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Management of the Innovative Economy in the Context of the Sustainable Development Trend in the Framework of the Institutional Matrix Clusterization Model in Adaptive Human Resource Management, Digitalization of the Agriculture and Food Sphere, Adaptation to the COVID-19 Pandemic Conditions

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Abstract. The article aims to study the management of the innovative economy in the context of sustainable development within an institutional and matrix clusterization model in the context of adaptive human resource management, the digitalization of the agricultural and food sphere and adaptation to the COVID-19 pandemic. Methods. The following special methods of scientific cognition were used in the research process: historical-logical method; method of systematization, classification and theoretical generalization; method of institutional analysis; method of system analysis; method of logical analysis and synthesis; method of graphic analysis. Results. The evolution of the effect of collaboration and achievement of synergy within clusters under different types of economic systems has been determined. It is shown that in a post-industrial economy there is a very strong effect of intra-cluster collaboration, which is due to the dominance of a super competitive environment and mutually beneficial cooperation between government, business and science. The formation of institutional and matrix clusterization in the system of the innovation economy is proposed. It is shown that the effectiveness of institutional and matrix clusterization is ensured by a high degree of its

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stakeholder communicativeness. Practical contribution. The directions and ways of development of clustering of innovative entrepreneurship, combining the characteristics of effective network cooperation with the participation of large leading enterprises in the form of cluster models "wheel and spokes", "satellite" cluster, provide an opportunity to plan at the macro, meso and micro levels innovation clusters taking into account the strategic priorities of economic development. Prospects for further research. Technological, human, material and information exchange with the changing external environment is constantly taking place in the innovation cluster. Such environment is characterized by a set of economic entities with which innovation, material and information interchange (innovation, products, personnel, services, finance, marketing communications, etc.) takes place constantly. The main feature of institutional and matrix clusterization is the emergence of synergistic effect and, as a consequence, the formation of mutually beneficial cooperation in the network system.

Keywords: management of innovative economy, trend of sustainable development, model of institutional-matrix clustering, adaptive personnel management, digitalization of agri-food sphere, adaptation, pandemic COVID-19.

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УПРАВЛІННЯ ІННОВАЦІЙНОЮ ЕКОНОМІКОЮ В КОНТЕКСТІ ТРЕНДУ СТАЛОГО РОЗВИТКУ В РАМКАХ МОДЕЛІ ІНСТИТУЦІОНАЛЬНО-МАТРИЧНОЇ КЛАСТЕРИЗАЦІЇ В УМОВАХ АДАПТИВНОГО КАДРОВОГО МЕНЕДЖМЕНТУ, ДІДЖИТАЛІЗАЦІЇ АГРОПРОДОВОЛЬЧОЇ СФЕРИ ТА АДАПТАЦІЇ ДО УМОВ ПАНДЕМІЇ COVID-19

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Анотація. Метою статті є дослідження управління інноваційною економікою в контексті сталого розвитку в рамках моделі інституційної та матричної

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кластеризації в контексті адаптивного управління людськими ресурсами, цифровізації агропродовольчої сфери та адаптації до пандемії COVID-19. **Методи.** У процесі дослідження були використані такі спеціальні методи наукового пізнання: історико-логічний метод; метод систематизації, класифікації та теоретичного узагальнення; метод інституційного аналізу; метод системного аналізу; метод логічного аналізу та синтезу; метод графічного аналізу. **Результати.** Визначено еволюцію ефекту співпраці та досягнення синергії всередині кластерів за різних типів економічних систем. Показано, що в постіндустріальній економіці дуже сильний ефект внутрішньокластерної співпраці, що обумовлено домінуванням суперконкурентного середовища та взаємовигідною кооперацією між державою, бізнесом і наукою. Запропоновано формування інституційної та матричної кластеризації в системі інноваційної економіки. Показано, що ефективність інституційної та матричної кластеризації забезпечується високим ступенем її комунікативності для стейкхолдерів. **Практичний внесок.** Напрями та шляхи розвитку кластеризації інноваційного підприємництва, що поєднують характеристики ефективної мережевої співпраці за участю великих провідних підприємств у вигляді кластерних моделей «колесо і спиці», «супутниковий» кластер, дають можливість планувати інноваційні кластери макро-, мезо- та мікрорівнів з урахуванням стратегічних пріоритетів економічного розвитку. **Перспективи подальших досліджень.** В інноваційному кластері постійно відбувається технологічний, людський, матеріальний та інформаційний обмін із мінливим зовнішнім середовищем. Таке середовище характеризується сукупністю суб'єктів господарювання, з якими постійно відбувається інноваційний, матеріально-інформаційний обмін (інновації, продукти, персонал, послуги, фінанси, маркетингові комунікації тощо). Основною особливістю інституційної та матричної кластеризації є поява синергетичного ефекту і, як наслідок, формування взаємовигідного співробітництва в мережевій системі.

Ключові слова: управління інноваційною економікою, тенденція сталого розвитку, модель інституційно-матричної кластеризації, адаптивне управління персоналом, цифровізація агропродовольчої сфери, адаптація, пандемія COVID-19.

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Introduction.

The spillover of resources and knowledge flows between enterprises of a cluster forms a competitive advantage for other market participants, which stimulates the distribution of the received resources in the nationwide innovation process and provides an opportunity to spread innovative ideas to potential new cluster members. Regarding the benefits of clustering at the micro-level, one should

consider the existence of the possibility of implementing unfair counteracting behaviour. When considering clusterization, it should be taken into account that the cluster innovation environment represents a significant number of related and supporting each other enterprises, different in size and type of ownership, universities, research centres, venture capital companies and other specialized institutions, so there is a

need for the in-depth understanding of the functioning process of the cluster action on mutually beneficial conditions for all its participants in the context of sustainable development trend within an institutional matrix clusterization model in the context of adaptive human resource management, the digitalization of agricultural and food sphere and adaptation to the COVID-19 pandemic. Stakeholders of the cluster will have incentives to create innovations only when they receive a fair profit from their commercialization.

Literature review.

Different types of clusterization will cause profits to be distributed differently depending on the costs of innovation activity. Sometimes, the business that earned profit from commercialization may not even be innovators. This is more likely to occur in the second type of clusterization, where the "quality" enterprise is in a better position to profit from commercialization due to limited resources and communications in smaller firms, or in the fourth type of clusterization, where state-owned enterprises are likely to take over a large part of it. These positions are especially important for shaping state priorities regarding the location of the industry or sector in which the innovation cluster will operate and require in-depth assessment by the cluster centre of the regional infrastructure when deciding whether to locate the cluster in a particular industry space. A large number of scholars have conducted research in this direction, among them, the following should be noted Brockova K. et al. (2021), Gryshchenko I. et al. (2021), Lozhachevska O. et al. (2021), Mykhailichenko M. et al. (2021), Petryk O. et al. (2020), Rakhmetulina Z. et al. (2020), Samborskyi O. et al. (2020), Zherdetska L. et al. (2021), Zos-Kior M. et

al. (2020, 2021).

It is necessary to form state priorities regarding financial support of innovation clusters, to identify advantages and disadvantages of cluster impact on employment in the region or other effects that may arise in the future, given the evolution of any economic system. For example, an innovative enterprise within a cluster can implement an innovative project quite successfully, however, during the pilot phase, it and the cluster may lack additional assets (financial, human, informational etc.). Therefore, there is a need for financial support not only for start-ups but also for mature cluster members for the further activation of innovative activities. Studying how to organize the process of financial support taking into account the limited resources of the state and its other strategic goals, needs and clusterization policies is the most important issue, which will continue to be of relevance in the public administration. It should be kept in mind that usually innovation is developed through joint efforts of the state, science and business, but the first effort should come from the initiator of the cluster initiative - the state in the context of the sustainable development trend within the model of institutional and matrix clusterization, in the conditions of adaptive human resource management, digitalization of agricultural and food sphere and adaptation to the COVID-19 pandemic.

Methodology.

The following special methods of scientific cognition were used in the research process: historical-logical method; method of systematization, classification and theoretical generalization; method of institutional analysis; method of system analysis; method of logical analysis and synthesis;

method of graphic analysis.

Research objectives.

The article aims to study the management of the innovative economy in the context of sustainable development within an institutional and matrix clusterization model in the context of adaptive human resource management, the

digitalization of the agricultural and food sphere and adaptation to the COVID-19 pandemic.

Results and discussions.

The benefits of institutional and matrix clusterization in the innovation economy are depicted in Figure 1.



Figure 1. Benefits of institution-matrix clusterization in the context of adaptive human resource management, agricultural and food digitalization and adaptation to the COVID-19 pandemic

Source: author's elaboration

At the same time, it should be taken into account that different types of clusters entail very different configurations, forms of cooperation and competition between business entities. It is entirely possible, the amount of implementation of the innovation process also differs depending on cluster types. Each type of cluster has its own model of the organization of cooperation with dominating firms, a specific type of relationship between cluster stakeholders and forms of state intervention. Hence, it is obvious that each cluster type has to be based on the identification of individual state priorities regarding their support. According to the institutional and matrix clusterization, different types of clusters can operate, which have different effects on the efficiency of socio-economic development of territories of their location.

Each type of cluster needs to have different government priorities for its support.

1. A closed type of innovation cluster.

The closed type of innovation cluster is based on equal dominance of small innovation-oriented, medium and small enterprises located in a separate territory and operating predominantly in one industry. This cluster configuration is quite common in South Korea, Poland, Slovakia, Germany, and Sweden, where there is an ancient tradition of the formation of cluster stimulation on the local level with regard to the needs of small businesses.

Small enterprises are densely "embedded" in the socio-economic system of the region, together with infrastructure elements, formal and informal institutions, between which there is little communication.

A democratic management policy, efficient outsourcing of employees,

exchange of technology and scientific knowledge, but only within a closed cluster, achieve the parity of relations between cluster members. Thus, the closeness of the cluster to the external environment can be explained by the need to build synergies exclusively within a certain cluster, following the security policy of information leakage or conference know-how, which must first appear on the consumer market to achieve a marketing strategy of "Removal of cream", which will ensure a high degree of profitability of the cluster's commercialized product. Low level of cooperation with businesses outside the cluster, cautious idiosyncratic cooperation with competitors and minimal communication with representatives of public authorities are the defining characteristics of this type of cluster. The innovation process within this type of cluster is rather short-term with a short production cycle, during which small process or product innovations emerge, which have been developed exclusively with the help of the cluster's enterprises without the involvement of large institutions and low interaction with infrastructural elements. Consequently, the commercialization of innovations on the consumer market will have its own characteristics, both positive and negative:

due to weak interaction with the external environment, enterprises lose the information sources necessary for the diffusion of innovations within the cluster;

at the stage of cluster creation, enterprises, which are small in size, will have the need to raise funds from outside, which makes further innovation activities much more difficult due to the loss of potential investors;

as all cluster enterprises interact tightly and exchange knowledge and skills only within the cluster, they have a mutually absorbing limited scientific and technological potential and therefore other competing enterprises are able to create innovations quite easily, using extensive communication, which the participating enterprises in this type of cluster cannot create;

there is a high probability that the limited cluster cooperation will affect the unfair distribution of profits from the commercialization of innovations and thus the potential developer of the know-how will receive significantly higher profits than other cluster members;

The cluster enterprises form a protective circle against unscrupulous espionage, information leakage and thereby deterring their own employees due to tight communication;

the results of commercialization of the products of such innovation clusters can realize the marketing strategy of "Removal of cream" faster than other enterprises with a sufficiently open organizational and managerial structure.

the strategy of a closed type of innovation cluster is based on the equal dominance of little innovation-oriented, medium and small enterprises, capable of essentially creating minor product and process innovations, aimed at the consumption of a small segment of consumers under sufficiently changing demand and significant changes in the conjuncture.

2. A limited type of innovation cluster

This type of cluster strategy is based on partial interaction with the state and the institutional environment.

A limited type of innovation cluster, based on the involvement in the cluster of small innovation-oriented enterprises,

"anchors" enterprises and enterprises with an established type of economic activity, but steadily functioning or striving for innovative change. According to this type of clusterization, an «anchor " or strategically important enterprise for the state has or forms extensive connections with consumers, suppliers of components, competitors and third-party firms (including foreign firms outside the cluster). The exchange of personnel takes place, as in the first type of clusterization, insufficiently active, but already with partial involvement of necessary workers outside the cluster, but strict conditions of such exchange established through contracts. For this type of enterprises in the cluster, the input resources of the territory where the cluster is located are actively controlled, and in case of a strategic need for change or diversification of the production facilities, they quickly acquire and develop them. An "anchor" enterprise in this case appears as a so-called communication source of technology, knowledge, skills transfer both for cluster members and for external market stakeholders. The "anchor" enterprise controls the market power of each enterprise in the cluster and assesses its potential abilities, which allows it to link cluster members and third-party market players in long-term transactions. If another large enterprise is attracted into the cluster, there is a fair coexistence of all cluster participants on conditions of effective competition. There is a clear distribution of risks between the cluster enterprises due to failed commercialization or unjustified too high costs of innovation. "Anchor" enterprises can form a closed chain of production within the cluster: being suppliers, generators of ideas, doing exclusively marketing policy, creating legal protection for cluster members,

licensing, patenting or other protection of property rights. Moreover, have their own human, technical and financial resources to protect the copyright and discoveries of the cluster stakeholders.

Innovation activities in the first type of institutional and matrix clusterization, in contrast to the second type, take place with a small amount of production, low mobility of employees, weak extra cluster cooperation, so the transfer of knowledge and experience is rather limited. In the second type of clusterization, the "anchor" enterprise develops innovative projects taking into account its own resources, cluster potential or with the help of third-party enterprises on contractual terms, thus retaining rights to potential commercialization results from innovative activities. Consequently, under such conditions, the cluster has a preferential right to earn profit from commercialization, irrespective of whether these innovations were created in-house by the cluster or outsourced to third parties.

Consequently, the benefits to the national economy from the second type of clusterization depend on the good conscientious action of the "anchor" enterprise of the cluster, because it is the one which receives the highest income from innovation, on its own discretion determines the costs of stimulating of development of the area where the cluster is located, thus determining the public utility of the region's cluster.

3. Open innovation cluster type

This type of cluster is characterized by an extensive level of interaction with the state and the institutional environment.

The clusterization policy for this type of cluster is quite often based on a state strategy to form clusters in pre-selected industries or sectors of the economy. Policies to attract enterprises to the

innovation cluster are based on a variable state contribution and focus on the inclusion of high-tech enterprises or institutions into the cluster, who seek to use third-party resources at the best way with fairly low price, usually, it is large multinational enterprises or their subsidiaries. This type of clusterization also involves the inclusion of predominantly large and almost entirely externally oriented enterprises with dense exchanges with parent enterprises and other subsidiary branches located in other regions of Ukraine. Enterprises operating in clusters actively interact with the institutional environment and representatives of the state authorities. Consequently, the source of information, knowledge, experience or technological strategies used for innovations will preferably be attracted inside the cluster through active exchange of communication, personnel which facilitating recombination of knowledge acquired not only within a particular cluster but also in the region where it is located.

Institutional and matrix clusterization with a branched level of interactions with the state and the institutional environment creates a wide platform for the diffusion of innovations, creation of innovations with unlimited exchange flows with other placed enterprises in the cluster, therefore borrowing of innovations by other cluster participants is not uncommon. Consequently, in this case, it is the cluster participants, taking into account the offer of the state, who activate innovation processes in strategically chosen industries, and the profit from commercialization of innovations are fairly distributed between the cluster participants and the state on a parity basis.

Thus, innovation clusters according to the third type of clusterization can generate innovations in the following ways: by their own efforts; by involving other affiliated branches; as a result of state cooperation. Cluster companies will benefit the most from the implementation of the innovations demanded by the state.

4. Progressive type of innovation cluster

In this type of cluster, there is the most active interaction with the state and the institutional environment.

The specified type of clusterization implies the most expedient or desired from a scientific and practical point of view configuration of the companies, which should be perceived as a model of shaping the advantages of progressive innovative socio-economic development of territories, based on networking. Such innovation clusters are formed through one or more state-owned enterprises whose main objective is to support local innovative development, small entrepreneurship and regional competitiveness. The specifics and the amount of influence on local socio-economic activities are determined by the "anchor" enterprises of the cluster according to the pre-selected state policy for this type of cluster. Around these large organizations, there may emerge a multitude of suppliers identified by the state, with which they establish short-term contracts beneficial to social development and scientific and technological progress. Given that "anchor" cluster enterprises are publicly funded, cluster strategy decisions can be made outside the territorial location of the cluster and depend on public policy choices or changes in market conditions. Furthermore, connections of "anchor" institutions with customers and suppliers are predominantly state-oriented character and include cooperation tools that do not

contradict the general economic development of the cluster location area. The benefits from the activity of this type of clusterization for the state are very significant, and its innovative dynamism and progressiveness depend on the type of specialization or sectoral affiliation with which this type of cluster operates. As an example, military or defence "anchor" cluster enterprises due to their specificity and relevance for the modern Ukrainian economy may be more active in producing innovations (while the innovative activity of such enterprises will require more involvement of research and development institutions), while others will be less demanding to changes in short-term market demand.

Determining which of the cluster participants will mostly benefit from this type of clusterization and profit from innovation activities seems obvious: if the innovation cluster works to ensure socio-economic development of the region, has state protectionism and encourages fair competition, and the creator of know-how is any medium or small firm (both within and outside the cluster), then the financial benefits of participation in the cluster will be borne accordingly by the innovations implementer enterprise and the region in which the cluster is located. According to this type, the diffusion of innovations within and outside the cluster provides the innovator with an uninterrupted flow of profit. At the same time, there is the possibility that the innovative product ordered by a government contract has a temporary deadline or need on the part of some state defence enterprise. In addition, it will be more difficult for a medium or small cluster member firm to protect the innovation due to state bureaucracy or unfavourable competition of the large "anchor" enterprise. This is why radical

innovations will mostly be developed by an "anchor" firm, which has a better chance of retaining the rights to the innovation and will be able to protect it from unintended diffusion of ideas over a longer period of time. The above discussions allow us to conclude that enterprises of the fourth type of clusterization generate innovations, the enterprises of the fourth type of clusterization generate innovations necessary for the state and socio-economic development of the territories, the innovators will be mostly either the "anchor" or other strategically selected by the state enterprises, with which a contract has been signed.

Under this type of clusterization, with the help of state protectionism, the enterprises participating in the cluster will receive more profit from innovations, but

the territories where the clusters operate may receive socio-economic effects in the short or medium-term due to the variability of state policy and market conditions.

Obviously, positive results from clusterization are not obtained by all participants, but depending on the effectiveness of the implemented combination of cluster strategy and the degree of the innovative direction of the cluster. Innovative activity of cluster participants of any type is the key to the competitiveness of an enterprise. Such activity allows an enterprise to gain access to limited resources. However, innovation activity within the proposed types of clusterization becomes more and more dependent on the correctly chosen state priorities and directions of state support (Table 1).

Table 1

Areas of state support for innovation clusters depending on their type

Type of innovation cluster	Innovation cluster strategy	Model of governmental behaviour towards the innovation cluster	Cluster initiative	Priority areas of state support for innovation clusters
1. Closed type of innovation cluster	Institutional and matrix clusterization with limited type of interaction with the state and the institutional environment	Liberal	The cluster is created according to the requirements of the market environment: by the initiative of the enterprises	Stimulation of consumer demand for cluster products with minimum government involvement in cluster activities
2. limited type of innovation cluster	Institutional and matrix clusterization with a partial level of interaction with the state and the institutional environment	Liberal	The cluster is created both according to market requirements and artificially: by the initiative of the enterprises	Establishment of cooperation with the innovation cluster, ensuring the resource needs of the cluster
3. Open type of innovation cluster	Institutional and matrix clusterization with a branched level of interaction with the state and the institutional environment	Mixed	The cluster is created both according to market requirements and artificially: by the initiative of the enterprises or the state	Identification of promising sectors for cluster establishment and development; protectionism of the state in terms of resource needs of the cluster

4. Progressive type of innovation cluster	Institutional and matrix clusterization with a full level of interaction with the state and the institutional environment	Conductor	The artificially created cluster has a deliberate degree of organization: by the initiative of the state	Elaboration of a target programme for the development of an innovation cluster with a central role of the state. Partnership management of the cluster together with entrepreneurs.
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Source: Suggested by the authors

Obviously, the state will earn benefit from clusterization only when clusters are able to function in a perfect institutional environment. Managers who choose an innovative type of doing business seek access to specific or hidden, for some reason, knowledge and this is best accomplished by concentrating in innovative clusters. At the same time, not every type of clusterization should have the same state priorities to support them. Not all clusters have a positive impact on the social and economic development of the state although some clusters do promote innovation, other types of clusters block them.

This is due to the fact that the specifics of the relationships between cluster stakeholders are not the same in all types of clusters. In addition, the institutional environment of clusters, the degree of state intervention and state protectionism are very different.

Most innovations are the result of effectively chosen government priorities of clusterization with limited resources and knowledge. These studies suggest that the macro benefits of clusterization in the formation of the innovation economy are increasingly seen as a necessarily social phenomenon rather than the result of the profitability of individual enterprises in the cluster.

Conclusions.

The evolution of the effect of collaboration and achievement of synergy within clusters under different types of economic systems has been determined. It is shown that in a post-industrial economy there is a very strong effect of intra-cluster collaboration, which is due to the dominance of a super competitive environment and mutually beneficial cooperation between government, business and science. The formation of institutional and matrix clusterization in the system of the innovation economy is proposed. It is shown that the effectiveness of institutional and matrix clusterization is ensured by a high degree of its stakeholder communicativeness. Technological, human, material and information exchange with the changing external environment is constantly taking place in the innovation cluster. Such environment is characterized by a set of economic entities with which innovation, material and information interchange (innovation, products, personnel, services, finance, marketing communications, etc.) takes place constantly. The main feature of institutional and matrix clusterization is the emergence of synergistic effect and, as a consequence, the formation of mutually beneficial cooperation in the network system.

References

- Rauch, A., Doorn, R., Hulsink, W. (2014). Qualitative Approach to Evidence-Based Entrepreneurship: Theoretical Considerations and an Example Involving Business Clusters, *Entrepreneurship Theory and Practice*, 38(2), 333-368.
- Hnatenko, I., Kuksa, I., Orlova-Kurilova, O. (2019). Paragenesis of entrepreneurship and innovation as drivers of the future economy, *Strategic Management: Global Trends and National Peculiarities*. Collective monograph. Poland: Publishing House "Baltija Publishing".
- Zos-Kior M. (2020). The impact of migration processes on the management of socio-economic development and self-organization of the individual. *Visnyk Cherkas'koho natsional'noho universytetu imeni Bohdana Khmel'nyts'koho. Seriya «Ekonomichni nauky» [Bulletin of Cherkasy National University named after Bohdan Khmelnytsky. Economic Sciences Series]*, 1, 4-9.
- Zos-Kior M. (2020). Motivational aspects of management of ecological and economic potential of agricultural enterprises. *Naukovyy visnyk PUET. Seriya «Ekonomichni nauky» [Scientific Bulletin of PUET. Economic Sciences Series]*, 1(97), 26-31.
- Zos-Kior M. (2020). Evaluation of the organization's personnel in the system of corporate time management. *Ekonomichnyy forum [Economic forum]*, 3, 57-63.
- Khodakivska, O.V., Hnatenko, I.A., Dyachenko, T.O., Sabiy, I.M. (2021). Models of entrepreneurship in terms of innovation economy and knowledge economy: resource and cost management. *Investytsiyi: praktyka ta dosvid [Investments: practice and experience]*, 15, 5–11.
- Lozhachevska, O., Navrotska, T., Melnyk, O., Kapinus, L., Zos-Kior, M., Hnatenko, I. (2021). Management of the logistical and marketing behavior of innovation clusters in territorial communities in the context of digitalization of society and the online market, *Laplace In Review*, 7 (3), 315-323.
- Okhrimenko, I. V., Vdovenko, N. M., Ovcharenko, E. I., Gnatenko, I. A. (2021). Innovations in the system of strategic security management of the national economy in terms of risks and uncertainty of globalization, *Ekonomika ta derzhava [Economy and state]*, 8, 4–9.
- Vdovenko, N. M., Sukhomlin, L. V., Bachkir, I. G., Gnatenko, I. A. (2021). Management principles of modeling state priorities in the innovative economy: diversification of business and market adaptation, *Ekonomika ta derzhava [Economy and state]*, 9, 19–23.
- Lozhachevskaya, O. M., Safonova, V. E., Gnatenko, I. A., Navrotska, T. A. (2021). Management of innovative economy: strategic approaches to business processes, personnel management and competitiveness, *Ahrosvit [Agrosvit]*, 15, 14–19.
- Gnatenko, I. A., Popova, Y. M., Bachkir, I. G., Nechiporenko, K. V. (2021). Strategies of state priorities in the context of the scenario foresight of management of innovative economy: modeling of scientific and technical and intellectual potential, *Ahrosvit [Agrosvit]*, 17, 3–9.