGES

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Abstract

The purpose of the study is to substantiate the innovation-investment mechanism of the development of economic entities in the conditions of transformational challenges, which involves a recurrent structure for comprehensive consideration of its components. In the researched and substantiated implementation of the recurrent ratio of the innovation-investment mechanism for the development of economic entities in the conditions of transformational challenges, it is possible to take into account: the functions of the innovation-investment mechanism, which include: strategic-target, organizational-management, analytical-informational, social-cultural functions; exogenous and endogenous actors of the mechanism of subjects of economic activity; targeting the achievement of the set tasks of the functioning of the innovation-investment mechanism for the development of economic entities in the conditions of transformational challenges; strategies of innovation and investment development at the level of various levels of government, enterprises and others, taking into account the coherence of the interests of all economic entities; diversification of sources of investment resources; generally accepted methods of the mechanism, which include: planning, forecasting, control, diagnostics, stimulation; specific methods of the mechanism, which include: generation of ideas, compilation, distribution; and management of the innovation and investment mechanism.

Keywords: *innovation-investment mechanism, transformational changes, innovation activity, investment, management of innovation-investment activity.*

JEL Codes: *D19, D23, E66.*

Introduction

Current conditions of economic development are characterized by transformational processes, which are described by complexity and contradiction, which is manifested in bifurcation changes in the economic entities' development. The causes of transformational processes are geopolitical, globalization, social, environmental and many other reasons. To ensure the development of

economic entities in such conditions of transformation, which is characterized by the speed of changes and unpredictability, it is necessary to implement an investment and innovation mechanism to ensure the sustainable development of economic entities. The direction of ensuring the sustainability of the economic entities' development is the innovativeness of their development, which

requires the attraction of investment resources and requires the implementation of an innovation-investment mechanism for the economic entities' development in the conditions of transformational challenges, which acts as an objective factor of new management approaches and ensuring the sustainability of development and life activities subjects of the economy in transformational conditions.

The purpose of the study is to substantiate the innovation-investment mechanism of the economic entities' development in the conditions of transformational challenges, which provides a recurring basis for comprehensive consideration of its components. Achieving this goal became possible due to: substantiation of the relevance of this study, which is confirmed by the analysis of statistical data on innovation and investment activity in Ukraine for 2012-2021; proving the components of the innovation-investment mechanism for the economic entities' development in the conditions of transformational challenges and developing, on this basis, the recurrent ratio of the mechanism, which has a functional and organizational structure and makes it possible to take into account the diverse interests of economic entities and transformation processes.

Literature review

The development of economic entities takes place in transformational conditions, the causes of which are geopolitical, globalization, social, environmental phenomena characterized by the speed of change and unpredictability, which necessitates the introduction of an investment and innovation mechanism to ensure the sustainable development of economic entities.

Within the framework of the study Shaturaev Jakhongir (2023), the issues of the effectiveness of investment projects, their evaluation during the introduction into the innovation process are considered. Scientists Trusova N. et al. (2021) considered the conditions for the formation of determinants of innovative and investment development of agriculture. The purpose of the study

Mykhailov A. et al. (2021) is to conduct an assessment of current financial instruments to ensure an increase in investment resources in the context of current global challenges through the use of new innovative instruments. The results of research Tulchynska S. et al. (2021), Shevchuk N. et al. (2021), Revko A. et al. (2021), Severyn-Mrachkovska L. et al. (2021), Ivanova N. et al. (2023), Abramova A. et al. (2021) are modeling and forecasting of the integral indicator of innovation activity of regions, assessment of the development and transformation of eco-industrial parks as determinants of innovation and investment development of economic entities, as well as development of a strategy for the formation and development of an innovative agro-industrial cluster.

Scientists Cherep A. et al. (2021) investigated the problem of increasing investment activity, determined the impact of investment activity on the development of innovative activity of industrial enterprises. Article Tkachenko A. et al. (2020), Grosu V. et al. (2021) examines innovative infrastructure and its economic development, highlights the European path of development of the domestic agro-industrial complex, which involves the transition of the economy to an innovative model. Scientific research Prokhorova V. et al. (2019) formed a methodical approach to the evaluation of the innovation-investment component of the security of an industrial enterprise. The authors Iastremska O. et al. (2019) claim that the investment and innovation development of industrial enterprises is determined by the influence on sensitive indicators of their activity, which characterize technological originality. Scientific papers Dubyna M. et al. (2021), Butko M. et al. (2020), Nikiforov P. et al. (2022) are relevant, within which the world experience of introducing modern innovations and information technologies in the functioning of financial institutions, the peculiarities of the formation of a regional innovation cluster with the aim of attracting investments, and also analyzed the state policy for the development of public-private partnership as a priority direction of activation

of innovation and investment processes of economic entities.

However, taking into account the existing research on this problem, the issue of forming an innovation-investment mechanism for the economic entities' development in the conditions of transformational challenges is extremely urgent and requires further research.

Methodical approach

The methodological basis of the research is the systematic approach. In the process of scientific work, the authors used the following general and specific methods: system, analysis and synthesis, systematization, comparison, induction and deduction, and graphic method. Among the methods of the innovation-investment mechanism for the development of economic entities in the conditions of transformational challenges, generally accepted and specific methods can be attributed. The generally accepted methods include such methods as: planning, forecasting, control, diagnostics, and stimulation. As well as specific ones, which include: generation of ideas, compilation, distribution. Such a combination of methods makes it possible to combine and direct the actions of the innovation-investment mechanism of the development of economic entities in the conditions of transformational challenges to obtain results and take into account the specificity of innovation activity and investment processes.

The innovation and investment mechanism for the economic entities' development in the conditions of transformational challenges should be aimed at ensuring such functions as:

- strategic and target, which consists in ensuring the strategic development of the

economic entity in the medium and long-term perspective, forming a system of goals for the innovative and investment development of the economic entities taking into account multi-vector interests;

- organizational and managerial, which involves management of the processes of development and implementation of innovations by economic entities, management of investment activities and diversification of attracting investment resources, management of investment and innovation processes taking into account transformational challenges;

- analytical and information department, which provides information support for innovation and investment activities, development of criteria's system for evaluating the effectiveness of innovation and investment activities;

- socio-cultural, which involves the formation of an innovative culture of economic subjects, the mentality of accepting innovations, the formation of opportunities for self-realization of economic subjects in the conditions of transformational challenges.

Thus, for the studied period from 2012 to 2021, it can be noted that the indicators of innovation and investment activity in general had a negative trend. The increase in the volume of sold products in monetary units can be explained by growing inflation.

Results

The need to implement an innovation-investment mechanism for the economic entities' development in conditions of transformational challenges is determined by the state of the economy's innovation-investment activity, which is illustrated in the Table 1 in the form of basic statistical data of innovation and investment activity.

Table 1. The main indicators of investment and innovation activity of economic entities in 2012-2021

Indexes	Years									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of innovation-active enterprises in industry (units)	1758	1715	1609	824	735	759	777	782	808	789
Volume of implemented innovative industrial products (million USD)	1818.5	1525.9	606.5	462.2	77.6	642.9	897.5	1216.3	1935.9	1865.0
The share of the volume of sold innovative products in the total volume of sold products of industrial enterprises (%)	3,3	3,3	2,5	1,4	0,9	0,7	0,8	1,3	1,9	1,8
Share of the number of industrial enterprises that introduced innovations to the total number of industrial enterprises (%)	13,6	13,6	12,1	15,2	16,6	14,3	15,6	13,8	14,9	15,1
The number of types of innovative products (goods, services) introduced in the reporting year (total units)	3403	3138	3661	3136	4139	2387	3843	2148	4066	4124
The number of employees involved in scientific research and development (persons)	164340	155386	136123	122504	97912	94274	88128	79262	78860	78156
Capital investments (per capita, USD)	810.4	727.7	439.7	406.1	304.0	384.7	496.2	529.2	497.9	451.8
Capital investments in scientific research and development (million USD)	68.8	73.8	32.2	32.9	27.3	40.3	54.6	73.1	84.6	93.4
Capital investments in professional, scientific and technical activities (million USD)	1130.5	445.9	250.8	257.9	236.7	289.1	389.8	422.9	481.6	608.4

**Source: formed by the authors based on the data of the State Statistics Service of Ukraine.*

The number of innovatively active enterprises decreased by 2.2 times. This affected the share of the volume of implemented innovative products of industrial enterprises, which decreased by two during the

studied period. At the same time, it should be noted that the lowest indicators at the level of 0.7% of the share of the volume of innovative products sold in the total volume of sales of industrial enterprises were observed in 2017,

after which there was a gradual increase in the share of innovative products to the total volume of sales. As for the percentage of enterprises that introduced innovations, their share did not change significantly for the entire period and, as of the beginning of 2022, amounted to 15.1%. The same situation is observed with the indicator of the number of types of innovative products introduced per year, the smallest number of which was in 2017 (2,387 units) and in 2019 (2,148 units), which is almost twice as small as the indicators of the last studied years. The number of employees involved in scientific research and development has halved, which at the beginning of 2022 amounted to 78,156 people. As for the volume of capital investments, over the studied period from 2012 to 2021, the volume of capital investments has a tendency to increase, but such growth, taking into account the inflationary component, shows a slight increase in investment activity.

The analysis of the presented statistical data proves the need to activate innovation and investment activity, which can be ensured by the implementation of an innovation-investment mechanism, which, due to the complexity of taking into account multi-vector components, is able to stimulate the innovation and investment processes of economic entities in the conditions of transformation.

The innovation-investment mechanism of the economic entities' development in the conditions of transformational challenges includes exogenous and endogenous factors. Endogenous include: founders of enterprises,

shareholders, management, managers, employees, scientists, etc. Endogenous actors include state and local authorities, control and regulatory bodies, financial and credit institutions, subjects of investment and innovation activities. It should be noted that the role of endogenous and exogenous actors is equal, and ensuring the effectiveness of the innovation-investment mechanism can be achieved with the simultaneous active participation of both parties.

The innovation-investment mechanism for the economic entities' development in the conditions of transformational challenges provides for a targeted approach to the achievement of set tasks, which may include:

- financial, material-technical, innovative-technological, intellectual-personnel support for innovative-investment activities of economic entities;
- introduction of new forms, methods, approaches to the implementation of business processes;
- modernization of economic entities;
- increasing social responsibility and building a stable business reputation;
- organization and financial support of research and innovation activities;
- establishment of international partnership and innovation-investment cooperation with foreign economic entities.

A visual presentation of the innovation-investment mechanism for the economic entities' development in the conditions of transformational challenges is presented in Fig. 1.

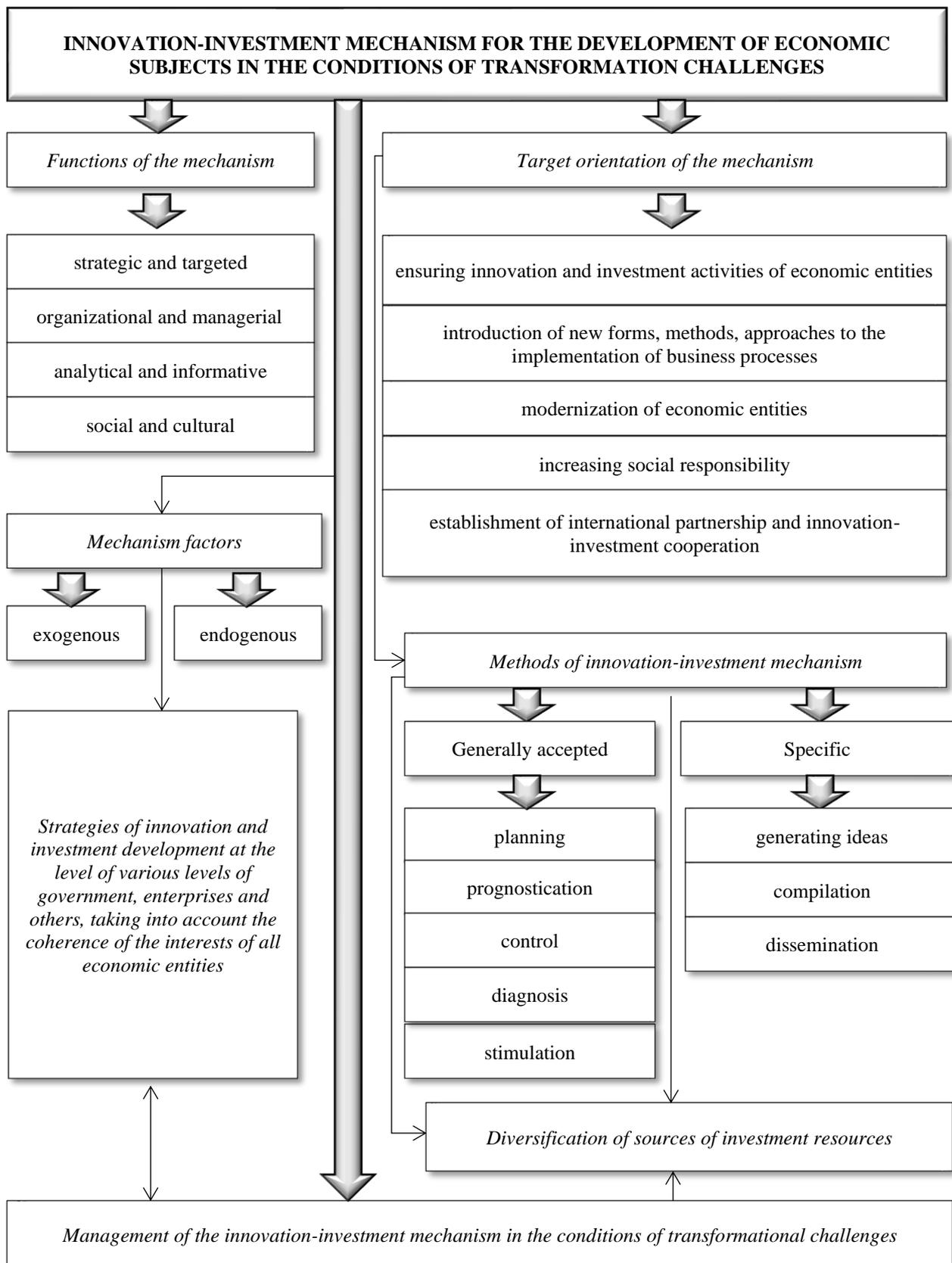


Figure 1. Innovation-investment mechanism of the economic entities' development in the conditions of transformational challenges

**Source: constructed by the authors.*

Innovative investment activity requires the formation of strategies at the level of state and local authorities, spheres of production activity and enterprises, only under such conditions of consistency of interests can a synergistic effect be achieved and gain efficiency from the implementation of the innovation-investment mechanism for the economic entities' development in the conditions of transformational challenges. The formation of strategic measures, the determination of priorities at the level of economic entities, the development of budgets taking into account the innovation-investment orientation ensures the balance of the capital investment policy and the implementation of innovative business ideas, taking into account the transformational challenges that require the adjustment of plans in crisis situations and the search for new approaches and timely management solutions.

Attracting investment resources for the implementation of innovative activities requires diversification of their sources, an intersectoral and interbranch approach to justifying the costs of implementing innovative projects, cooperation between state and private authorities, and the implementation of public-private partnerships. The direction of innovation and investment activities of

enterprises should take into account the vector of programs and plans for the innovative development of territories and the state as a whole.

The management of the innovation-investment mechanism should be based on the systematic management and its timeliness, providing a comprehensive object-subject analysis and control over investment funds and innovative implementations. And also take into account the conditions of transformational challenges. The management of the innovation-investment mechanism should be structured and consistent, take into account the levels of economic entities, be based on methodological principles and use applied management tools.

Therefore, the implementation of the innovation-investment mechanism for the development of economic entities in the conditions of transformational challenges requires comprehensive consideration of its components for effective implementation, which can be carried out under the conditions of building a recurrent relationship where the innovation-investment mechanism for the economic entities' development in the conditions of transformational challenges is a function components and has the form:

$$IMT = f \left\{ \begin{array}{l} F_1 (ST, OM, AI, SC), n = 1 \\ \left\{ \begin{array}{l} Ex_2 (a_1, \dots, a_{1+m}), n = 2 \\ En_3 (b_1, \dots, b_{1+m}), n = 3 \end{array} \right. \\ TD_4 (T_1, \dots, T_m), n = 4 \\ S_5 (S_1, \dots, S_m), n = 5 \\ DI_6 (DI_1, \dots, DI_m), n = 6 \\ \left\{ \begin{array}{l} MGA_7 (p, f, c, d, s), n = 7 \\ MS_8 (gi, com, distr), n = 8 \end{array} \right. \\ M_9 (c_1, \dots, c_m), n = 9 \end{array} \right.$$

where F – functions of the innovation-investment mechanism, which includes: ST - strategic-target, OM - organizational-management, AI - analytical-informational and SC - social-cultural functions;

Ex – exogenous actors of the mechanism, subjects of economic activity;

En – endogenous actors of the mechanism, subjects of economic activity;

TD – targeting the achievement of the set

tasks of the functioning of the innovation-investment mechanism for the development of economic entities in the conditions of transformational challenges;

S – strategies of innovation and investment development at the level of various levels of government, enterprises and others, taking into account the coherence of the interests of all economic entities;

DI – diversification of sources of investment resources;

MGA – generally accepted methods of the innovation and investment mechanism, which include: planning (*p*), forecasting (*f*), control (*c*), diagnostics (*d*), stimulation (*s*);

MS – specific methods of the innovation and investment mechanism, which include: generation of ideas (*gi*), compilation (*com*), distribution (*distr*);

M – management of the innovation and investment mechanism.

Thus, the innovation-investment mechanism of the economic entities' development in the conditions of transformational challenges is presented in the form of a functional-organizational algorithm with the help of a recurrent relationship, which makes it possible to take into account all its components and heterogeneous processes.

References

- Abramova A., Shaposhnykov K., Zhavoronok A., Liutikov P., Skvirskiy I., & Lukashev O. Ecosystem of VAT Administration in E-Commerce: Case of the Eastern Europe Countries. *Estudios de economía aplicada*. 2021. Vol. 39(5).
- Butko, M., Ivanova, N., Popelo, O., Samiilenko, G. (2020). Conceptual foundations of the regional industrial cluster formation based on European experience and leading world tendencies. *Financial and credit activity: Problems of theory and practice*, 1(32), 319-329.
- Cherep, A., Mostenska, T., Cherep, O., Tarasiuk, H., Bexhter, L. (2021). Relationship of Investment Development and Innovative Activity of Industrial Enterprises. In Alareeni, B., Hamdan, A., Elgedawy, I. (eds.), *The Importance of New Technologies and Entrepreneurship in Business Development: In The Context of Economic Diversity in Developing Countries. ICBT 2020. Lecture Notes in Networks and Systems*, 194. Springer, Cham.
- Dubyna M., Popelo O., Kholiavko N. (2021) World Experience In The Introduction Of Modern Innovation And Information Technologies In The Functioning Of Financial Institutions. *Baltic Journal of Economic Studies*, 7(2), 188-199.
- Grosu V., Kholiavko N., Zhavoronok A., Zlati M.L., Cosmulese C.G. Conceptualization of model of financial management in romanian agriculture. *Economic Annals-XXI*. 2021. Vol. 191(7-8(1)). P. 54-66.
- Iastremska, O., Stokovych, H., Dzenis, O., Shestakova, O., Uman, T. (2019). Investment and innovative development of industrial enterprises as the basis for the technological singularity. *Problems and Perspectives in Management*, 17(3), 477-491.
- Ivanova, N., Nazarko, S., Denysenko, T., Kublitska, O., & Kononenko, S. (2023). Business Strategy Transformation: The Impact of Global Digitalization and COVID-19 Pandemic Factors. *Journal of the University of Zulia*, 14(40), 486-505.

Conclusions

The implementation of the innovation-investment mechanism for the economic entities' development in the conditions of transformational challenges will contribute to the achievement of the set goals and will ensure the increase of profits, increase in the level of liquidity and competitiveness of economic entities on the domestic and foreign markets.

The scientific novelty of this study consists in the development of an innovation-investment mechanism for the economic entities' development in the conditions of transformational challenges, which is based on the recurrent ratio of all its components and heterogeneous processes, the simultaneous consideration of which will contribute to obtaining a synergistic effect and taking into account the interests of all economic entities.

Methodological approaches to assessing the efficiency of investment financing of innovative activities of economic entities in the conditions of transformational challenges need further scientific research, which will increase the efficiency of capital investments and innovative development.

Mykhailov, A., Mykhailova, L., Kharchenko, T., Mohylina, L., Shestakova, A. (2021). Investment Instruments for Managing Innovative Transformations of the Agricultural Sector to Ensure Sustainable Development in the Context of Globalization. *Estudios de Economía Aplicada*, 39(7). DOI: 10.25115/eea.v39i7.5068.

Nikiforov P., Zhavoronok A., Marych M., Bak N., Marusiak N. (2022). State policy regulation conceptual principles of public-private partnership development. *Cuestiones Políticas*, 40(73), 417-434.

Prokhorova, V., Protsenko, V., Abuselidze, G., Mushnykova, S., Us, Yu. (2019). Safety of industrial enterprises development: evaluation of innovative and investment component. *Naukovyi Visnyk Natsionalnoho Hirnychoho Universytetu*, 5, 155-161.

Revko A., Popelo O., Butko M., Garafonova O., Rasskazov O. (2021). Strategy of the Formation and Development of an Innovative Agroindustrial Cluster of the Region in a Context of Decentralization of the Authoritative Powers. *Financial and credit activity: problems of theory and practice*, 2(37), 219-230.

Shaturaev, Jakhongir. (2023). The Effectiveness of Investment Projects Evaluation in the Development of Innovation Industrial Activities. *ASEAN Journal of Science and Engineering*, 3(2), 147-162.

Shevchuk, N., Tulchynska, S., Severyn-Mrachkovska, L., Pidlisna, O., Kryshtopa, I. (2021). Conceptual Principles of the Transformation of Industrial Parks into Eco-Industrial Ones in the Conditions of Sustainable Development. *IJCSNS International Journal of Computer Science and Network Security*, 21(12), 349-355.

Tkachenko, A., Levchenko, N., Pozhuieva, T., Chupryna, N. (2020). Innovative Infrastructure And Economic Development In The AgroBusiness Investment. *International Journal of Advanced Science and Technology*, 29(8s), 2559-2565.

Trusova, N., Hryvkiivska, O., Kotvytska, N., Nesterenko, S., Yavorska, T., Kotyk, O. (2021). *International Journal of Agricultural Extension*, 9(4), 81-100.

Tulchynska, S., Popelo, O., Tulchynskiy, R., Khanin, S., Hrechko, A. (2021). Modeling and forecasting of the integrated index of innovation activity of regions. *Management Theory and Studies for Rural Business and Infrastructure Development*, 43(2), 307-315.

Tulchynska, S., Shevchuk, N., Kleshchov, A., Kryshtopa, I., Zaburmekha, Ye. (2021). The Role of Higher Education Institutions in the Development of EcoIndustrial Parks in Terms of Sustainable Development. *IJCSNS International Journal of Computer Science and Network Security*, 21(10), 317-323.