Challenges of Innovative Development Within the National Economy

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Abstract. The paper clarifies the main problems of innovative development taking into account social and economic conditions of innovative business, mechanisms to expand innovative processes within the national economy. The theory of innovative infrastructure formation within innovative development based on research-scientific and innovative structures is developed. Innovative infrastructure is considered the mechanism representing a set of interconnected and complementary scientific and technological systems, organizations, firms ensuring efficient implementation of innovative activity and innovations as such. It is specified that innovative processes in Tajikistan are characterized by relatively low activity and efficiency, which is substantially caused by lack of corresponding scientific and technological potential of innovative development and problems of creating favourable conditions for the development of small forms of innovative business in various industries of the national economy. There is a need to develop a national innovative system allowing defining areas of expanding the innovative activity and innovative business alongside with implementing organizational and institutional approaches to economic policy in the field of innovative processes expansion through various industries of the national economy. The tasks of the state policy in the field of innovative business development in Tajikistan taking into account state support at initial stages of innovative business formation and expansion of innovative activity are specified. The principles of establishing small innovative enterprises based on innovative activity of higher educational institutions and research centres are suggested and specified.

1 Introduction

Social and economic transformations in Tajikistan without innovative development of economic branches slowdown the economy, level of competitiveness of national enterprises and demonstrate poor development of innovative business.

The analysis of innovative processes allows understanding the priorities of state policy within social and economic sphere, developing national productive forces, providing resources, increasing scientific and technical level of production meeting the demands of the market. It appears that the task of any state with regard to its economy does not only include commoditization of the domestic market and improvement of national productive forces ensuring innovative development. It is ever more critical that in modern conditions the main driver of advanced countries leadership is the development of innovative production potential.

Without conditions contributing to the development of innovative processes it is impossible to overcome the structural and technological backwardness of the country, and the emerging difficulties of material prerequisites for efficient social and economic transformations. Therefore, the focus of innovative processes towards the achievement of economic and political goals of the state shall become one of the priorities of the market economy and poverty reduction in the country. Employees of 100 enterprises and 476 researchers took part in the survey, which showed that the growth rates of innovative processes are still unstable.

1.1 Importance of the Problem

The efficient state innovative policy implies utilization of portfolio-balanced approach principles. The innovative portfolio shall contain various projects: large, average, small, long-term and short-term with regard to implementation deadlines, different in purpose and realization principles. It is critical to ensure control over factors of innovative environment, formation and maintenance of favorable investment climate promoting the necessary motivation for business confidence and steady demand for innovations [1].

Therefore, at different stages of development every enterprise demands certain external information services in course of its innovative activity. Businessmen definitely need information services in various fields and act as their active consumers. However, various enterprises have different demands for a variety of information services.

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2 Results

Among enterprises engaged in innovations 82% noted that in-house products serve as developers of innovations within their enterprises, at the same time partially in-house products with local partners – 12%, in-house products with foreign partners – 12%, local enterprises of research institutes/higher educational institutions, certain scientists – 12%, firms of CIS and foreign countries – 18%, while 71% noted that the sources of information on innovations are in-house products, including exhibitions – 18%, clients – 18%, research centers, universities – 12%, computer databases – 12%, partners, enterprises and competitors – 18% [2].

Apparently, the given data concerning the main sources of information on innovations shows that almost all respondents highlighted the use of in-house products for knowledge-intensive production and technology. It is explained by the fact that innovative enterprises shall mostly utilize information from research centers, higher educational institutions, computer databases, clients, competitors, etc. Unfortunately, innovative enterprises do not fully use the specified types of information sources. It demonstrates undeveloped information services in the republic, low level of relations of enterprises with research centers similar to the quality of developments, insufficient state support of innovative enterprises, competitive weakness of enterprises and their unstable financial status.

Enterprises, which implemented or developed an innovative project, were suggested to answer some questions, for example, why they are engaged in innovative activity and what is its purpose. 60% consider the purpose of innovative activities as the increase of product quality, 65% highlighted competitiveness enhancement, and 47% marked the development of new sales markets. Among all respondents, 29% of enterprises are focused to replace their backward products.

Among innovative enterprises, the survey revealed only 2 out of 10 innovative enterprises with the ratio of innovative products making over 50% of their total sales, 4 enterprises – up to 20% and 4 – from 20 to 50%. It is no wonder that the substantial part of financial support to innovations comes from personal funds of enterprises. The highest share of costs is the acquisition of new equipment. Thus, currently the enterprises of Tajikistan spent most of their funds to purchase modern equipment due to aging of technical and processing facilities. Out of 10 innovative enterprises 80% spent funds for this kind of activity, including 40% of them that spent money for new technologies, 30% for staff training, 30% for market research, 30% for R&D, 30% for production design, 20% for patents, licenses and know-how [3].

Many types of innovations, mainly technological and production innovations require considerable costs for their creation and replication. It includes time consumption, labor costs, information, material and financial resources. Some of them may be spent without effect; the others will not be paid off; and some will only bring income in quite a long time. Thus, the Silicon Valley in the USA was only able to recover its costs in 13 years. The elite business school in Skolkovo, the construction of which cost about 250 million dollars, will start giving financial return (up to 1 trillion rub annually) only in 10-15 years. Considering a long time gap between costs of innovations and their results, many companies focus on the development of long-term production cycles. Their time horizon exceeds the average period between economic crises. China, for instance, developed the roadmap of industrial and technological development until 2050 [4].

3 Discussion

Tajikistan, similar to many other countries of the world, shall decide between the most efficient ways of future development following a new investment strategy, which will ensure implementation of a new investment policy and create investment mechanisms of transition to innovative economy with priority development of knowledge-intensive branches of national economy and increase in domestic market capacity. In this regard it is necessary to formulate conceptual framework of investment strategy, which is considered as the mechanism for the implementation of social and economic strategy of the republic upon transition to innovative development.

Comparative assessment of innovative effect in developed countries demonstrates that the current results several times exceed the volumes of science investment contributing 3-4% to GDP. The effect of transition to innovative economy is 2-3 times higher than that of the development of other spheres of production and business. Therefore, in the long run the transition to innovative economy will also be inevitable for Tajikistan. Unfortunately, today the republic lacks sufficient prerequisite for transition to innovative economy. As a rule, the innovative economy is supported by sound scientific and technical base, accumulated scientific and technical knowledge and sufficient level of education, but the country suffers their shortage. Annually 0.10-0.11% of GDP [5] is allocated for the development of science, which hardly ensures its survival but not the development. Design centres are liquidated everywhere, research and development (R&D) staff is made redundant, there are no research centers in ministries and enterprises. However this does not mean that the republic shall accept the current situation and refrain from solid measures on the transition to innovative economy.

According to the report of the Global Innovation Index 2013 at the annual session of the UN Economic and Social Council (ECOSOC) made by the Cornell University and the World Intellectual Property Organization (WIPO), innovative activities continue to develop despite the economic crisis. The top ten among the leaders of innovations included Switzerland, Sweden, Great Britain, the Netherlands, the USA, Finland, Hong Kong (China), Singapore, Denmark and Ireland. Latvia takes the 33rd place, Estonia – the 25th, Lithuania – the 40th. In comparison with 2012, Latvia lost its position in ranking by three times, last year the country took the

30th place. Armenia takes the 59th place and Russia – the 62nd. Ukraine, Georgia and Belarus hold the 71, 73 and 77 places, respectively. Kazakhstan appeared on the 84th place and took the second position in Central and Southern Asia.

According to the level of innovation development, Tajikistan holds 101st position, Azerbaijan – the 105th, Kyrgyzstan – 117th and Uzbekistan – the 133rd [6].

Thus, innovations serve the tool contributing to economic modernization and are considered the catalyst for production relations. Therefore the cumulative means in development of applied economy is the innovation, without which the modernization within a cumulative aspect is impossible. According to its economic features the economy of innovations may be defined as follows:

- formation of commercial exchange between innovative products became a natural result of historical development of production relations, which is connected to deepening of public division of labor, specialization and cooperation, continuous improvement of which will lead to innovations and technological modernization in particular;
- innovative products coming into the sphere of exchange correspond to all features of goods and commodity relations and are considered efficient for further use;
- market mechanism, which basic elements include supply and demand defining the structure of goods and interpreting the innoative product de facto de jure.

The activation of innovative processes places great emphasis on the integration of various fields of science, technology, production and development of horizontal links, which, acording to the US experience, have considerably facilitated interindustry scientific and technical exchange, and promoted efficient innovations [7]. The role of institutional innovations, which are treated as 'the process changing the internal rules, having decentralized properties and connected to violation of the existing rules' is also gaining momentum [8]. At the same time institutional innovations create preferences for certain areas and fields of activity, which are critical from the national perspective [9].

In the development conditions of innovative economy focused on all-round development of a person, the center of gravity is ever more shifted from material sphere to innovative environment thus increasing the role of qualitative characteristics. Innovative activity implies comprehensive understanding of a role and prospects of information technology, which were widely used in key spheres of economy of developed countries. Therefore, the organization of innovative activity requires adequate approaches to the object of activity as such considering the fact that nowadays productions turn into an information system more depending on scales of production of knowledge-intensive goods and services.

The world economy has accumulated a certain experience from countries that decided to go for the innovative model of economc development. Such countries have powerful state programs supporting the innovations. Besides, there are levers of indirect control over innovative activity representing tax benefits from aggregate investment into active fixed assets, reduction (by 25%) in taxable income of enterprises from provisions for research and development, changes of the antitrust law facilitating the creation of joint research trusts, programs (consortia) and others. Today, as a result of efficient state policy, Germany, the USA, and Japan in total possess 48% of the world's latest technologies [10].

It should be noted that the private business also does not rush to invest into innovative developments and their practical implementation. It invests to innovations only insofar as necessary to survive in rigid competitive environment. The volume restriction of innovation-focused investments from private businesses is first defined by the institutional structure of national economy and capital investments. Therefore, the development of innovative activity requires the insurance system, which would compensate potential losses. Perhaps, initially there will be the need to establish state insurance companies, which would get down to innovative projects. The purpose of the insurance system operating in this field is to create a permanent monetary fund, which is partially increased due to insurers and partially due to state investments.

The next major component of innovative development may be the introduction of preferential taxation for enterprises performing innovative projects. Thus, the privileges may cover the entire business performing innovative projects as its main activity or be limited to innovative projects as such. In any case, for the period of innovations the business introducing them shall be exempted from additional tax payments. Such approach will also promote innovations and serve the protective measure allowing business to incur additional expenses related to innovations [11]. Nevertheless, the issue of creating a national innovative system remains relevant: today there are only its separate elements, which are poorly coordinated and prevent successful implementation of a balanced package of measures stipulated in the Strategy of Innovative Development of the Republic of Tajikistan until 2020 and approved by the Resolution of the Government of the Republic of Tajikistan No. 354 of 30 May 2015. The existing underestimation of fundamental science as a basic component of national innovative development deserves particular attention, there is unsatisfactory development dynamics of small innovative business [12], there is no account of large innovation-driven companies, innovative development of regions is extremely uneven, almost all participants of the innovative process experience an acute shortage of skilled manpower, etc.

3.1 Conditions and factors of innovative development

The innovative development of Tajikistan needs targeted state support from participants of innovative projects. It is expedient to create financial mechanisms of such support on the basis of specialized innovative funds, development of insurance services, interdepartmental programs of innovative activity.

The main conditions of innovative development

within the national economy are as follows:

- inventory and specification of research and scientific-technical divisions, enterprises and branches regarding the development of scientific potential. At the same time it is advisable to evaluate the competitiveness of various spheres of economy, level of technologies and main types of equipment;
- availability of efficient national innovative system stimulating public and private companies, enterprises of scientific and technological sector of economy;
- identification and approval of priority areas of innovative development and critical technologies for enterprises of the country;
- strengthening a new capital in economic science, mass consciousness and the legislation. Its most dynamic parts are intangible assets, including cost of patent and nonpatent licenses for intellectual property (inventions, industrial prototypes, know-how, brands and trademarks, selection inventions, software, integrated-circuit technologies, copyright);
- reversal of innovative policy. It is known that the innovative activity in the country in many respects depends on investment climate and hence there is a need to revise the structure of investments with regard to their affiliation with innovative processes, to develop venture investment;
- transformation of enterprises, firms, research institutes, design centers into efficient owners interested in and capable to carry out innovations;
- increase in efficiency of innovative policy implementation based on favorable conditions for the development of financial and credit institutions of innovative activity, improvement of legislative and statutory regulation of innovative activity in the field of science and technology, institutional transformations within industries;
- transformation of investments into human capital, into the main sphere of long-term investments. It also requires new assessment methods of liability and risk insurance, attraction of private funds, credit granting to students, etc.;
- equal and mutually beneficial scientific and technical integration with partners in terms of scientific, technical and economic cooperation [13].

At this stage it is critical for Tajikistan to make sure that the created scientific and technical, organizational and economic, as well as intellectual potential is in demand, adapted to world market conditions and is developed. The implementation of innovative activity requires sufficient innovative potential [14]. Therefore, the assessment of innovative conditions is the first baseline in organizing and managing innovative development and it is obvious that only the state is capable to formulate the scientific and technical policy meeting the main demands of social and economic development of the country [15]. Thus, the assessment of innovative processes of economy shows that only an integrated approach to restructuring the national innovative system and elaborating the innovative development strategy taking into account requirements of new market realities will make it possible to overcome difficulties on the way towards innovative development of the national economy.

The future of each state is defined by its ability to use its intellectual potential, including in the field of management of the economy. The knowledge-driven economy is characterized by large scales and higher rates of innovative transformations since the scientific and technical progress is disseminated in the market environment in the form of innovations [16].

The authors believe that there is a need to modernize higher education fostered by the Ministry of Education and Science, the Academy of Sciences of the Republic of Tajikistan and other research centers. The universities of the republic shall become centers that train a new generation of professional staff for business activity, namely for innovative business. It is also necessary to draft the law "On Special Economic Zones of Technology Development Type". This shall be done to release industrial products within technology development zone. A resident of a technology development zone shall not be limited only to the introduction and pilot production, but could also reckon upon batch production.

Development and activation of innovative activities are closely linked to the organization of small innovative businesses (SIB). The world practice shows that they create 2.5 times more inventions per each invested dollar than large companies, and in branches where there is high risk and uncertainty of obtaining results, they ensure approximately half of all large technological innovations consuming from 2 to 5% of the total amount of R&D funds [17].

The English economist G. Bannock notes that more than a half out of 70 major inventions of the 20th century were made by small-sized firms or independent inventors. It is the small enterprises that created electronic tubes for TV sets, climate control units, electrostatic copy machines, transistors, mixers and even the jet engine, not to mention such minor inventions as a ball-point pen, a flash message, vacuum cleaners, toasters and many other things [18].

Therefore, the difficulties of SIB are caused by limited financial opportunities. Due to limitation of all types of resources any small business is interested in rapid development and use of new technologies, production of new products, bringing innovations to the stage of industrial prototypes, which are transferred on a commercial basis for use by large enterprises.

4 Conclusion

According to the authors, the solution of the specified problems includes the formation and development of

SIB infrastructure support mechanisms: innovative and technological centers, science and technology parks, business incubators providing access for small innovative enterprises to premises and equipment on favorable terms, to information databases, delivering entrepreneurship courses to staff in the field of innovations.

The human resources become the most important source of an enterprise economic growth. On the other hand, in modern economic conditions it is not fully possible to break administrative barriers, to master and gear innovative mechanisms to personal interests caused by objective development of innovative business.

State regulation and support of innovative business implies the development of the optimal model of management and implementation of the target program on innovative development of the industry. At the same time there is an urgent need to establish the National Council on Coordination of Innovative Activities and the Innovative Fund in the country. It is believed that the solution of tasks related to the development and activation of innovative processes in the national economy implies the following:

1) to apply an integrated approach to the national innovative system of the country taking into account formation and development of innovative business;

2) to put more emphasis on the solution of core problems of innovative business related to the development of long-term innovative policy and institutional registration of its key components;

3) to accelerate the formation of full-fledged interstate innovative systems as a factor of country's integration into global innovative space and a condition of innovative development;

4) to foster the development of a network innovative model within regions of the republic based on venture funding mechanism;

5) to create a special body coordinating the development of innovative business and to eliminate duplication of management functions with regard to innovations of the national economy.

According to OECD experts [19], the state policy in the field of innovative activity shall be balanced in terms of several aspects, including:

- support of innovations both at large, small and medium-sized enterprises since they all play a crucial role in innovative systems and often supplement each other;

- deeper recognition of the scale and advantages of innovations at low-technology productions and in service sectors. The current innovative policy is excessively concentrated on high technologies;

- openness of innovative systems to foreign sources of knowledge, which will not replace domestic sources but supplement them. The scientific policy of the republic is progressively focused on broad international cooperation. The same openness is needed to ensure higher standards of knowledge and accumulate the innovative potential of enterprises.

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