

ECONOMIC DEVELOPMENT AND EDUCATION

**PECULIARITIES OF ECONOMIC
DEVELOPMENT ON THE BASIS OF
INNOVATION AND INNOVATION
POTENTIAL**

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Abstract: Increase and progress in formation of innovation potential of economy (companies, firms) hold important place in raising its competitiveness. Because innovation potential plays a leading role in production of science-intensive products, realization of innovative investment projects, formation of human (intellectual) capital and securing steady development tendency in economy. The article has been dedicated to elucidation of knowledge economy and components of innovation potential. The main purpose here is explaining components of innovation potential, defining their mutual relation with other potentials, systemizing various approaches developed today and defining their importance in formation of knowledge economy.

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Introduction

Undoubtedly, high-tech peculiarities and science-intensiveness and of products produced today in conditions of intensification of globalization enables any country to gain and hold an advantageous position in the world market and international division of labor. Realization of these opportunities reveals importance of solution of the problem of development based on knowledge. Having a complicated character, the process of innovative development requires detailed knowledge on methods and tools used in effective use of new technologies, scientific-intensive products, economical main point of intellectual capital, its formation and usage peculiarities, as well as intellectual resources.

For the first time, the notion of innovation was used in relation with cultural changes, which took place in the 19th century. However, in

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connection with entrepreneurs and business it was firstly used in 1909 by Werner Sombart (1863-1941). He promoted inventiveness (not in the sense of technical inventions, but related with new form of production, transportation and sale of products and etc), pioneering (being the first distributor of a new product), the will for achievement and finally, organizational skills. Two years later - in 1911 J.Schumpeter explained 5 typical directions of innovative entrepreneurship: usage of new technologies and technological processes or new basis of production, realization of a product with new peculiarities, usage of a new kind of raw material, changes in material-technical supply and in organization of production and finally, occurrence of a new market for sales

J. Schumpeter wrote in his scientific work named "The theory of economic development" that innovation was when consumer products, production and transportation market changed for the purpose of implementation and usage of new organizational forms of industry. Until 1930 he used the notion of newness in his researches, but in 1930 he used the concept of innovation in his scientific work named "conjunction cycles" and founded the "theory of innovation".

Studying social problems of innovative administration, Lapin (2008) came to a conclusion that innovation was, practically, a product given to consumers' usage for the purpose of creation and spreading of new means, as well as more complete provision of consumers. Lapin emphasized that newness was a broader concept than innovation and believed that newness included examples of new products, technologies, methods of production, social (economical, organizational, cultural and etc.) structure and relations, norms and cultures. Valenta (1985) and Foster (1986) included in newness and production mechanism of administration changes in the initial structure, as well as its internal structure that ran to a new situation: positive and negative changes in products, technologies, means of production, professional and vocational structure of personnel and finally, social-economical consequences.

Innovation potential is the aggregate of material, financial, intellectual and scientific-technological resources (and resources of other types, too) so important for realization of innovation activities. Also, it includes institutional conditions, normative-legal acts, financial and social character. Such resources consist of research basis, production field and power, staff with necessary skills, scientific basis of production technologies, financial means for conduction of researches or realization of production, information resources, sales network for distributing and selling new products, etc. From this point of view, innovation potential is viewed as the ability of different fields of economy to produce scientific-intensive products, which meet demands of the world market. Innovation potential is the aggregate of the objects and subjects, which directly take part in the process of innovation (in other words, the aggregate of infrastructure). From this aspect, national innovation potential can be approached to as combination of resources, which realize the process of innovation activities in economy as a whole.

In economy and clusters in can be considered as combination of factors, which regulate the process of innovation.

The methodology of evaluation of innovation potential

Nowadays, as known, there are many indexes and indicators used for evaluation of steady economic development of countries in the world: evaluation of human capital, development level of science and education, indicators of competitiveness, innovation activity, superiority of laws, working mechanism of normative-legal acts and etc. Among these indicators, several ones are for definition of innovation potential of a country - number of people working in the sphere of intellectual and scientific-intensive occupations, structure and volume of production funds used in the process of innovation, innovation expenditures, technological exchange, mastering, improvement and transfer of technologies, production of innovation product, dynamics and structure of sales, influence of innovations on an enterprise's operation, innovative activity of enterprises, income from sales of innovation product, technological structure of economy, development level of stock and securities market and etc. These indicators are the main ones for evaluation of existing situation of innovation potential.

Main factors affecting innovative development

Today, together with scientific, educational and industrial potentials, innovation potential of a country is one of the important factors affecting its competitive economic development. Actually, scientific, educational and industrial potentials are important components forming the innovation potential. From this viewpoint, main emphasis here is put on development of education (training highly qualified professionals), application of scientific results (new ideas, inventions, discoveries and etc.) in production (industry), realization of these results in the market and conduction of complex measures for obtaining economic benefits.

Several aspects here are noteworthy:

1. Let's suppose that a definite country has enough highly qualified professionals. In case of non-purposeful use of these professionals in the sphere of scientific creativity, they will turn to simple labor sectors and as a result, economic and social importance of educational expenditures will decrease.
2. Let's suppose that highly qualified professionals are involved in scientific creativity activities and provide successful theoretical research works. But if there are no production spheres, productive-experimental institutions and scientific laboratories for testing and application of their scientific results, economic and social effect of expenditures of both education and science will decrease.
3. Let's suppose that production enterprises have been formed on the basis of high-tech and advanced technologies. In case of absence of

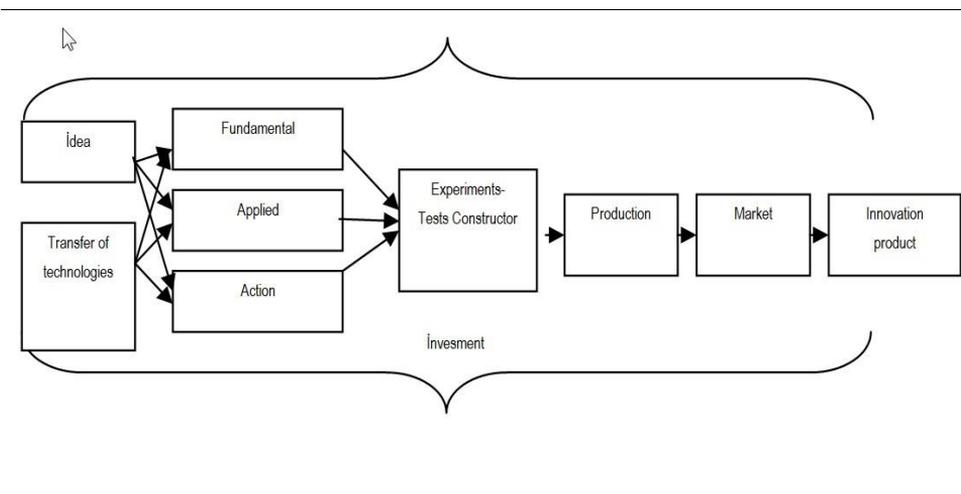
skillful professionals to work in these enterprises, absence of specialists to improve transferred technologies and lack of scientific-technical potential meeting demands of today, there should be no doubt that development based on innovations is impossible and so, economic and social effect of expenditures will decrease.

We consider that complex measures are significant in order to increase economic and social effect of expenditures in the abovementioned fields. Because all of the fields are closely connected with each other and in case that one of them lags behind, achievement of economic benefit is impossible.

Widely used in economy, scientific achievements, as well as renovation of assortments of products produced on the basis of new technologies brings to formation of “innovation economy” based on application of knowledge (Hamilton, 2000). In order to increase its profit and to strengthen its position in the market, every company (firm) strives to raise its innovative activity. Developed and developing countries, in turn, keeps to pay attention to such innovative activities, taking into consideration that it is one of the basic indicators for acceleration of economical growth, which makes it steady and long-term. Because based on knowledge, development of the society secures dynamic development of economy (Tupitzin, 2000).

Conducted researches and analysis of reports of international organizations show that formation of knowledge economy is impossible without increase of innovative activity, as results of science and education are realized namely in innovation product and provides benefits for economy.

FIGURE 1. INNOVATION-INVESTMENT PROCESS

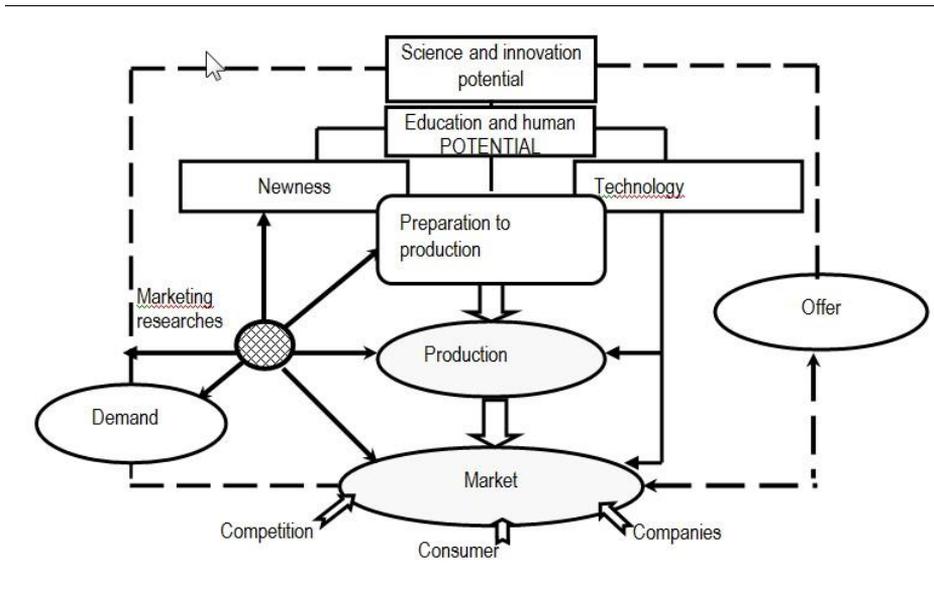


As mentioned above, innovation is a process, basis of which consists of inventions, information, know-how and ideas. This factor reflects the economic meaning of innovation. Being a means for economic

development, innovation is, in accordance with its character, a practical usage of ideas and inventions for the purpose of gaining social profit, additional income and benefit. It creates a technical-economical process that leads this idea towards application through researches. Investment holds one of the most important positions in this process (Figure 1).

Education, science and industrial potential are closely involved in this process (Figure 2). As known, occurring as a result of innovation activities, a new product is competitive. Besides, it requires improvement of production and administration systems, formation of human potential and adaptation of usage mechanism of this potential to demands of present time.

FIGURE 2. OPTIMAL STRUCTURE OF APPLICATION OF SCIENTIFIC RESEARCHES AND ACTIONS IN PRODUCTION



Positively affecting the formation of flexible management system in economy, it can contribute to creation of healthy environment for competition and development of business relationships. But, first, formation of innovation potential should be realized.

In all cases, instability of innovation process differs with that it is financed at the expense of venture capital. If in the first half of the 80s risk capital could unambiguously bring benefit, in the end of 90s signs of decrease in results began to be observed, when profitability of risk capital decreased from 39% to 20%. It led to changes in the mechanism of usage of risk capital, as well as internal (formation of stock market by shares of newly created enterprises, recollection of risk capital, increase in amount of stocks, decrease in demands for chosen projects, excessive funding of some new enterprises and etc.) and external (innovation

cycle, economic conjuncture, conjuncture changes, in main spheres - structure changes in investment of risk capital, foreign investors, competitive environment and etc.) factors.

Innovation index (The World Bank)

As known, formation and application level of innovation potential are one of the most important indicators in measurement of knowledge economy. Reports of the World Bank, the World Intellectual Property Organization, the UN and etc. in recent years affirm this consideration. According to the World Bank, one of the 4 indicators of knowledge economy index is namely innovation indicator (Table 1).

It should be mentioned that in 2012 the Czech Republic advanced 7 steps forward in knowledge economy index in comparison to 2011 and held the 26th place with the index of 8.14, while Azerbaijan (in the mentioned period) advanced 15 steps forward and held the 79th place with the index of 4,56. As seen in the table, the Czech Republic outstrips the average index among Europe and Central Asia countries.

TABLE 1. INDEX OF KNOWLEDGE ECONOMY

Index	Azerbaijan			Czech Republic			Europe and Central Asia			World		
	2012	2000	1995	2012	2000	1995	2012	2000	1995	2012	2000	1995
1. Knowledge Economy Index (Average of 3,4,5,6)	4.56	3.61	4.62	8.14	7.46	7.77	7.47	7.56	n/a	5.01	6.06	n/a
2. Knowledge Index (Average of 4,5,6)	4.96	4.25	5.59	8.00	7.56	7.67	7.64	7.84	n/a	5.45	5.61	5.00
3. Economic Incentive and Institutional Regime	3.36	1.68	1.71	8.53	7.18	8.07	6.95	6.72	6.06	3.72	3.89	n/a
4. Education	5.95	5.84	5.64	8.15	7.56	8.13	7.13	7.38	n/a	7.72	7.75	7.91
5. Innovation	4.01	3.38	4.97	7.90	7.50	7.15	8.28	8.38	8.41	3.58	6.53	7.16
6. ICT	4.93	3.54	6.17	7.96	7.62	7.73	7.50	7.78	8.20	5.12	5.95	n/a

Source: The World bank, 2013.

In 2012 the Czech Republic advanced 2 steps forward in innovation index in comparison to 2011 and held the 30th place, while Azerbaijan advanced 14 steps forward and held the 89th place. Surprisingly, Switzerland held the first place in innovation index, while countries with high level of innovation activity as Japan (the 15th place), South Korea

(the 21st place) and Norway (the 17th place) could not find their place in the first ten.

Analyses conducted on global innovation index show that, having only the index of 0.65 Azerbaijan holds the 100th place in the index of effectiveness of innovations among 141 countries, while the Czech Republic has the 22nd place with the index of 0.875. According to this index, Azerbaijan falls behind the world maximal index (highest in China with 1.13) as far as 0.48 points and lags behind the world average index in 0.08 points. Azerbaijan outstrips the world minimum index (lowest in Sudan with 0.44) in 0.21 points. One of the important points here is that, having low indexes in many spheres, China, Moldova and India are seen in the first 3 and moreover, countries as Zimbabwe, Nigeria and Mali are included in the first 20, despite of that they constantly hold the last places in all indexes.

In the sub-index of entering innovation (in fact, it is the result of the system of indexes that characterize innovation potential), among 141 countries Azerbaijan holds the 85th place with 36,82%, while the Czech Republic has this index as 53,3% and holds the 31st place. It should be mentioned that the world maximum sub-index of entering innovation is 74,91% (Singapore) and the minimum sub-index is 23,3% (Sudan). According to analyses, falling behind the world maximum sub-index in 38,0 points and the world average sub-index in 5,38 points, Azerbaijan outstrips the minimum sub-index in 13,5 points.

Conclusion

According to conducted researches and experience of developed countries, innovation potential plays the role of motivating mechanism in formation of knowledge economy. In case of absence of such formation, the contact between science and production breaks and motivating mechanism ("wheel") of knowledge economy (in turn, it motivates steady development) stops. Undoubtedly, formation of innovation potential in any country becomes more important day by day, as the main production factors rapidly gain intellectual character. Rational use of innovation potential serves not only perspectives of economic growth, but also the level of economic freedom and increases welfare indicators.

Innovative economy is the ability to use all useful innovations (patents, licenses, know-how, special innovations, new technologies and etc.) for the society effectively. Innovation economy is a type of economy that bases on innovation collection, constant improvement of technologies, production and export of high-tech products and high percentage of high-tech products in added value. It should be mentioned that, economy based on innovations develops in parallel with increase of the value and quality of human capital. In other words, innovative economy is not possible apart from education, scientific activities and human capital. So, human capital with high quality in a broad sense, effective innovation system, effective industrial enterprises

with ability of producing innovation products and favorable environment for human capital are critical points in innovative development.

Existence of innovation system is a process that plays the role of defining component of economic development, combines different results of mutual operation of economic institutes and connects between various components of the “science - production - consumption” linear relationship chain. Being the source of competition in the market conditions, innovation-based development creates opportunities for free and healthy competition, which in turn, highlights notions as economic freedom, competition market, the rule of law, private property and etc., thus directly stimulating innovation activities, increasing the demand for such activities and shortening the “bridge” between ideas and innovation products.

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