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## **INNOVATION ACTIVITY PRIORITY SELECTION SYSTEM OF ENTERPRISES**

**Abstract.** In the article investigated the system of selecting priorities innovation of enterprise. Considered the essence of the concept of innovation in the legal framework and scientific periodicals. Founded that innovation in a market economy is one of the key factors that ensure efficiency and redistribution of tangible and intangible resources, competitiveness and influence on improving the return and profitability. Analyzed of the current state of innovation activity in Ukraine, through which stipulated that in Ukraine there are many problems and obstacles to innovation development of economy, but remains untapped innovation potential benefits that contribute to economic development.

Considered the priorities of innovation activity in Ukraine, which are divided into strategic and medium-term. Proposed using of the system the choice of priorities of innovation of the enterprises, which includes six consecutive stages. These stages are: research innovation potential levels national, regional, sectoral and enterprise levels; searching target markets for innovation; determine the resource potential of an innovative project by establishing requirements and review of financial resources; the timing of the implementation of innovative projects; definition and rationale for the introduction and implementation of innovations; study the reality of implementation and effectiveness of the implementation of innovative project. Determined that the system of selecting priorities innovation enterprise should also have certain options and tools to ensure this selection. Parameters such selection was determined as follows: the importance and maturity, scale, focus on the highest technological structure, in terms of structuring a hierarchical system. The instrument such selection set: legal, organizational, financial and economic. In implementing the priorities for innovation enterprises defined effects will be achieved, namely economic, social, technological, environmental.

**Keywords:** innovation, innovation activities, system, innovation priorities

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**JEL Classification:** F41, O31, O32

**Introduction.** The basis for the economic development of any country is industry which efficient operation contributes to improving the social and economic life standards of the population. However, the development of industry in Ukraine occurs without proper evaluation and consideration of the inexhaustibility of natural resources. Globalization processes occurring in the world and growing competition in the international markets require seeking new sources and ways to increase industrial efficiency. Such an increase in the industrial efficiency is possible only through the introduction of new innovation in the manufacturing and identifying priorities of the innovation activities of enterprises.

In recent years, despite some progress in stabilizing macroeconomic indicators Ukraine has failed to achieve tangible results in the export of innovative products and creating favorable conditions for innovation activities of domestic producers. Unfortunately, Ukrainian innovation sector has also failed to become really attractive for domestic and foreign investors so far. This result is largely associated with limited opportunities of the state as regards to the financial flows in the innovation economy development, which volume, according to the experience of developed countries, far exceeds the resources needed to carry out the traditional science and technology policy and insufficient attention of the state to the stimulation of the international cooperation in innovation area corresponding to the mutual interests of Ukrainian and foreign partners [Razumkov Centre Analytical Report 2009].

**Literature review and the problem statement.** The significant amounts of scientific works of authors are worth noting a number of scientists are devoted to the issue of innovative activities of enterprises. The Austrian economist Schumpeter first considered innovation, just as the concept of "innovation". The special attention mentioned in the works of A. Amosh, M. Dolishnf and K. Perveyz has been paid to the impact of public policy on innovative activities of enterprises. O. Lapin, A. Lapko and E. Arnold made a significant contribution to the study of regulation of innovative activities of enterprises and its impact on the efficiency of this activity. B. Geyets and A. Savchuk dedicated their researches to setting priorities of innovative activities of enterprises. M. Chorna and L. Filipishyna in determining priorities of innovative activities of enterprises studied their impact on the state's economy as a whole, which would enhance investment and contribute to its innovative development. However, there is no clear highlight of an important issue that reveals the formation of the system of choice of priorities of innovative activities of enterprises in the work of these researchers.

The article aims at developing the innovation activity priority selection system of the enterprises to facilitate a thorough analysis of innovation activity.

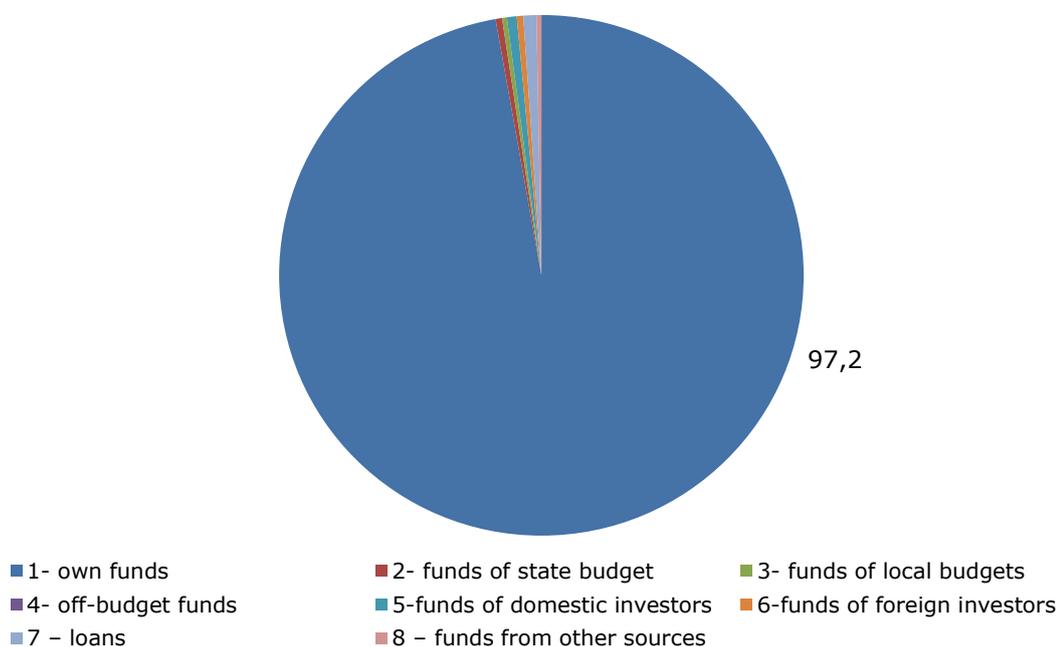
**Research results.** Today, the economies of many industrialized countries focus on the development of enterprises engaged in innovative activities [Amosha 2005]. Innovation activity in a market economy is one of the key factors that ensure efficiency of use and redistribution of tangible and intangible resources, competitiveness of an enterprise and influence on improving the return and profitability indexes.

In the Law of Ukraine "On Innovation Activity [Law of Ukraine "On Innovation Activity" 2012] innovation activity is an activity aimed at using and commercializing the results of research and development and causes marketing new competitive products and services.

Well-known American economist Joseph Schumpeter saw innovation as an activity related to the transformation of research and development, and other scientific and technological achievements into a new or improved marketed product, a new or improved technological process used in practice or a new approach to the implementation of social services, their adaptation to the urgent requirements of society [Schumpeter 2000].

The scientists M.V. Chorna and L.M. Filipishyna define innovation activity as an activity for the creation, implementation and commercialization of scientific development, which in terms of the essential novelty of the result and outstripping competitors in time provides an innovator excess profits and monopoly for a certain period of time [Chorna 2007].

In Ukraine, innovation activity is represented by the development and introduction of new and advanced technology in various industries. The number of enterprises involved in innovation activities in 2015 totaled 824. Most of them carried out funding of innovation to purchase machinery, equipment and software. In 2015, by the areas of carried out innovation by the types of economic activity processing industry is a leader in terms of the number of business entities (751 enterprise) which carried out introduction, updating of equipment and facilities, technology and other types of innovation activity. Funding sources for innovation activity of industrial enterprises in Ukraine include funds of: own, state and local budgets, off-budget funds, domestic and foreign investors, loans and other sources. Funding sources of the innovation activities of industrial enterprises in Ukraine for 2015 are shown in Figure 1.



**Figure 1** – Funding sources of innovation activities of in industrial enterprises in Ukraine for 2015, %

Source: composed by the author based on [State Statistics Service of Ukraine 2015]

As you can see from Figure 1, the main funding source of innovation activity of industrial enterprises in Ukraine is own funds. This situation demonstrates the poor level of funding from other sources affecting the slowdown in production, implementation and application of innovation in the economic activities of enterprises.

In the international practice, to determine the level of innovation activities carried out in the country and to determine the extent of introducing innovation the Global Innovation Index is used. This index reflects the rating of 141 countries and was made in 2007 by the International Business School INSEAD [INSEAD] and the World Intellectual Property Organization of Cornell University (USA) [WIPO]. The Global Innovation Index includes a set of main comparative indexes that reflect the innovation potential of the economy and is a summary measure of the state's innovation development condition.

According to the data specified in the Global Innovation Index, in 2016 Ukraine took the 56<sup>th</sup> place in the ranking and was between Mongolia (55<sup>th</sup> place)

and Bahrain (57<sup>th</sup> place). In the group of countries with an income below average Ukraine took the 2<sup>nd</sup> place after Moldova. In the region "Europe" Ukraine took the 34<sup>th</sup> place out of 39, ahead of Macedonia (58<sup>th</sup>), Serbia (65<sup>th</sup>), Belarus (79<sup>th</sup>), Bosnia and Herzegovina (87<sup>th</sup>) and Albania (92<sup>nd</sup>). Ukraine is one of the European countries in the total ranking from 50 to 100 which improved its positions. Weak criteria in the Global Innovation Index for Ukraine is "Political Stability and Security" (125<sup>th</sup> place out of 128), "Easy Solution for Bankruptcy" (113<sup>th</sup>), "Political Environment" (123<sup>rd</sup>), "GDP per Unit of Energy Used" (115<sup>th</sup>). Also, the weak point is the category "Investment", where our country is ranked 77<sup>th</sup> in the indicator "Easy Protection of Minority Shareholders", 76<sup>th</sup> - in "Market capitalization" of the national companies. By the indicator "Amount of Venture Investment" - per billion USD of GDP Ukraine takes 42<sup>nd</sup> place. Global Innovation Index also takes into account some cultural indicators, where our weak point is "Number of Feature-Length Films Shot" per million of people - 94<sup>th</sup> place in the ranking [The Global Innovation Index 2016]. These ratings indicate once again that Ukraine has a considerable innovative potential which has not been used in full.

To improve innovation and increase the efficiency of enterprises, an important aspect is the choice of priorities and directions of innovation activity. According to the Law of Ukraine "On Innovation Activity Priorities in Ukraine", priority directions of innovation activity in Ukraine also include scientifically and economically grounded directions of carrying out innovation activity aimed at ensuring economic security of the state, creation of high-tech competitive environmentally friendly products, providing quality services and increasing export potential of the state with effective use of national and world science and technology achievements [Law of Ukraine "On Innovation Activity Priorities in Ukraine" 2011].

Priority directions of innovation activities of the enterprises in Ukraine should include a set of measures that are shown in scientific, technical and socio-economic development programs of various industries. The current legislation of Ukraine provides for a list of priority directions of innovation activities in Ukraine, their main types, the process of regulating their introduction and implementation, the legal basis for funding innovation programs.

The main types of priority directions of innovation activity are strategic and medium-term.

The strategic priority directions for 2011-2021 are the following:

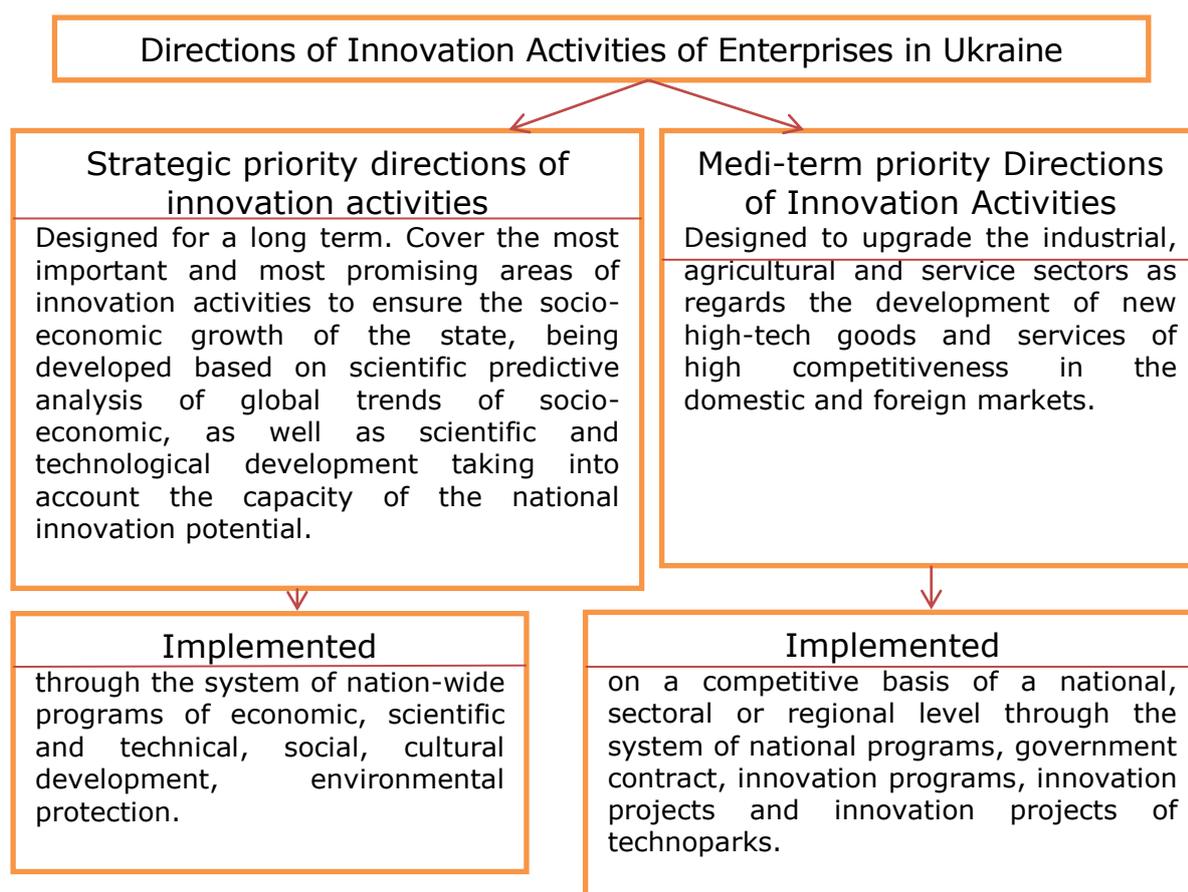
- 1) development of new technology of energy transportation, introducing energy efficient, energy saving technology, development of alternative energy sources;
- 2) development of new technology of high-tech development of transport systems, space industry, aircraft and shipbuilding, armament and military hardware;
- 3) development of new technology for the production of materials, their processing and combining, creating nanomaterials and nanotechnology industries;
- 4) technological renovation and development of the agricultural sector;
- 5) introduction of new technology and equipment for quality health care, treatment and pharmaceuticals;
- 6) wide use of technology of more environmentally friendly production and environmental protection;

7) development of modern information, communication technology, robotics [Law of Ukraine "On Innovation Activity Priorities in Ukraine" 2011].

The term of implementation of strategic priorities of innovation activity is 10 years. To perform the process of introduction, implementation, monitoring, control and regulation of the above areas medium-terms priority directions are used; their main task is the gradual and phased implementation of strategic directions. Medium-term priority directions of innovation activity of enterprises are scheduled for implementation for up to 5 years.

The directions of innovation activity in Ukraine are shown in Figure 2.

The choice of priority directions of innovation activity in Ukraine should not be chaotic and depend on individual factors of influence. Identification of priority directions should be subject to certain system selection of innovation projects. Thus, when funding innovative measures from the state or local budgets, the competent authorities designated to choose priority directions for innovation activities of enterprises should carry out expertise, market research of internal and external markets, assessment of the importance of developing specific innovation direction, analysis of resource potential of the enterprise to implement innovation. It is therefore advisable to use a special system of selecting innovative projects that belong to the priority directions of innovation activities.



**Figure 2** – Types and levels of implementation of priority directions of innovation activities of enterprises in Ukraine

Source: composed by the author based on [Law of Ukraine "On Innovation Activity Priorities in Ukraine" 2011]

An effective system of selecting priorities of the innovation activities of an enterprise should include the following components, which based on the innovative project may be changed and improved. In general, such a system should include the successive stages of project selection for setting priority directions of innovation activities of enterprises (Figure 3).

Let us consider each stage of the project selection for setting priority directions for innovation activity of enterprises:

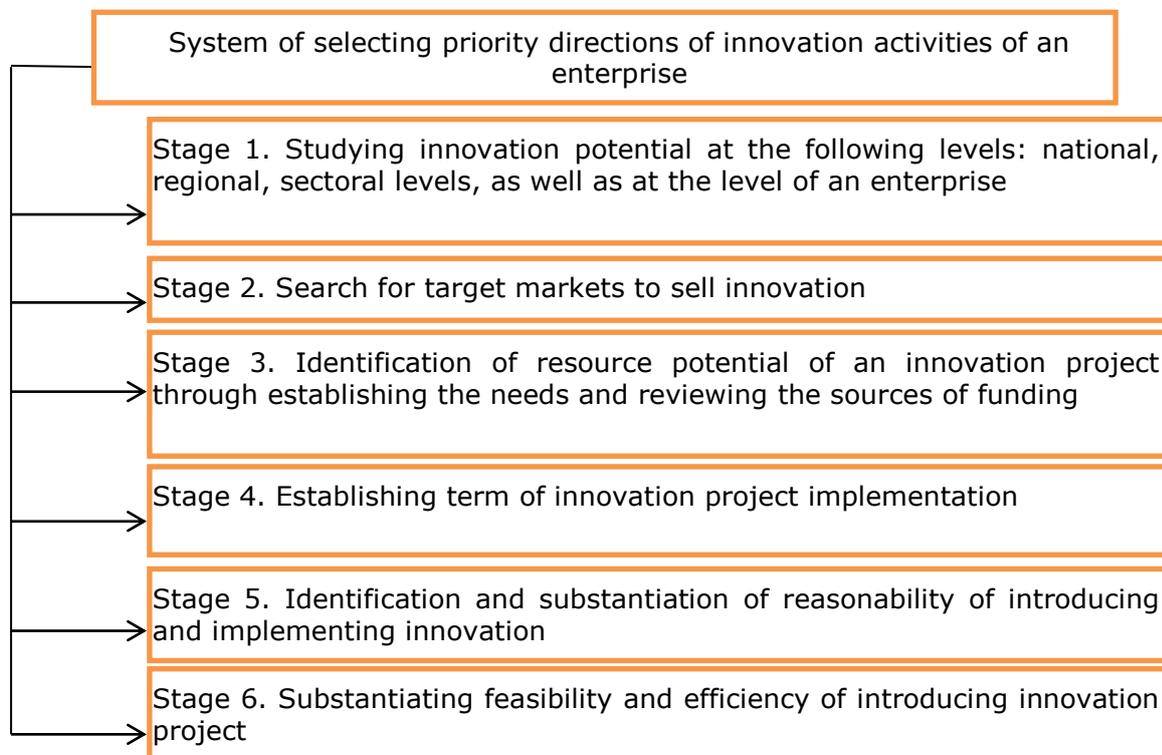
Stage 1. Setting priorities for innovation enterprises should focus on restructuring and technological areas. At the first stage, innovation potential is studied on a national, regional, sectoral levels and at the level of an enterprise. Pervaiz K. argues that the highest priority innovation projects are innovation projects that create an innovation culture and climate in the market [Pervaiz 1998].

This stage is very important because priority innovation programs can be implemented only provided the existing potential, although not used in full.

As O.V. Lapin notes, assessment of the innovation potential of an enterprise includes:

- Assessment of the enterprise's readiness to introduce innovation;
- Selection of a specific area to introduce innovation.

An innovative way of the enterprise development is inherently focused on increasing revenues, as opposed to extensive and intensive development options oriented towards increasing production volumes and reducing costs accordingly. In addition, the orientation of an entity on innovation development allows it to adapt to changes in environment conditions and retain its position in the market for a long time [Lapin 2014].



**Figure 3** - System of selecting priority directions of innovation activities of an enterprise

Source: composed by the author

Stage 2. Search for target markets to sell innovation. Search and selection of the target market to sell innovation shall be paid a special attention, as the effectiveness of an innovation project implementation will depend on it. Therefore, it is necessary to analyze the internal and external market to determine the demand for innovative projects.

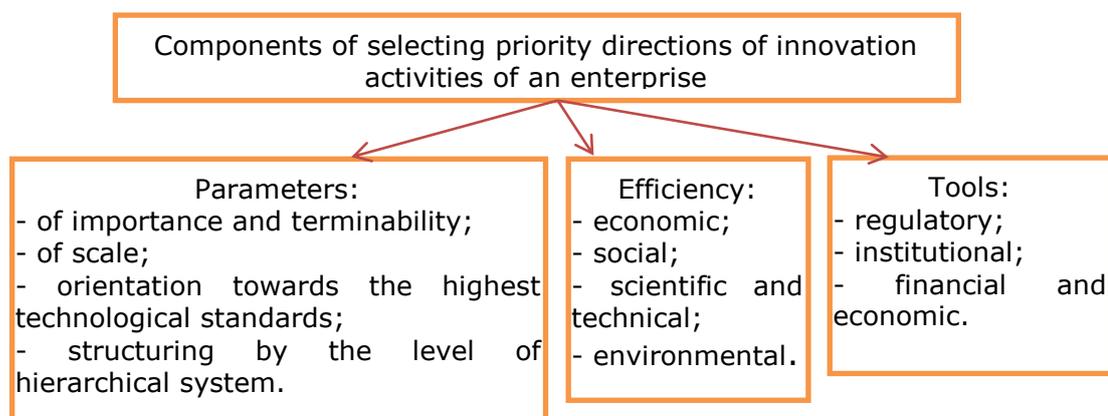
Stage 3. Identification of resource potential of an innovation project through establishing the needs and reviewing the sources of funding. Availability of all the resources determines the reasonability of applying innovation. This will be based on the following steps: analysis of alternative options of innovative development of a certain branch taking into account the risk of their implementation; evaluation of the level of impact and effectiveness of applying innovation on the national, regional, sectoral and local development; identification of the opportunities of using resource potential at all levels; identification of the needs and financial resources to implement innovative projects.

Stage 4. Establishing term of innovation project implementation involves determining the specific term limits to point to the degree of development and implementation of an innovative project that will provide predictability and planned nature for the enterprise which sells the innovation in the market.

Stage 5. Substantiating feasibility and efficiency of introducing innovation project. Feasibility of the development and implementation of scientific, technical, social, environmental, institutional projects will be identified through increase in profitability, labour productivity, reduction of harmful emissions into the environment. Reasonability of selecting priorities of innovation activities is identified taking into account many factors, both internal directly related to the enterprise and external (national, regional and sectoral). The main purpose of the evaluation of these indicators is a balance between intra-productional interests and those of the market in general.

Step 6. Substantiating feasibility and efficiency of introducing innovation project. This stage is the final stage and shall include the results of previous stages of systematizing selection of innovation activities of an enterprise.

The system of selecting priorities of the innovation activities of an enterprise should also have certain parameters and tools to ensure this selection, which will help to achieve the expected effect of implementing priorities of the innovation activities of an enterprise (Figure 4).



**Figure 4** – Components of selecting priority directions of innovation activities of an enterprise

Source: composed by the author

Let us consider the parameters and tools to support the system of selecting priorities of the innovation activities of an enterprise.

The parameter of importance determines the level of significance of innovation and their priority for the state, regions, industries and an enterprise. This parameter should ensure national, sectoral competitiveness of innovation products according to the type of the enterprise's activity.

The parameter of scope determines the space of distribution of the effect of implementing priority directions of the innovation activities (within an enterprise, region, industry and state in general). The scale of distributing innovations also means their transfer from a particular enterprise to the industry, the regions that would ultimately determine the national scale of the efficiency of innovations.

The parameter of time (terminability) describes the period of implementation of the priority directions for innovation activities (short-term, medium-term and strategic priorities).

The parameters of orientation towards the highest technological standards involves the selection of priority directions of the innovation activity, which provide for high-technology implementation of not less than 4<sup>th</sup>-6<sup>th</sup> technological standard.

Structuring parameter in terms of a hierarchical system provides for the implementation of the priority that takes place at the national, regional, sectoral or local level.

Compliance with the above parameters when selecting priorities of the innovation activities of an enterprise will allow reaching in a short time the strategic directions in the economy.

When selecting priorities of the innovation activities of an enterprise it is also important to determine the effect to be obtained when implementing priority directions of the innovation activities of an enterprise. Traditionally, in the economic literature they distinguish the following types of effects: economic, social, scientific and technological, environmental.

The economic effect will manifest itself through: increasing the share of innovation products in the GDP of the state and effectiveness of social production; rational distribution of productive forces and their use; filling the state budget through the development of innovation entrepreneurship; targeted use of budgetary funds; restructuring of the regional economy and efficiency of using their resources; increasing the level of using innovation potential of the region through industrial, natural, financial and human resources; reforming and restructuring of the sectors of national economy based on high technology innovation, formation of monoindustrial areas; implementation of high-tech and commercially efficient innovation programs in the industrial sectors; improving the use of resources and production capacities; increasing sales volumes, labour productivity, capital productivity ratio, accelerating working capital turnover; rapid return on investment; reducing production costs through the introduction of technological or managerial innovation.

Social effect will be manifested through: improving the quality and standards of living; preservation of national priorities and achievements; resolving social conflicts; social infrastructure development; raising the educational level of the population; improving the quality of human resources in the country; human potential development; improving working conditions and increasing quality of life and health; creating innovation goods, works and services that would better satisfy the consumer demand; increasing the qualification of employees; raising invention of the staff and readiness to innovations through the established system

of incentives.

Scientific and technical effect will manifest itself through: retrofitting of the national production to high technology; renewing cooperation of scientific and industrial sectors; increasing the proportion of introduced and implemented scientific developments into a new or improved products; promoting creation of quality innovation climate in the country; improving organizational structure of the regions (creation of technoparks, technotowns, etc.); restructuring of the company production (renewal of fixed assets).

Environmental effect manifests itself through: implementation of a set of measures to reduce the negative impact and reduce the proportion of harmful emissions into the environment; comprehensive use of resources through a waste-free production of an enterprise and introduction of environmental-friendly technology; improving the environmental performance of manufactured products; increasing energy efficiency of the goods; conservation of natural resources.

The developed system of selecting priorities of the innovation activities should reflect the importance of assigning innovation to the priority ones and ensure invariability of the program implementation tools during a certain period. This can be achieved by establishing national programs or through placing public orders for innovation products.

**Conclusions.** Summarizing the results of the study, we note that innovation activity is a key factor in the effective development of an enterprise, industry, region and state economy as a whole. The analysis of the current state of development of innovative activity shows that there are many problems and obstacles to innovation development of economy in Ukraine, however unused innovation potential still remains which use would contribute to the economic development of the country. As mentioned, an important aspect is a selection of priority directions of the innovation activities of an enterprise. To facilitate the choice of these directions, a system of selecting priority directions of the innovation activities of an enterprise, which includes the phased innovative projects selection.

Further development of this study shall consist in improving the system of selecting priority directions of the innovation activities of an enterprise at the national, regional and sectoral levels and at the level of enterprises themselves.

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