

INFORMATION AND INNOVATIVE TECHNOLOGIES IN THE TURBULENCE ERA



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INFORMATION AND INNOVATIVE TECHNOLOGIES IN THE TURBULENCE ERA

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Part 2. INFORMATION AND INNOVATIVE TECHNOLOGIES IN ECONOMY AND MANAGEMENT

2.1. INNOVATIVE ACTIVITY IN THE CONDITIONS OF ECONOMIC COMPETITION

The economic progress of society is mainly ensured by innovations. This fact is evidenced by the experience of successful functioning of innovative economies of post-industrial countries. After all, innovations are the result of combining economic needs with the possibilities of scientific and technological progress (STP). Scientific and technological progress is a rather complex technological, scientific and socioeconomic process. Scientific and technological progress organically combines the development of science and technology. The transformation of science into a direct productive force means that every next step in the development of technology is based on previous scientific developments.

Therefore, technical progress becomes the materialization of scientific progress and is an important factor in innovative development. The innovation process combines economics, technology, education, science, management and entrepreneurship. Its limits are from the birth of an idea to its commercialization, i.e. a complex of relations: production → exchange → consumption⁴³⁷.

The concept of "innovation" appeared for the first time in the studies of culturologists and testified to the introduction of some elements of one culture into another. But in the process of improving traditional ways of life, they began to study the patterns of technical, technological, organizational, and economic innovations⁴³⁸. Currently, it is relevant to study innovations from an economic point of view. Innovations are one of the main generators of dynamic macroeconomic development. They are aimed at the creation of an innovative society, innovative development institutes that architect the infrastructure to ensure the country's competitiveness in the innovative world-system. It is innovations that form an environment that contributes to the scientific, technical and technological progress of society. For more than 70 years of innovation research, one can see a turn from a technocratic to a socio-economic vision of innovation processes. That is, the analysis of innovations included such elements as social consciousness, expectations and moods, values and norms. As the experience of various countries of the world and the modernization of their economies has shown, for successful innovative development, a harmonious interaction of its technological component with other, less researched – institutional and social-value components is necessary⁴³⁹. Therefore, in this section of the monograph, we will try to reveal the content of innovations from the standpoint of institutionalism and consider their institutionalization. The term "innovation" as a new economic category was introduced by J. Schumpeter at the beginning of the 20th century⁴⁴⁰.

Translated from the Latin "innovatio" ("in" – "in", "novus" – "new") is an update. In French, "innovation" means innovation, while in English, "innovation" has two meanings: "new idea", "method", "invention", "introduction" or "the introduction of something new". As for the Ukrainian word "innovation", it means a purposeful change that introduces new, stable elements into the institutional environment, causing the system to transition from one state to another. "Innovation" or "new tool" has another interpretation – "tools" (new method, program, technology), then innovation is considered as the process of mastering a new tool. J. Schumpeter defined innovation as an innovation applied in the field of production technology or management of some economic unit

⁴³⁷ Kraus, N. M. (2019). *Innovatsiina ekonomika v hlobalizovanomu sviti: instyutsionalnyi bazys formuvannia ta traiektoriia rozvytku: monohrafiia*. Kyiv: Ahrar Media Hrup, 2019. 492 s.

⁴³⁸ Barneva, A. Yu. (2007). *Ynnovatsyia kak ekonomycheskaia katehoryia*. Ynnovatsyy, 2007, № 9 (107). S. 61-63.

⁴³⁹ Nabatova, O. O. (2011). *Dzherela i osoblyvosti instyutsionalizatsii sotsialnykh innovatsii u transformatsiinii ekonomitsi*. *Visnyk Donets'koho natsionalnoho universytetu ekonomiky i torhivli im. Mykhaila Tuhan-Baranovskoho*. Ser. Ekonomichni nauky, 2011, № 3 (51). S. 234-240.

⁴⁴⁰ Shumpeter, Y. (1982). *Teoriia ekonomycheskoho rozvytyia (Yssledovanye predprynymatelskoi prybyly, kapytala, kredyta, protsenta y tsykla kon'unktury)*. M.: Prohress, 1982. 431 s.

as a result of the commercialization of all new combinations based on the use of new materials and components, the introduction of new processes, the opening of new markets, the use of new organizational forms. Based on this approach, the concept of "innovation" also includes the sphere of human activity, which is called inventions. The scientist believed that when business is connected to changes, they become innovations. Thus, by "innovation" J. Schumpeter meant any changes that occur as a result of technological, organizational, and administrative decisions. A large economic dictionary also offers a double understanding of the concept of "innovation": investing funds in the economy, which ensures the change of generations of equipment and technology; a new technique, a technology that is the result of scientific and technological progress.

The development of inventions, the discovery of pioneering and large-scale inventions is an essential factor of innovation. The modern definition of the term "innovation" is given by the Law of Ukraine "On Innovative Activities": innovations are newly created (applied) and (or) improved competitive technologies, products or services, as well as organizational and technical solutions of a production, administrative, commercial or other nature, which significantly improve the structure and quality of production and (or) the social sphere. According to Ukrainian scientists O. Volkov and M. Denysenko, it is worth distinguishing the concepts of "novation", "innovation" and "innovation"⁴⁴¹. By innovation, they understand a new order, process, method, new product or technology. An innovation is a formalized result of fundamental, applied research, development or experimental work in a certain field of activity to increase its efficiency. Innovations can take the form of: discoveries; inventions; patents; trademarks; rationalizing proposals; documentation for a new or improved product, technology, management or production process; organizational, production structure; scientific approaches or principles; document (methodology, instructions); the results of marketing research. Scientists call innovation the final result of management and obtaining economic, social, ecological, and technical types of effects. In their opinion, it is illegal to include the development of innovation, its creation, implementation and diffusion in the concept of "innovation". These stages belong to innovative activity as a process, the result of which can be innovations or inventions. The point of view of the Hungarian economist B. Santo (B. Santo) is convincing – "this is such a socio-technical and economic process, which, through the practical use of ideas and inventions, leads to the creation of better quality products, technologies and, if it is oriented for economic benefit, profit, its appearance on the market can bring additional income", notes N. M. Kraus in his monograph.⁴⁴² The scientist characterizes innovation as a production factor that determines the formation of productivity and the gross national product.

American scientist B. Twiss made a significant contribution to the research of this category. He considers innovation as a process in which an invention or idea acquires economic meaning, that is, an invention becomes an innovation if it succeeds in the market. This kind of process combines technology, management, science and economics and covers a complex of relations, production, exchange and consumption⁴⁴³. When substantiating the need for a conceptual approach to understanding the innovation process, the scientist considers scientific and technical innovations as a process of transformation. He has two of these processes: product-oriented and technical-market oriented. B. Twiss interprets innovation as the process of transferring scientific or technological knowledge directly to the sphere of consumer needs. At the same time, the product becomes only a carrier of technology, and the form it takes is determined after the "connection" of the technology itself and the satisfied need. The definition of innovation by Ukrainian scientists I. Yepifanova, Z. Varnaliya, V. Zyanko and O. Garmashova is interesting, who claim that it is the creative result of the implementation of an innovative idea in a subject substance – technology, product / service, which is characterized by new consumer qualities, together with therefore, it is the result

⁴⁴¹ *Ekonomika ta orhanizatsiia innovatsiinoi diialnosti : pidruchnyk / O. I. Volkov, M. P. Denysenko, A. P. Hrechan ta in. 3-tie vyd. K.: Tsentr uchbovoi l-ry, 2007. 662 s.*

⁴⁴² Kraus, N. M. (2019). *Innovatsiina ekonomika v hlobalizovanomu sviti: instyutsionalnyi bazys formuvannia ta traiektoriia rozvytku: monohrafiia*. Kyiv: Ahrar Media Hrup, 2019. 492 s.

⁴⁴³ Tyvys, B. (1989). *Upravlenye nauchno-tekhnicheskymy novovvedenyamiy; sokr. per. s anhl. avt. predysl. y nauch. red. K. F. Puzhnia. M.: Ekonomika, 1989. 271 s.*

of the development and commercialization of a new idea that turns into a product, technology, marketing solution⁴⁴⁴.

O. Nabatova, a Ukrainian researcher, insists that "innovations are not only innovations as a static final result of creative activity, but also the process of transforming innovations into socio-cultural norms and models of behavior, their institutional design"⁴⁴⁵. In this regard, there is a need to study the institutional mechanisms of innovation. As we can see, somewhat different views on this issue have formed among foreign and Ukrainian economists. Our analysis of the category "innovation" and its related ones gives us the opportunity to offer our own interpretation of them. In our opinion, innovation is not a product in itself, but a characteristic of its novelty, which is measured by the share of intellectual value in the total value of innovative capital⁴⁴⁶. We understand innovation as a direct new tool, new method, technique, program, technology, the application of which determines the amount of innovation rent. Innovation is the result of creative and creative activity of the innovator, which is presented in the form of: new consumer values of products / services and new types of them and is aimed at the creation, development and distribution of the latest technologies that bring a socio-economic effect; introduction of new norms and rules of institutional management, forming a new economic order, a new quality of life in society⁴⁴⁷. Note that innovation can be considered and interpreted as the "energy" of the innovative economy. Consideration of innovation from the standpoint of an institutional approach gives an understanding that innovation is a change in the structure of a "production organism" due to which its internal structure changes to a new state, which leads to qualitative and quantitative changes at the micro- and macro-level.

On the basis of the conducted theoretical and methodological analysis, it can be stated that the innovative activity of the enterprise is an activity associated with changes in its internal processes. It is clear that in market conditions, any changes in the enterprise are carefully calculated and evaluated from the point of view of economic effect.

Therefore, it can be concluded that the changes adopted for implementation at the enterprise will necessarily have a positive socio-economic effect. On this basis, the enterprise's acquisition of new high-quality equipment, the involvement of a new highly qualified employee, or the optimization of the use of production facilities in order to save space are its innovative activities.

Macro-level innovations cover three levels of the social system: socio-economic institutions, innovation structure, socio-cultural characteristics of society. The latter is the most fundamental level in which there are structures of values, goal orientations, needs, motivations, norms and models of everyday behavior. For this reason, this level is a strategic object of innovative activity. The more "deep" the socio-cultural level is, the smaller the changes occurring in it are subject to the direct control of the elite, and the more important is the influence exerted on it by the "stochastic" actions of millions of people. Based on this, for example, O. Nabatova believes that innovations may not lead to the desired results if they are not based on appropriate changes in the models of socio-economic behavior of micro-level subjects. We agree with her on this. Another situation is possible, when the emergence of innovative practices is not accompanied by the corresponding renewal of institutional forms. In both cases, there are institutional gaps, the results of which are unpredictable negative consequences of social innovation activity; a sharp deterioration in the functioning of a certain sphere of human activity as a result of deinstitutionalization or the displacement of formal institutions by informal ones; imitation of innovations, replacement of innovative activity

⁴⁴⁴ Zianko, V. V. (2015). Innovatsiina diialnist pidpriemstv ta yii finansove zabezpechennia v umovakh transformatsiinykh zmin ekonomiky Ukrainy : monohrafiia. Vinnytsia: VNTU, 2015. 172 s.

⁴⁴⁵ Nabatova, O. O. (2011). Dzherela i osoblyvosti instytutsionalizatsii sotsialnykh innovatsii u transformatsiinii ekonomitsi. Visnyk Donets'koho natsionalnoho universytetu ekonomiky i torhivli im. Mykhaila Tuhan-Baranovskoho. Ser. Ekonomichni nauky. 2011. № 3 (51). S. 234-240.

⁴⁴⁶ Kraus, N. M. (2015). Categorical difference of notions "novation", "novelty" and "innovation" as tools of innovative economy: institutional context. Institutional framework for the functioning of the economy in the context of transformation: Collection of scientific articles. Montreal: Publishing house "BREEZE", 2015. P. 53-58.

⁴⁴⁷ Kraus, N. M. (2015). Ukrainsko-rosiisko-anhliiskyi terminolohichnyi slovnyk z ekonomichnoi teorii. K.: Tsentri uchbovoi l-ry, 2015. 328 s.

with primitive adaptation, which does not have a defined direction and is not always effective. Thus, the most important substantive aspect of the institutionalization of innovations is mutual conditioning and mutual stimulation of changes in socio-economic institutions and models of socio-economic behavior through the action of positive and negative feedback⁴⁴⁸.

So, our theoretical and methodological research of the categories "innovation", "innovation", "innovation" and certain aspects of their institutionalization allows us to formulate a number of conclusions and generalizations:

1) the special content of innovation is qualitative changes that lead to improvement, improvement or the appearance of a new product/service, technology.

2) the definition of the essence of the concept of "innovation" is constantly being improved, refined and supplemented with aspects that take into account the peculiarities and requirements of a certain stage of development of the country's economy.

3) types of effects, which in most cases the innovation provides are economic, social, technological and environmental.

4) the given classification signs and types of innovations confirm that the nature of innovation processes is different, and therefore the methods of their organization, the measures of influence on innovation activity are also different from each other. Innovations differ in their content and areas of application, methods of use, level of development and distribution, and economic significance.

5) scientific and technical novelty, commercial feasibility and industrial application are the key qualities of innovation, which determine its content. Commercialization in relation to innovation acts as a potential quality, without which it can become an ordinary innovation.

The innovation process is closely related to the life cycle of innovations, which, moreover, is not aimed at preserving existing qualities, but at its transformation, at the transition to a new quality⁴⁴⁹. The innovation process is a complex of stages, stages, actions related to the initiation, development and manufacture of products, technologies that have new properties that more effectively satisfy existing needs and those needs that may appear⁴⁵⁰.

Innovative activity is a component of the innovation process that combines science, technology, and entrepreneurship. It is a risky type of business that requires large one-time costs that are not always paid off. Therefore, there is a need for insurance protection against the risks of innovative activity as a means of reducing investors' financial losses in case of unsuccessful project implementation⁴⁵¹. This is an activity that focuses, first of all, on the creation / implementation of progressive innovations. We can say about innovative activity that it is an activity aimed at the implementation of new ideas, scientific knowledge, technologies and types of products in various spheres of production and management of society, the results of which are used for economic growth, competitiveness and improvement of social services.

During the institutionalization of innovative activity, the following occurs: technological re-equipment of production; formation of new innovative product / service markets; creation and development of innovative infrastructure facilities; patenting (including abroad) of intellectual property objects, acquisition or transfer of rights to them; introduction of new technologies and methods. The importance of innovative activity cannot be overestimated, as it determines the innovative and active development of the economy and is a necessity for "survival" in the competitive environment of suppliers and manufacturers of products on the domestic and global innovation markets. Active innovative activity affects the development of technological and scientific-technical progress. The innovation management mechanism is responsible

⁴⁴⁸ Nabatova, O. O. (2011). Dzherela i osoblyvosti instyuttsionalizatsii sotsialnykh innovatsii u transformatsiini ekonomitsi. Visnyk Donets'koho natsionalnoho universytetu ekonomiky i torhivli im. Mykhaila Tuhan-Baranovskoho. Ser. Ekonomichni nauky. 2011. № 3 (51). S. 234–240.

⁴⁴⁹ Delyia, V. P. (2011). Ynnovatsyonnaia ekonomyka y ustoichyvoe razvytye: monohrafyia. Balashykh: De-Po, 2011. 256 s.

⁴⁵⁰ Mykytiuk, P. P. (2009). Innovatsiina diialnist: navch. posib. [dlia stud. vyshch. navch. zakl.]. K.: Tsentri uchbovoi l-ry, 2009. 392 s.

⁴⁵¹ Okrushko, V. Ya. (2009). Razvytye ynnovatsyonnoi sposobnosti natsyonalnoi ekonomiky. Problemy sovremennoi ekonomiky. 2009. № 4. S. 34–36.

for the promotion of innovations in the practice of innovative activity. It is based on four key points: determination of the purpose of changes, development of innovations, testing of innovations and their implementation in production, replication (diffusion) of innovations.

The main goal of innovative activity is the creation, accumulation and development of the scientific and technical potential of the business entity, which ensures its competitiveness, economic security and development. Important factors in determining innovative activity are:

- innovative activity is based on new scientific knowledge;
- the result of innovation is the introduction of new products or services to the market or the development of new production processes.

Innovative activity combines a complex of scientific, technological, organizational, financial and commercial activities that collectively lead to the creation of innovations. Innovative activity can be expressed in such forms as:

- preparation and organization of production, which includes the acquisition of production equipment and tools, changes in them, as well as in standards, procedures, methods of production and quality control of the production of a new product or the use of a new technological process;
- pre-production development, involving modification of the product and technological process, retraining of personnel;
- marketing of new products, which includes activities related to bringing new products to the market;
- acquisition of patents, licenses, disclosure of know-how, trademarks, models, designs and services of technological content;
- acquisition of the subject technology – machines and equipment, according to their technological content, related to the introduction of product or process innovations at the enterprise;
- production design, which includes the preparation of plans and drawings to determine production procedures, technical specifications.

All forms of innovative activity lead to the strengthening of competitive positions according to such criteria as product quality, consumer properties of products, cost of products, etc.⁴⁵².

Without the use of innovations, it is practically impossible to create a competitive product or service that would possess a high degree of knowledge and innovation. Innovation is able to give a long-term beneficial effect, which makes it possible to significantly break away from competitors. The effectiveness of some innovative projects can significantly exceed that of conventional processes and approaches. The company with the lowest costs is able to achieve such results, the achievement of which for competitors who do not have such innovative support and use traditional work methods, will be combined with significant additional financial and time costs⁴⁵³. Quite often, the enterprise that has broken out on the wave of innovation continues to hold the leadership in the future, because the advantages it used may be unattainable for other market participants, and it is almost impossible to overcome the lag in other ways. For this reason, many companies abroad directly finance scientific and research centers that are engaged in the development of innovative projects and directions. Ideas, projects or solutions that are the result of a creative process and contain a non-standard approach that ensures an increased effect from their implementation (due to their uniqueness) are of interest to the enterprise. Some innovations achieve competitive advantages by creating fundamentally new favorable opportunities in the market, or make it possible to capture market segments that have been missed by competitors. If the reaction of competitors is slow, then such innovations will provide the company with competitive advantages. Japanese companies, for example, the automobile industry, have achieved initial advantages by focusing on compact models that have smaller dimensions,

⁴⁵² Krysanov, D. F. (2009). Innovatsiyni faktor rozvytku kharchovoi promyslovosti Ukrainy. *Ekonomika Ukrainy*. 2009. № 4. S. 71-81.

⁴⁵³ Drahan, I. V. (2010). Innovatsiina diialnist yak faktor pryskorenoho rozvytku promyslovosti. *Ekonomika ta derzhava*. 2010. № 6. S. 34-36.

consume less energy, which were ignored by their foreign competitors, considering such models to be less profitable and less attractive⁴⁵⁴.

Thus, strategically correctly implemented innovations in any field of activity of the business structure contribute to increasing the competitiveness of the enterprise in general.

Innovations in the market economy are a tool of competition, since the consequences of innovations can be the emergence of new needs, reduction of production costs, increase in profits, improvement of the image of the manufacturer, influx of investments, opening and capture of new markets.

The use of innovations worldwide today is not a desire, but a necessity for survival, maintaining competitiveness and strengthening the market position. A vivid example of this is the events of the early 1980s in the motorcycle market, when the Yamaha company attempted to attack the Honda company, and in response, instead of the generally accepted price reduction, it chose an innovative strategy and in a year and a half released 113 new motorcycle models to the market, leaving the opponent is far behind. Innovations within the enterprise affect all areas of its business and are interconnected. In order to correctly evaluate each innovation, starting from the proposal to its distribution within the entire enterprise, it is recommended to combine all innovations into a single portfolio of enterprise innovations.

Thus, Table 1 shows the goals, ways to achieve them, and the results of the enterprise's innovative activities at the level of projects, programs, and portfolios.

Table 1. Levels of innovative activity of the enterprise

The level of innovative activity	Project	Program	Portfolio
Target	Solving tactical tasks	Solving a complex problem	Achieving competitive advantages
A way to achieve goals	Innovative product	Innovative technology	Innovative business
Result	Reducing the cost of the product, improving quality, increasing the return on investment	Increasing the market share, expanding the partner network, increasing the level of customer loyalty	Globalization of benefits

As a result of the application of a single integrated approach to innovation management within the corporate innovation portfolio, the head of the enterprise receives:

- maintaining a balance between ensuring long-term competitiveness and current liquidity during the creation, implementation or acquisition of innovations;
- achieving a balance between ensuring the competitiveness of the enterprise in the long term and profitability in the short term;
- increasing the manageability of the enterprise in real time, taking into account internal and external changes in the environment.

When introducing innovations into the practice of entrepreneurial activity, it is very important to know which factors can slow down or accelerate the innovation process. The main factors influencing the development of the innovation process are given in the Table 2.

The main goal of introducing innovations at enterprises is to achieve strategic business goals. Making small changes to an enterprise's operational processes or improving technologies and characteristics of its products or services cannot be classified as innovations. Implementation of innovations for business contributes to:

- increase in net profit;
- increasing return on investment (ROI);
- increase in earnings per share (EPS - Earnings per share);
- cost reduction in the portfolio of products or services;
- expansion of customer retention opportunities;

⁴⁵⁴ Yakubovskiy, M., Shchukin, V. (2007) Infrastruktura – faktor pryskorennia innovatsiinoho rozvytku promyslovosti. Ekonomika Ukrainy. 2007. № 2. S. 27–38.

- ensuring the inflow of investments;
- improving the image of the manufacturer of new products or services;
- opening or capture of new domestic and foreign markets.

Table 2. Factors affecting the implementation of innovations

A group of factors	Factors hindering innovative activity	Factors contributing to innovative activity
Economic, technological	Lack of funds for financing innovative projects, weakness of the material and scientific and technical base, lack of reserve capacity, dominance of the interests of current production.	The availability of a reserve of financial and material and technical means, advanced technologies, the necessary economic and scientific and technical infrastructure.
Political, legal	Restrictions from antimonopoly, tax, depreciation, patent and license legislation.	Legislative measures (especially benefits) that encourage innovative activity, state support for innovation
Socio-psychological, cultural	Consequences such as a change in the status of employees, the need to find a new job, restructuring of a new job, restructuring of established methods of activity, violation of existing stereotypes of behavior and traditions, fear of uncertainty, fear of punishment for failure.	Moral encouragement of participants in the innovation process, public recognition, provision of opportunities for self-realization, release of creative work. Normal psychological climate in the workforce.
Organizational and managerial	Established organizational structure of the company, excessive centralization, authoritarian management style, predominance of vertical flows of information, departmental closure, difficulty of inter-branch and inter-organizational interactions, firmness in planning, focus on established markets, focus on short-term payback, difficulty in harmonizing the interests of participants in innovation processes.	Flexibility of the organizational structure, democratic management style, advantage of horizontal information flows, self-planning, allowing adjustments, decentralization, autonomy, formation of target work groups.

That is, the timely introduction of innovations ensures that the enterprise maintains existing and gains new advantages in the conditions of competition. Innovations as a result of creative entrepreneurial activity, on the one hand, should be aimed at better, more complete satisfaction of consumer requests, and on the other hand, at obtaining a certain effect⁴⁵⁵:

1) this is an expansion of the range of manufactured products (services). With respect to an already functioning enterprise, expansion of the range of manufactured products is possible in two directions: due to the release of new products or due to the improvement of products or services provided. Accordingly, both directions, which ensure the expansion of the range of products (services), ultimately lead to an increase in profit and are directly related to innovative activities, and the totality of works related to the development, development and improvement of already produced products is, in essence, already innovative activity;

2) maximizing the price at which a product is sold or a service is provided. It is obvious that the possibility of increasing the price of the final product or service directly depends on the demand and supply of products. The most important thing here is whether the company operates in conditions of market competition or occupies a monopoly position;

3) reduction of costs for the production and sale of a unit of production, which is possible only in two ways: either by mobilizing the reserves of already used technology, or by developing the latest technology or new elements of the old technology. At the same time, we mean the development of both new equipment and technology, as well as new methods of organization and management of production and sales of products. Ways to increase the company's profit by minimizing costs for the production and sale of a unit of products (services) are determined by the effectiveness of innovative activities;

4) increase in sales of products or services, which is possible by increasing sales of "old" and new products. In turn, an increase in the volume of sales of "old" products is possible due

⁴⁵⁵ Kudyko, O. M. (2011). Suchasnyi stan innovatsiinoi diialnosti na pidpriemstvakh kharchovoi promyslovosti Ukrainy. Ekonomika APK. 2011. № 11. S. 102-107.

to the implementation of a set of marketing measures aimed at stimulating sales (advertising, promotions, contests, sales, etc.), entering new markets, as well as increasing the consumer appeal of products from the point of view of the buyer (price, quality, additional product functions).

It is obvious that activities related to improving the quality of products (services), as well as adding a new function to them, will be innovative. The release of new products is also the result of innovative activity. Thus, the increase in the volume of sales of products (services) is also largely achieved due to the corresponding innovative transformations. Conclusions. It is innovations that can explain the unprecedented growth of the market economy of developed countries, the achievement of global levels of competitiveness and their taking leading positions in the international markets of goods and services through successful competition and victory over rivals.

It is innovations that are aimed at creating new or improving existing products, services or technologies that can be considered as the main issue of increasing the competitiveness of both individual enterprises and the economy as a whole.

Innovative activity is a decisive factor in the competitive struggle, which provides conditions for sustainable long-term development of the enterprise.

Currently, none of the developed countries of the world can carry out innovative activities in all areas for objective reasons – each country has only its own, specific, often limited list of resources. Therefore, Ukraine, as a developing country, has a chance to become part of the global world progress due to the improvement of the efficiency of innovative activities based on its inherent resource potential.

Industry is a catalyst for the development of other industries, one of its foundations is the development of scientific and technical activities of business entities. According to the indicator of the number of scientists, as the main carriers of capital and drivers of scientific and technical activity, Ukraine is among the top ten world leaders. However, the current rate of growth of the gross domestic product of Ukraine due to the introduction of new technologies is less than 1%, while in the developed countries of the world it is 60-90%⁴⁵⁶. The ambiguity of the situation dictates the study of its causes. For this purpose, the international ratings of innovative activity of Ukraine against the background of the countries of the world, which are based on the methodology of aggregating heterogeneous indicators of the subject area, were considered.

According to the results of economic development in 2021, announced during the World Economic Forum in Davos, Ukraine was included in the list of countries whose economic level is slowly decreasing. According to the Global Innovativeness Index, in 2020, Ukraine took 43rd place out of 126 countries in the world, against 50th place in 2019. According to the component "productivity of knowledge and technologies", in 2020 Ukraine held 27th place. According to the components of the Global Competitiveness Index (GIC), Ukraine has comparatively diametrical positions. In particular, Ukraine ranks 131st in the "macroeconomic stability" sub-index and 110th in "institutions", as it is 46th in the "skills" sub-index, as Ukrainians traditionally attach great importance to higher education and intellectual development, 47th by "market capacity", which indicates the openness and attractiveness of the Ukrainian market in the international arena. In terms of "innovative capacity", Ukraine ranks 58th, and in terms of "use of information and communication technologies" – 77th in the rating⁴⁵⁷. Indicators that testify to the innovative potential indicate prospects in the field of scientific, technical and technological development of Ukraine and at the same time remain inactive.

The spread of technologies based on the Internet is a sign of the transition of society from the industrial stage of development to the information stage. More than 40% of the world's population is connected to the global network. The world leader in the number of Internet audiences for the past five years belongs to China.

In the continental aspect, the distribution of the network reaches 75% in Europe, 66% in North and South America, 45% in the countries of the Asia-Pacific region and about 25% in Africa. More than 15.3 million Ukrainians use the Internet, which is 49.8% of the country's adult population.

⁴⁵⁶ Global Innovation Index (2020).

⁴⁵⁷ Ibidem.

According to this indicator, Ukraine is among the top ten "Internet countries" in Europe. The rate of Internet usage in the European segment is 3%, Ukrainians are in 33rd place in the world.

According to the Index of Development of Information and Communication Technologies, in 2020 Ukraine took the 79th position among 176 countries of the world, in 2019 – the 78th. The above indicators indicate an insufficient level of development of information and communication technologies in Ukraine, compared to what it should be, given the existing knowledge and innovation potential of the country in this area.

In Ukraine, there is a decrease in the amount of scientific research and research engineering: during 1996-2020, from 1.38 to 1.0% of GDP. The commodity structure of Ukrainian exports is threatening: its volumes are formed mainly at the expense of raw materials industries, in contrast to developed countries, in which 85-90% of GDP growth is provided by the production and export of science-intensive products. The share of Ukraine in the market of high-tech products, the estimated total capacity of which is 2.5-3 trillion. dollars USA, is about 0.05-0.1%. This shows that Ukraine is technologically dependent on the developed countries of the world.

In particular, in 2015, the import of high-tech goods to Ukraine amounted to 2,341.4 million dollars USA, (6.5% of the total volume). Its structure is dominated by electronics (US\$782.8 million), chemical products (US\$404 million) and non-electrical equipment (US\$371.2 million). During the analyzed period, Ukrainian export of high-tech goods accounted for only 2.35% of the total volume⁴⁵⁸. The particular danger for Ukraine's economy is primarily caused by the growing technological aging of industries, the need to quickly cover markets and preserve the country's scientific and technical potential. The structure of Ukraine's industrial production does not create incentives for innovative and technological development of the country. During 2020, 963 organizations (59,392 scientists) carried out scientific and scientific-technical work in Ukraine, 15.2% of which belonged to the higher education sector, 45.8% to the public sector of the economy, and 39.0% to the entrepreneurial sector. In 2019-2020, Ukraine had 661 institutions of higher education (HEI) of the I-IV level of accreditation, of which more than half have the right to carry out research and development. This testifies to the significant scientific-technical and scientific-technological potential of the domestic sector of higher education and science, and therefore, to the ability to carry out research and development, produce technologies and transfer them to business. During 2010-2020, the share of organizations performing scientific and scientific and technical work in the higher education sector in the total number of organizations is increasing: from 13.7% in 2010 to 15.2% in 2020. In contrast, the share of organizations that performed work in the business sector is decreasing: from 46.8% in 2010 to 39.0% in 2020. This reflects the trend of increasing the scientific and technological potential of domestic higher education institutions and increasing the role of their innovative activities as full-fledged subjects of the innovative infrastructure. At the same time, although Ukraine is traditionally considered a country with significant scientific potential, world-recognized scientific schools, and a developed personnel training system, in 2017 the share of scientific research and development workers (researchers, technicians, and support staff) in the total number of the employed population was 0.58%, among them researchers – 0.37%, which is one of the lowest indicators among developed European countries. According to Eurostat, in 2017 the highest share was in Finland (3.21% and 2.35%), Austria (3.10% and 1.92%) and Sweden (2.97% and 2.33%) ; the lowest – in Romania (0.53% and 0.33%), Cyprus (0.83% and 0.61%), Poland (1.0% and 0.75%) and Bulgaria (1.0% and 0.65%)⁴⁵⁹.

In recent years, the scientific and technical potential of Ukraine has been in a state of "survival", instead of updating and adapting to the demands of the modern market. Currently, less than a third of domestic doctors and candidates of sciences of Ukraine work directly in the scientific sphere. Therefore, in 2017, about a quarter of all scientific and scientific and technical works were directed to the creation of new types of products, technologies, varieties of plants, breeds of animals, and types of materials. There remains a need to increase this share and stimulate the participation of scientists from scientific institutions and universities in innovation processes of all fields.

⁴⁵⁸ Derzhavna sluzhba statystyky Ukrainy.

⁴⁵⁹ Derzhavna sluzhba statystyky Ukrainy. Naukova ta innovatsiina diialnist Ukrainy.

The dynamics of the number and composition of research and development workers in Ukraine are characterized by a negative trend: at enterprises and organizations that carried out research and development, the number of workers of such work at the beginning of 2020 was 94.3 thousand persons (taking into account part-time employees and persons working under civil law contracts), of which 63.0% are researchers, 9.7% are technicians, 27.3% are support staff. Compared to 2019, the total number of performers decreased by 3,638 thousand people, including the number of researchers decreased by 4,302, while the number of support staff increased by 1,520 people.

During 2018-2020, the share of enterprises in Ukraine engaged in innovative activities was 18.4%, including technological innovations – 11.8% (5.7% – product and 10.3% – process), non-technological – 13.4% (8.7% – organizational and 10.2% – marketing). During 2018-2020, the largest share of innovative enterprises was in the field of information and telecommunications (22.1%), processing industry (21.9%), financial and insurance activities (21.7%), in the field of architecture and engineering (20.1%).

It should be noted that a higher than average share of enterprises with technological innovations was their share in the processing industry (15.6%), electricity and gas supply (12.6%), enterprises engaged in activities in the fields of architecture and engineering, scientific research and developments, advertising activities – 13.2%; with non-technological innovations – among enterprises of financial and insurance activities (18.0%), information and telecommunications (17.3%), processing industry (15.3%)⁴⁶⁰. The prevalence of growth rates in the number of introduced innovative technological processes and the growth in the number of industrial enterprises implementing innovative products over the growth rates of the total number of industrial enterprises implementing innovations is positive. However, despite the positive factors regarding the activation of innovative activities of industrial enterprises of Ukraine, the share of implemented innovative products in the total volume of industrial products is low. This is evidence that the products manufactured by domestic industrial enterprises are mostly not innovative. The results of the analysis of the innovative activity of industrial enterprises indicate that more than half of those enterprises that declared the development of technological innovations purchased machines, equipment and software for the production of new or significantly improved products and services. About a third of the enterprises carried out activities for the introduction of new or significantly improved products or processes (in particular: technical and economic substantiation, testing, development of software for current needs, technical equipment, organization of production, etc.). Both the total number of industrial enterprises and the number of enterprises that introduce innovations in Ukraine are decreasing every year. However, there is also a positive trend – an increase in the share of innovatively active enterprises. Thus, the share of enterprises engaged in innovative activities in Ukraine increased from 13.8% in 2018 to 16.2% in 2020. Including, the share of enterprises that carried out internal scientific research increased from 2.1% in 2018 to 2.8% in 2020. The analysis of the given data shows that the implementation of innovative activities in the business sector is characterized by a certain stability. This makes it necessary to pay attention to increasing the number of effective research and development in this sector. In 2020, 88.5% of innovatively active industrial enterprises implemented innovations (or 14.3% of surveyed industrial enterprises), which in particular introduced 2,387 innovative types of products (including technological processes), of which 477 were new exclusively for the market, 1910 – new only for the enterprise. Of the total number of introduced products, 751 are new types of machines, equipment, devices, devices, etc., of which 30.5% are new to the market. During 2018-2020, the highest level of innovation activity was observed at enterprises of the Rivne, Kharkiv regions and the city of Kyiv. In particular, according to the data, the highest share of technologically innovative enterprises is in the Kharkiv, Ternopil, Mykolaiv, Cherkasy, Kirovohrad, Ivano-Frankivsk, Sumy, Zaporizhia regions and the city of Kyiv; in terms of types of economic activity – at enterprises for the production of basic pharmaceutical products and pharmaceutical preparations, other vehicles, computers, electronic and optical products, beverages, electrical equipment, chemicals and chemical products⁴⁶¹.

⁴⁶⁰ Ibidem.

⁴⁶¹ Ibidem.

A significant obstacle to the innovative development of Ukraine is the insignificant demand for scientific and technical developments from both the state and private business. The amount of budget expenditures for science in Ukraine in 2020 was 0.45% of the gross domestic product⁴⁶², while in the countries of the European Union this indicator exceeds 3% of the gross domestic product. Due to the practical absence of venture capital of domestic origin, foreign venture capital funds are mostly not interested in the development of competitive new technologies in Ukraine. Funds are directed mainly to enterprises of traditional industries, in particular energy, machine-building, construction and processing industries. Currently, funding of scientific research and research and design developments from the budget does not exceed 0.4% of gdp, but the figure is declared at the legislative level to be 1.7%. the share of programmatic funding of scientific research and research and design developments does not exceed 10% of the costs of science according to the norm of 30%⁴⁶³ there are more than forty administrators of public funds in the scientific field, which leads to dispersion of funding and inefficient use of funds. in addition, the unsatisfactory state of scientific research and research and design development negatively affects ukraine's foreign trade in science-intensive products.

The insufficient level of financing remains one of the main factors that prevent the full development of innovative infrastructure entities of Ukraine. This is explained by a number of reasons: the general economic crisis, the lack of a sufficient number of competitive educational products, the imperfection of mechanisms for the interaction of higher education institutions and scientific institutions with the business environment and foreign partners, etc. Together, these and other factors cause the devaluation of the innovation potential of the majority of domestic innovatively active business entities and inhibit their interaction within the innovation infrastructure.

In order to stimulate innovative activity in the countries of the European Union, one of the five target tasks of the "europe 2020" strategy is to increase the specific weight of expenditures on scientific research and research and design development as part of the gross domestic product to 3% by 2020 preliminary analysis showed that in 2015 the member states of the european union spent about 283 billion euros on r&d, the share of which in the gross domestic product was 2.03%, which corresponds to the level of 2014 and significantly exceeds the indicator reached fifteen years ago – in 2004 (1.76%).

For Ukraine, this indicator was 0.45% in 2017, against 2015, when it reached 0.62%. The most significant source of funds aimed at the implementation of scientific research and research and design developments in the countries of the European Union is the entrepreneurial sector – 55% of the total amount of funding, which indicates the interest of business in the commercialization of innovations. In the countries of the European Union, state bodies pay great attention to the development of scientific and technical activities (funding from state sources is 32.7%), foreign participants also attract funds (8.9%).

The analysis of indicators of the structure of financing of scientific-research and research and design developments in Ukraine showed that at the moment, about 40.3% of scientific-research and research and design developments are financed from the funds of entrepreneurial structures, which is 15 percentage points less than in the countries of the European union Accordingly, this indicates a significantly lower capacity of domestic business entities to carry out effective innovative activities and technology transfer, compared to EU countries.

The share of state funding of scientific research and research and design developments in Ukraine reaches about 40%, but in absolute terms it is much less than in the USA or EU countries. The specific weight of funds from foreign sources, directed in Ukraine to the implementation of scientific research and research and design developments, is 18.2%, which indicates the interest of foreign investors in domestic scientific research and research and design developments.

⁴⁶² Kraus, N. M. (2019). *Innovatsiina ekonomika v hlobalizovanomu sviti: instyutsionalnyi bazys formuvannia ta traiektoriia rozvytku: monohrafiia*. Kyiv: Ahrar Media Hrup, 2019. 492 s.

⁴⁶³ Kraus, N. M. (2015). Categorical difference of notions “novation”, “novelty” and “innovation” as tools of innovative economy: institutional context. Institutional framework for the functioning of the economy in the context of transformation: Collection of scientific articles. Montreal: Publishing house “BREEZE”, 2015. P. 53-58.

The number of enterprises spending funds on scientific research and research and design development in Ukraine is 2.5 times less than the average in EU countries.

Thus, in European countries, mainly every second enterprise with technological innovations spends money on internal scientific research works and every fourth uses the services of state or private scientific research institutes in terms of research and development. However, another aspect is gaining significant importance: innovative products are generated if enterprises, as subjects of innovative activity, are given the opportunity to engage in this. This is a complex, expensive and risky process, each stage of which requires a special approach.

Thus, about a third of the funds spent by enterprises on innovative activities are for the purchase of equipment, while the costs for acquiring rights to new objects of intellectual property rights or for scientific research and research and design development are almost ten times smaller. The need to improve the current policy of financing and crediting innovative processes of domestic business entities is due to the fact that almost half of the innovative enterprises practically do not finance the conduct of scientific research and research and design developments for their production. These trends can be explained by the aspirations of enterprises to practical implementation of innovative measures by purchasing new machines, equipment, and software, which, in turn, will lead to faster profits. At the same time, research and development projects, due to their long-term and risky nature, as well as the lack of desire and desire of the research staff to work effectively due to the low level of wages, bring tangible economic results much slower.

According to the World Intellectual Property Organization, Ukraine demonstrates relatively high activity in the field of patenting, although the levels of patenting in individual sectors differ significantly. It is noteworthy that ZVO submits the largest part of applications for obtaining security documents out of their total number in Ukraine. The number of applications submitted to the patent offices of foreign countries is insignificant, each year it is one to two dozen, which indicates, in particular, the underdeveloped international cooperation of Ukraine with other countries in the field of innovation and technology transfer.

In the future, there is a tendency to decrease the number of applications for inventions submitted to the State Department of Intellectual Property Registered license agreements to only 2.21-2.61% of the number of patents, which is several times less than the similar indicators of the leading countries of the world. Existing shortcomings in the enforcement of the regulatory and legislative framework in terms of the protection of rights to intellectual property objects have led to partial losses of the scientific and technical potential of the state. Summarizing the conducted analysis, it should be noted the gradual increase in the level of indicators of innovative activity of Ukraine.

Despite the above-mentioned difficulties, it is now quite reasonable to talk about the possibility of Ukraine joining the list of high-tech countries in the world. The transition to sustainable growth depends on the effectiveness of the state's efforts in the context of expanding the processes of diversification of the economy, increasing the level of its innovativeness and creating conditions for the realization of the creative abilities of the population. Conclusions from the conducted research and prospects for further exploration in this direction.

Taking into account the current state of innovative activity in Ukraine, which is caused by the long-term negative impact of general economic problems related to the structural deformity of the economy and the dominance of low-tech industries in it, the speed of the state's entry into the modern trajectory of innovative progress depends, first of all, on the preservation of the scientific and technological potential of its institutions and development of innovative infrastructure.

In order to increase the efficiency of business entities within the modern innovation infrastructure in Ukraine, it is necessary to provide conditions for the creation and active activity of new-type universities, technology parks, the effectiveness of which will be measured by the implementation of innovative developments and projects in the practical activities of enterprises in various industries. In the conditions of the knowledge economy and world globalization, the level of economic development of the country determines the NTP and the ability to commercialize intellectualized products.

An important and promising mechanism for economic stabilization of the state is technology transfer, the essence of which is the transfer of know-how, new technologies, technological equipment and scientific and technical knowledge from the owner to the customer. Technology transfer ensures the development of industries, is the basis of qualitative changes in the economy in general. In Ukraine, due to the weak interaction between science and business, technology transfer has not developed sufficiently. Due to the insufficient spread of advanced technologies, the country loses the opportunity to use the strategy of building innovative potential in the priority directions of the National Development Program, which threatens to establish an extensive model of economic development.

Overcoming negative trends in the development of Ukraine's innovative infrastructure will primarily be facilitated by the study of institutional factors, on the basis of which it should be improved, which will involve a purposeful transition to the European path of development. Among the main directions of increasing the efficiency of innovative activity of business entities in the context of the modern stage of development of innovative infrastructure of Ukraine, the following are highlighted:

- identification of state priorities in the field of innovative activity and technology transfer, development of innovative development strategy of Ukraine;
- stimulation of innovatively active business entities on the basis of improving systems for providing tax benefits and lending;
- various types of support for technology parks, business incubators and other innovative infrastructure facilities;
- stimulating the creation of joint forms of commercial activity between higher education institutions and business structures for the purpose of developing and transferring technologies, searching for opportunities to implement the acquired fundamental knowledge into practical ideas;
- improvement of the system of financing scientific, technical and innovative activities of business entities in Ukraine;
- creation of national research programs and other forms of participation of innovative infrastructure objects in the scientific and innovative processes of the state, activation of the development of small and medium-sized innovative businesses, etc.;
- substantiation and application of the latest tools for forecasting innovative development at both the macro and macro levels;
- organization of venture enterprises for the implementation of innovative technologies, support for novice inventors and encouragement for the creation of startups.

The justification of the specified directions is the subject of our further work.

Ukraine has significant potential for effective innovation, but even individual technological breakthroughs cannot provide the main result – a new competitive economy based on knowledge and innovation. The innovative activity of industrial enterprises of Ukraine is mainly aimed at saving resources, and not at creating a new competitive product. This requires changes in approaches to stimulating the innovative development of the country and, in particular, to eliminating gaps between the entities of the innovative infrastructure. For this, a complex of measures is necessary, the basis of which is the successful interaction of science, business, government and society.

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ANNOTATION

Part 1. INFORMATION AND INNOVATIVE TECHNOLOGIES IN EDUCATION

1.1. Mykhailo Kalenyk. ORGANIZATION OF ONLINE EDUCATION IN PHYSICS AT SCHOOL USING MODERN INFORMATION TECHNOLOGIES

The method of using modern information technologies for the organization of online classes in physics at school is proposed. It is based on an integrative model of the educational process. Multimedia technologies are considered when working with educational texts, conducting a physical experiment, solving problems, managing the educational activities of students, repeating the studied material, checking, recording knowledge, organizing independent activities of students. Ways of organizing distance learning in synchronous mode using video conferences, interactive animations of processes and phenomena, training exercises, web 2.0 technology, and cloud services are offered.

1.2. Lidiia Slipchyshyn. THEORETICAL AND METHODOLOGICAL BASIS OF SPECIALISTS VISUAL CULTURE FORMATION

The article substantiates the theoretical foundations of the specialists' visual culture formation. The philosophical basis of the concept of "visual" is analyzed. The importance of discourse experience forming is shown, which helps the individual to perceive and explain the "inexpressible", to fill the image with meaning, and produce ideas. It has been established that the visual-figurative way of conceptualizing reality opens up wide opportunities for identifying connections and working with information, building new concepts and images. The role of visual thinking in organizing mental activity and working with information is emphasized. The essence of a specialist's visual culture is revealed and its features for artistic and technical profiles are shown.

1.3. Natalia Afanasieva. FEATURES OF THE RELATIONSHIP OF EMPATHY AND BEHAVIORAL STRATEGIES IN CONFLICT AMONG PSYCHOLOGY STUDENTS

The article presents an analysis of the relationship between empathic abilities, tendencies and styles of conflict behavior in the studied psychology students, which revealed the presence of a direct and inverse relationship between these indicators. The general trend shows that the higher the level of empathy among the subjects, the less aggressive forms of behavior they choose in the conflict. It should be noted that among the strategies of behavior in the conflict, compromise and cooperation prevail. This is probably due to two main factors – the gender of the subjects (girls predominate in the group) and professional focus (psychology). But this assumption needs additional analysis. Based on the conducted psychodiagnostics research, a social-psychological training program aimed at optimizing the empathy of future psychologists was developed.

1.4. Ivan Vasylykiv. FORMATION OF PROFESSIONAL COMPETENCE OF PRIMARY SCHOOL TEACHERS IN THE FIELD OF INFORMATION AND COMMUNICATION TECHNOLOGIES

The article examines information competence, which is a necessary quality of teachers, characterized by their focus on mastering the theoretical and practical foundations of their specialty, professional self-development, personal self-actualization and self-realization in the conditions of an increase in the amount of information and the development of technologies.

The formation of informational competence of teachers should occur simultaneously with the formation of their communicative competence.

Communicative competence of teachers is closely related to their ability to use ICT for access to information, its organization, production and transmission in order to carry out productive professional and pedagogical activities in the modern informational and educational space.

1.5. Olena Havrylo. FORMS AND METHODS OF FORMING NATURAL CONCEPTS IN PRESCHOOL CHILDREN

The article analyzes different definitions of the term “concept” and “natural concept”. The aim is to prove the formation of concepts in preschool children. In the context of the article, the most optimal is the definition of the concept as a form of thinking, generalization of the essential features of the object. The article proves the effectiveness of selected methods in the formation of preschool children’s natural concepts. The child’s natural concept is largely dependent on the personality of the educator. In the modern pedagogical research, the concept of readiness for environmental pedagogical activity is interpreted differently. Thus, under the condition of purposeful pedagogical influence, natural concepts can be effectively formed on preschool children.

1.6. Nataliya Drozhzhina. INNOVATIVE TECHNOLOGIES FOR SHAPING PERFORMANCE CHARACTERISTICS OF VARIETY SINGERS IN THE SYSTEM OF HIGHER MUSIC EDUCATION OF UKRAINE

The main task of higher education at the current stage of the development of variety music is to create the theoretical and methodological bedrock, on which the system of training professional vocal performers in institutions of higher education of culture and arts should be based. Therefore, the purpose of the research is to analyze the introduction of innovative technologies for shaping performance characteristics of variety singers into the higher music education of Ukraine with the aim of substantiating the universal methodology of training highly qualified specialists in the field of variety vocal art.

1.7. Alla Diachenko. APPLICATION OF INNOVATIVE APPROACHES DURING UNDERGRADUATE PRACTICE BY STUDENTS OF THE INDUSTRIAL DESIGN SPECIALIZATION AT THE MYKHAILO BOICHUK KYIV STATE ACADEMY OF DECORATIVE-APPLIED ARTS AND DESIGN

The article examines the peculiarities of the application of innovative approaches during pre-diploma practice by students specializing in "industrial design" at the Mykhailo Boichuk Kyiv State Academy of Decorative-Applied Arts and Design. It is established that during the course of pre-diploma practice, students have the opportunity to choose design methods according to the nature of the project and other design tools, which are based on various innovative approaches and design methods, such as ICA, ICB, 3D, 3R, PSS, information architecture, user design interface etc.

1.8. Yuliya Zhurat. INNOVATIVE METHODS FOR TEACHING READING IN PRESCHOOL THEORY AND PRACTICE

Nowadays, understanding that full-fledged personality development occurs only when a child's full-fledged physical and mental development is in harmony, which means that the future of a person depends on the conditions created in childhood.

Therefore, it is necessary to promote the development of children's reading skills and the desire to independently familiarize themselves with works, not for the sake of the process itself, but mainly because the book is one of the main and irreplaceable means of spiritual and moral education. Since it is important for the future desire to read and successful learning how the child feels when learning reading skills at the first stages, it is advisable to make this process easy, interesting and natural. Therefore, the use of game techniques both in a preschool institution and at home when getting acquainted with letters is an important condition for the child's successful development.

1.9. Volodymyr Kovalchuk. INFORMATION AND THE LATEST EDUCATIONAL TECHNOLOGIES AS AN IMPORTANT FACTOR IN INCREASING THE EFFECTIVENESS OF THE MODERNIZATION OF PEDAGOGICAL EDUCATION

Students and teachers most willingly master new forms of pedagogical activity, but at the same time pay the least attention to the techniques of the pedagogical toolkit – helping the schoolchild to enrich his experience of creative life. If the nature of the student's work on the educational material is exploratory and research, then the studied material will acquire personal significance for the student, since it was obtained by him in real activity and, accordingly, will be retained in his memory for a long time. In addition, in this process, students master the basics of working with computer information technologies, their capabilities and perspectives, which is important for life in modern society.

1.10. Tetiana Koliada-Berezovska. EDUCATIONAL INNOVATIVE DEVELOPMENTS: FORECASTING ALGORITHMS IN THE SOCIAL COMMUNICATION SPHERE

The study results of information analysts professional training modernization problem are presented in the context of higher education new paradigm as its fundamentality and integrity united principle. The proposed development purpose and tasks are defined by the need to provide potential specialists, second-level higher education students mastering a specialty related to the information analytical and synthetic processing processes, documentation support of social communications, information and documentation management support based on knowledge and information technologies' algorithmic essence understanding. Also emphasized is that, considering the professional competences requirements, the ability to predict the socio-communication environment condition, to forecast the socio-communication processes development a factor of professional data handling with the algorithmic analytical-synthetic procedure as an optimal combination of fundamental and practice-oriented knowledge aimed at the prospect of a specific problem solving.

1.11. Zhanna Melnyk. TRAINING OF SOCIONOMIC SPECIALISTS FOR PROFESSIONAL ACTIVITY BY MEANS OF INNOVATIVE TECHNOLOGIES

One of the central tasks of modern economic reform in market conditions is to activate the human factor. A person is the bearer of all social relations. Nowadays, technology is becoming universal, acquiring importance as a factor that becomes one of the main sources of social change. Society has reached such a stage in its development when the solution to social problems is impossible without the appropriate technology. Today, the problems of technology, more than ever before

in the history of mankind, directly affect social aspects and aspects that reveal the life content, existence of Man and humanity. At the present stage, when the need to move from the spontaneous to the conscious nature of social practice becomes not only an obvious social truth but also a technological requirement of the era, especially the social need for socio-philosophical awareness of the essence and human content of Technology, ways of its evolution and use in the interests of man is growing.

1.12. Olexiy Pavlenko. THE USE OF INFORMATION AND DIGITAL TECHNOLOGIES IN THE ORGANIZATION OF SCIENTIFIC WORK OF APPLICANTS IN THE SPECIALTY OF TRANSPORT TECHNOLOGIES

The necessity of using modern information and digital technologies for organizing the scientific work of applicants is substantiated. Existing information resources used for preparation were assessed. The presented competencies obtained by the applicant made it possible to establish directions for increasing the level of teacher training in the direction of his information and digital awareness. The means necessary for the applicant for high-quality and effective preparation of scientific developments, motivating him and encouraging him to search for new ideas, striving for the future, are determined.

1.13. Tetiana Spirina. MAKING EFFECTIVE DECISIONS AS A COMPONENT OF THE PROFESSIONAL CULTURE OF A SOCIAL WORKER

Modern professional education focuses on the preparation of a competitive specialist, capable of self-development and creative search in professional activity, an individual with a stable system of moral values. The professional culture of a social worker involves not only theoretical aspects, which are expressed in the possession of certain knowledge, abilities and skills in the professional field, currently, a more important role is played by the practical use of theoretical knowledge, the meaning of which lies in the performance of a certain set of humanistic tasks and functions aimed at an effective solution problem of recipients of social services, as well as reducing social tension in society. The author considers effective decision-making as a component of the professional culture of a social worker. Analyzes the scientific and theoretical foundations of decision-making in social work and considers the factors and criteria for effective decision-making.

Part 2. INFORMATION AND INNOVATIVE TECHNOLOGIES IN ECONOMY AND MANAGEMENT

2.1. Anna Kozachenko. INNOVATIVE ACTIVITY IN THE CONDITIONS OF ECONOMIC COMPETITION

The article analyzes the role of the innovation process as a basis for increasing competitiveness enterprises. The relationship between the main elements of innovative activity of enterprises, as well as levels, is considered its manifestation. Factors affecting the implementation of innovations at enterprises were analyzed. The forms of innovative activity are considered. The importance of innovative activity for the purpose of forming and maintaining competitive advantages, as well as strengthening the competitive positions of the enterprise both on the domestic and foreign markets, is substantiated.

2.2. Olena Martseniuk. INTERNET BANKING – INNOVATIVE DEVELOPMENT OF THE BANKING SECTOR IN UKRAINE

Internet banking service is an intangible information form of conducting commercial and banking business in the international online space. The trends of their formation have a powerful influence on international electronic business and the international monetary and financial sphere, the banking system, which are systematically subject to financial crises and global currency transformations.

The article is devoted to the study of the use of digital and Internet technologies in banking activities on the territory of Ukraine, taking into account the European experience. Features of remote banking services for retail customers are summarized. The essence and main forms of Internet banking services for retail customers are considered. The mechanism of remote service to the population, which is an important element of the banking business, has been studied. The prerequisites and factors that became the driving force behind the development of channels for the provision of banking services are highlighted. The analysis of transitional forms of providing banking services in Ukraine was carried out. Banking services, which are formed under the influence of the development of digital Internet technologies, have been evaluated. The possibilities of improving the Internet banking service process are substantiated.

Given the economic importance of digital technologies in banking in the face of modern challenges, recommendations on improving the efficiency of providing Internet banking services to customers, which are associated with improving the quality of service through the use of innovations, as well as recommendations on avoiding risks inherent in alternative channels, are substantiated implementation and identification of current models of banking activity.

2.3. Mariia Miroshnykova. INCREASING THE EFFICIENCY OF REFRIGERATING EQUIPMENT OF PASSENGER CARS

Most of the passenger cars operated on Ukrainian railways were built in the 70s and 80s of the last century and their service life is coming to an end. Under the condition of limited funding, carrying out restorative repairs by car repair plants and railways remains the main means of maintaining the car park in the required number.

Thus, during the operation of passenger car air conditioners, the internal surfaces of their pipelines are contaminated (primarily due to the accumulation of oil residues on them), as a result of which the performance of the air conditioner decreases.

In addition, the passenger car park has cars equipped with refrigerating equipment designed for the use of freon-12 (R12), freon-22 (R22) refrigerants. Therefore, it is necessary to clean the internal surfaces of pipelines and refrigerating equipment of air conditioning systems from mineral oil residues and impurities when replacing (retrofit) R12, R22 with ozone-safe alternative refrigerants.

2.4. Olena Polova. INNOVATIVE MANAGEMENT OF MARKETING ACTIVITIES OF THE ENTERPRISE

The modern stage of development of the agrarian sector of the economy of Ukraine is characterized by the gradual creation of fundamentally new conditions entrepreneurial activity. An economic situation is formed, under which it arises urgent need for further development of market orientation of production. The global food crisis caused a number of peculiarities in implementation of the production and commercial process of this industry. In this regard a real economic tool for organizing agricultural activities enterprises, taking into account the requirements of the market, becomes a marketing activity – complex and systematic method of solving problems of agricultural organization production All this requires solving a number of research tasks based on system approach, development and implementation of market strategies management for agricultural enterprises.

The practical significance of the obtained results lies in the possibility of using theoretical and methodological developments and practical recommendations regarding the formation and functioning of the mechanism for managing the marketing activities of an agricultural enterprise.

2.5. Oksana Ruda. INNOVATIVE TECHNOLOGIES IN BANKING ACTIVITIES AS THE DRIVING FORCE OF THE EFFICIENT FUNCTIONING OF THE BANKING MARKET

The essence, principles and chronology of the implementation of banking innovations were studied. The modern trends of banking innovations in Ukraine have been determined. The classification of banking innovations is considered. Advantages and prerequisites of banking innovations are disclosed. Domestic banking innovations are highlighted. Specific features and directions of implementation of innovative technologies in banking activity are identified, among which can be attributed: financial component, technological component, and organizational and structural component. The main innovative technologies that were introduced in banking activities were considered, including: contactless payments, identification using biometric technologies, blockchain technology, NFC technologies, Internet banking, virtual bank technology, etc.

2.6. Nataliia Havrylenko. DEVELOPMENT OF FISCAL ADMINISTRATION IN UKRAINE UNDER THE CONDITIONS OF DIGITAL TRANSFORMATIONS

The purpose of the study is to develop theoretical provisions and practical recommendations regarding the development of digital transformations in the field of tax administration in Ukraine. The theoretical basis of the research was the results presented in fundamental and applied scientific works of Ukrainian and foreign scientists in such areas as: taxation, tax management, tax control, tax administration, digital economy, as well as in analytical reports and documents of international organizations on topical issues of digitalization tax administration. A digital platform is proposed, which will allow attracting specific proposals from individuals and legal entities – taxpayers in the field of fiscal administration, aimed at improving the quality of digital technologies that are introduced in the fiscal sphere. This will help reduce the risks of taxpayers' interactions with fiscal authorities in the digital environment and increase their interest in participating in the digital environment.

2.7. Yuliia Haibura. SOME ASPECTS OF ANALYSIS AND FORECASTING OF THE FINANCIAL STATE OF ENTERPRISES IN CRISIS CONDITIONS

The financial condition of the enterprise is the ability to finance its activities. The financial condition is characterized by the provision of financial resources, the expediency of their placement, as well as the efficiency of use and many other parameters, for example, financial relationships with counterparties and partners, solvency, financial stability.

The enterprise must evaluate and analyse its current financial situation and compare it with the financial situation of previous periods and with the financial situation of enterprises of similar activity. The purpose of this analysis is to obtain an objective and reasonable description of the financial state.

Analysis of the financial condition of any enterprise is a necessary condition. It is financial analysis that is a means of assessing and forecasting the financial state of the enterprise. It can be performed both by the company's management staff and by any external analyst. The results of the financial analysis are used for planning, control and forecasting of the financial state of the enterprise.

The current state of the economy of our country leads to the fact that business entities need to find ways and directions to increase the efficiency of their activities, find new ideas and opportunities to overcome shortcomings and market challenges. Thus, the problem of improving the company's financial condition and finding ways to improve the company's financial condition is undeniable and relevant.

2.8. Vasyl Gorbachuk. ECONOMICS OF DATA CONSUMPTION AND MANAGEMENT OF EXTERNAL NETWORK EFFECTS

While network externality refers to all types of (negative or positive) feedback from the market, network effect is usually mentioned only for positive feedback leading to an increase in the value of the network. Each digital service will involve network effects that can influence the evolution of the respective market over time. If positive network effects lead to slow initial adoption of new services, it can be accelerated by initial offering the new service for free. Estimates of the value for networks of various types are used in strategic planning. Network effects can be visualized using undirected networks, where the number of nodes, as a rule, does not exceed the number of connections (links) between them.

2.9. Olexander Krasnoshtan. SYSTEM AND METHODOLOGICAL FOUNDATIONS OF SOLVING THE PROBLEM OF MODERNIZATION AND INNOVATIVE DEVELOPMENT OF THE COUNTRY'S TRANSPORT SYSTEM

The system and methodological foundations of solving the problem of modernization and innovative development of the transport system are considered. A modern complex definition of the transport system as a multi-level hierarchical system, its structure, place and role in the general socio-economic system of the country is given. The main regularities of the development of the hierarchy of multi-level transport systems have been identified and systematized. The concept of the system-mental complex of the country's transport system was introduced.

2.10. Iryna Markovych. BEHAVIORAL AND CULTURAL ASPECTS OF CORPORATE MANAGEMENT IN THE CONTEXT OF ENSURING MOTIVATION OF ACTIVITIES

The article analyzes concepts related to labor motivation and its place in the enterprise management system. Content and process theories of motivation are analyzed in detail. Approaches to the assessment of personnel motivation are summarized by identifying the factors that have the most noticeable impact on the employee's motivation at the enterprise and its formalization. A study of the influence of cultural factors on staff motivation was conducted, as well as a comparison of the cultural foundations of work motivation systems in the United States of America, Switzerland, France, and Germany with the motivation system of Ukraine.

2.11. Alla Meish. POLAND AND UKRAINE: PROBLEMS OF INNOVATIVE ECONOMIC DEVELOPMENT

The problem of innovative development of the economy is highlighted. On the basis of an analytical understanding of the factual material and a comparison of the dynamics of statistical indicators of Poland and Ukraine, deductive generalizations of the false reformation of the causes of the paradoxes that arose as a result of the shortcomings of the stretching of the economy of Ukraine, which are not localized to this day and make innovative development of industry and agriculture impossible, but on the contrary, catalyze environmental problems, are given. The impasse of this variant of the development of the domestic economy, when domestic owners of industrial and agricultural enterprises are satisfied with the current status of suppliers of raw materials for export, is emphasized. Attention is focused on the fact that only the leveling of protracted paradoxes in these industries can become a reliable basis for the innovative development of the economy.

2.12. Serhii Moroz. ELECTRONIC TRADE IN UKRAINE AS AN INDEPENDENT ATTRIBUTE OF BUSINESS DEVELOPMENT

At the moment, the transformation of business process implementation trends by business entities in accordance with the permanent rapid development of the latest electronic commerce technologies is extremely relevant. And if small enterprises in practice use a narrow range of such tools, then transnational corporations invest significant sums of money in the introduction of data processing systems and cloud computing, etc. The current conditions of the functioning of Ukrainian economic entities are characterized by the increasing instability of the domestic economic situation, the increase in this connection of both internal and external competition. Taking into account the European integration vectors of the functioning of domestic business entities and the deepening of relationships on the international labor and capital markets, in particular in the field of information technology development, as well as in order to increase the competitiveness of domestic enterprises, it is advisable to use electronic commerce and analytics technologies.

2.13. Svetlana Suprunenko. INSTITUTIONAL REGULATION OF STATE INFORMATION SECURITY: ASPECTS OF DETERMINING EFFICIENCY

The study is devoted to the study of the current state of institutional regulation of the information security of the state in the conditions of globalization challenges and military threats and the development of a methodological apparatus for conducting an analysis of determining its effectiveness. The article discloses modern aspects of the choice of approaches to the assessment of institutional regulation of information security. The author thoroughly analyzed the impact of state management mechanisms on the work of information security regulatory institutions and identified key problematic aspects and directions for further improvement. In the course of the research, the author's approach to the evaluation of the level of effectiveness of the institutional regulation of information security of the state when changing its system-forming factors is proposed.

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