TENDENCIES IN INNOVATION AND TECHNOLOGICAL DEVELOPMENT OF THE UKRAINIAN ECONOMY

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Abstract: Based on the statistics analysis and systematic approach, the article highlights the dynamics of the scientific, technological and innovation development, and shows the tendencies in innovation process in Ukraine. It proves that the scientific and technological development is happening slowly and very unsteadily in different branches and sectors of the economy. The role of the innovation factor in the growth of the competitiveness of the Ukrainian economy is hampered for the following reasons: lack of demand for innovation, lack of development institutes which provide for the functioning of the innovation economy with all its constituent parts; lack of the efficient and consistent governmental scientific and technological, industrial and innovation policy. To solve the key issues of improving the efficiency of the innovation economy development, it has been proposed to develop and officially approve a strategy of the innovation development of Ukraine, and the corresponding schemes of its implementation.

Keywords: Ukrainian economy, innovation, development, dynamics of development.

Introduction

Since the beginning of the XXI century, it has been more and more noticed that the tendency which characterizes the sources of the countries’ competitiveness is the newest technologies, the institutional and economic environment giving rise to technological leadership, the global competitive strategy. Nowadays, the competitiveness of the developed countries is based mainly on technological advantages, while in the developing countries (including Ukraine) it is based on resources. The idea of the innovation model of the economic development of Ukraine, which has been so much spoken about by both scientists and politicians, has not been implemented yet.

The processes of the development, transmission and distribution of technological innovations, their important constituent parts, need a profound critical analysis from the point of view of the theory, and practical ways to solve the problem of technological development of the economy.

For the last twenty years, there have been offered so many ideas, projects, concepts regarding innovation in all spheres of the society, not only in industry, that if they were compiled and generalized, we could get a systematized document package of methodological, scientific and practical nature, concerning modernization of the Ukrainian society in all spheres. At different times, such Ukrainian scientists as V.Aleksandrova, L.Antoniuk, Y.Bazhal, A.Halchynskyi, M.Zgurovskyi, B.Malitskyi and others contributed substantially to the theory of economics and methodology of the innovation and technological development. However, the challenges that are constantly happening in the world, and within the country, caused by global changes, generate a need for a complex estimation of the innovation process, which would be a base for the development of a scientifically grounded strategy of the country’s innovation development, and the mechanisms of its implementation. Therefore, the main objective of the given research was to analyze the state and find out the characteristic tendencies in scientific, technological and innovation development of the Ukrainian economy in order to outline future trends.

Method

When conducting the research in order to thoroughly study the peculiarities of innovation development, we have used both general scientific and empirical methods, and also specific scientific methods of applied nature. Methods of statistic and systematic analysis let us study the conduct of the object under research as a system, with all the factors that influence its functioning, and find out the regularities of the scientific, technological and innovation development. For the theoretical and methodological grounds of the research,
we have taken the newest conceptions of transforming the industrial production method into the post-industrial one, the role of the technological factor in the competitiveness strategy.

Results

In the post-crisis period, the most visible tendencies to be seen in the world are those of international transfer of technologies from the point of view of their impact on the state economic and innovation policies, among which are the following: a) gradual re-distribution of the world flows of high-technological export to developing countries; b) foreign objects of intellectual property being used by the subjects of the world economy in order to maintain their own level of international competitiveness; c) diffusion of technologies through the channels of the world high-technology product markets, due to which the boundaries between the processes of creation and re-distribution of technologies, especially industrial technologies, are getting blurred.

In Ukraine, the scientific and technological development remains quite uneven; on the one hand, there are achievements in some spheres due to scientific developments and corresponding break-through technologies; on the other hand, problematic fields of out-of-date technologies are still predominant, and they worsen the process of destructive changes, especially in the national industry. This state is regularly marked in both domestic statistics, and the global competitiveness ratings. One of the most common and popular methods of general competitiveness rating is the Global Competitiveness Index (GCI), developed for the Global Economic forum and first published in 2004. By the results of 2013 – 2014, the Global Competitiveness Index of Ukraine was 4.1 points. The index of Ukraine decreased slightly after a three-year increase. The most unfavorable factors for conducting business in Ukraine remain the limited access to finance, and corruption. The lowest indices in comparison with other countries, Ukraine has in the following: impact of taxation on investment (145th position among 148 countries), and the quality of the roads (144th position). The sub index “innovation and development factors” has also lowered – from the 79th position to 95th.

Despite the unfavorable conditions for development due to low finance and lack of demand for innovation in the domestic actual economy sector, the scientific and technological potential of the domestic science continues to “survive”; however, the number of scientific institutions continues to diminish: at the end of 2012 this number was less than the number of institutions in 1991 (just before Ukraine proclaimed independence). The most serious concern is about the reducing number of scientific workers: in 2012 this number was 3.6 times less than in 1991. The competitive advantage of Ukraine is the increasing share of highly-qualified scientific workers, namely doctors of science – 59.8% increase, and candidates of science – 52.9% increase from 1995 to 2012.

As a negative tendency, there should also be noted the reducing volume of fixed assets in the scientific and technological organizations in comparison with the volume of fixes assets of all organizations, which considerably lowers the development level of the scientific and technological potential. One of the indicators of the scientific and technological potential effectiveness is the volume of implemented scientific and technological works; and despite the fact that in 2010 – 2012 it increased slightly in actual prices, its specific weight in GDP still remains very low – 0.8%.

The dynamics of innovation activities at the Ukrainian enterprises is very unsteady in the number of enterprises which conduct innovation activities, although their number reduced not much in the 2008 – 2009 crisis years, and in 2012 it even increased slightly in comparison with 2011. The specific weight of enterprises which introduced innovation made 12.8% in 2011 as compared to 11.5% in 2010 and 13.6% in 2012 (the minimal threshold is 20%).

The biggest specific weight of enterprises’ innovation expenditures in 2012 was connected with the acquisition of machinery and equipment related to innovation implementation (70.1%), which is an indicator of quite a natural process – enterprises’ desire to update their technological base in order to be competitive.

Traditionally, the main source of financing technological innovation in Ukraine is the enterprise’s own capital; however, some difference has also been noted: it is a considerable reduction of financing in 2010 from both their own budget and the state budget, and a weighty role of foreign investors in 2009 – 2010. In 2012, the statistics showed some reduction in the financing of technological innovation from their own budget, and the increasing role of the state budget, and, what is more important, foreign investors (Table 1).

The given state influenced considerably the dynamics of introducing new technological processes: increasing their number in 2006 – 2011 (and more notably, it was especially big exactly during the crisis
period), although the specific weight of introducing low-waste and resource-saving technological processes reduced during 2009 – 2011, which indicates not only the lack of working governmental incentives in this part of industry modernization, but also shows its structural peculiarity – the prevailing share of low processing stage enterprises in the technological complex which are not always interested in updating their technological base if they get a high rent at favorable conditions in foreign markets. The year 2012 showed a decrease in the total number of implemented new technological processes (from 2510 in 2011 to 2188 in 2012), and some increase in the number and, correspondingly, the specific weight of low-waste and resource-saving technological processes.

<table>
<thead>
<tr>
<th>Year</th>
<th>Enterprise’s own budget</th>
<th>State budget</th>
<th>Foreign investors</th>
<th>Other sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1399.3</td>
<td>7.7</td>
<td>133.1</td>
<td>217.0</td>
</tr>
<tr>
<td>2001</td>
<td>1654.0</td>
<td>55.8</td>
<td>58.5</td>
<td>203.1</td>
</tr>
<tr>
<td>2002</td>
<td>2141.8</td>
<td>45.5</td>
<td>264.1</td>
<td>562.4</td>
</tr>
<tr>
<td>2003</td>
<td>2148.4</td>
<td>93.0</td>
<td>130.0</td>
<td>688.4</td>
</tr>
<tr>
<td>2004</td>
<td>3501.5</td>
<td>63.4</td>
<td>112.4</td>
<td>857.3</td>
</tr>
<tr>
<td>2005</td>
<td>5045.4</td>
<td>28.1</td>
<td>157.9</td>
<td>520.2</td>
</tr>
<tr>
<td>2006</td>
<td>5211.4</td>
<td>114.4</td>
<td>176.2</td>
<td>658.0</td>
</tr>
<tr>
<td>2007</td>
<td>7999.6</td>
<td>144.8</td>
<td>321.8</td>
<td>2384.7</td>
</tr>
<tr>
<td>2008</td>
<td>7264.0</td>
<td>336.9</td>
<td>115.4</td>
<td>4277.9</td>
</tr>
<tr>
<td>2009</td>
<td>5169.4</td>
<td>127.0</td>
<td>1512.9</td>
<td>1140.6</td>
</tr>
<tr>
<td>2010</td>
<td>4775.2</td>
<td>87.0</td>
<td>2411.4</td>
<td>771.9</td>
</tr>
<tr>
<td>2011</td>
<td>7585.6</td>
<td>149.2</td>
<td>56.9</td>
<td>994.7</td>
</tr>
<tr>
<td>2012</td>
<td>7335.9</td>
<td>224.3</td>
<td>994.8</td>
<td>345.8</td>
</tr>
</tbody>
</table>

Source: data of State Statistics of Ukraine

The indicator which characterizes the efficiency of introducing new technologies in the production is the use of inventions, useful models and industrial templates, i.e. commercialization of the results of scientific and technological activities, and using them in economic operations. Unfortunately, in the recent years, there has been a steady decline in using objects of intellectual property rights (OIPR), which is undoubtedly related to low inventive activities in the branches of national economy, decreasing numbers of scientific workers and slow tempos of scientific and technical work. Under the statistics, the share of used protected documents in relation to the total number of such documents has reduced from 79.2% in 1995 to 18.3% in 2012. Also, there has been noted a tendency to reduce the number of invention applications by 16.9%.

Summarizing the results of the given analysis, we have a general tendency of preserving all indicators of a steadily flowing innovation and technological process, which is not enough for the economy that wants to achieve a stable growth.

Among the reasons hampering the realization of the innovation factor role in increasing competitiveness of the Ukrainian economy, we can name the following: lack of demand for innovation, since the Ukrainian economy in its current state does not make the predominant part of the subjects of the economy interested in the results of scientific developments, or they are not able to use efficiently such innovative developments; lack of the development institutes which let the innovative economy function at all its levels (development organization and management; its financing, marketing, commercializing etc); small numbers of highly-qualified specialists who can work in the innovation sphere; lack of an effective and unified governmental scientific and technological, industrial and innovation policy.

To solve the key issues of increasing the efficiency of the innovation development of the country’s economy, with the direct involvement of the State Science, Innovation and Informatization Agency of Ukraine, it is necessary to finalize and officially approve the existing version of the draft Strategy of Innovation Development of Ukraine (Strategy) and the corresponding schemes of its implementation, whose aim should be creating a new type of national innovation system that provides for the competitiveness of the economy, which uses domestic scientific and technological potential to facilitate economic growth and integration into the global economic environment.
An important mechanism in the innovation strategy realization should be the development of the Concept of creation and stimulation of the development of the sixth technology revolution industrial and technological systems. Moreover, attention should be focused on creating an environment for cultivating globally competitive enterprises which practice the technologies of the new technological mode (nano-, bio-, IK-technologies). In the strategy, it is important to define specific branches and instruments of integrating the Ukrainian innovation system into the global innovation system, namely: to make an inventory of the technological capacities which can, in a revolutionary way, update the corresponding branches and sectors, and thus increase the share of the Ukrainian manufacturers in the global market. It is also worth taking into consideration the tendency with the population to increase their share of expenditures on services and leisure if the general incomes grow, and the possibility of Ukraine’s entering foreign markets with comparatively simple, mass labor-consuming types of products.

Discussion

The question of the scientific, scientific and technological, and innovation system being effective, is extremely burning; however, any attempts to solve it now in Ukraine will be formal, since, from the point of view of a civilized scientific administrative and innovation management, the following is needed first: to develop and approve a strategy of the social and economic development of the country for a definite period, with strictly identified priorities. If the main priority is the development of the national economy on the innovation base, so, there should be developed a scientific, scientific and technological, innovation and industrial policy which regulates and specifies the governmental course in the chosen direction.

In accordance with the chosen policy, there should be created a national innovation system as a complex of different institutions which together contribute to the development and transmission of technologies, and make a framework for a governmental policy that can influence the innovation processes. It is only within such a system that an efficient scientific and technological, and innovation process management structure could be built (it should be precisely a process aimed at receiving final results, but not an activity, which reflects a certain set of functions).

The practical importance of the obtained results lies in the necessity of their being used by the governmental bodies to create an innovation and investment development model, and to improve the schemes of governmental innovation policy in the future; in the process of improving legislative instruments and other regulations in the sphere of innovation organization.

References
