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INNOVATION FACTORS OF COMPETITIVE DEVELOPMENT OF NATIONAL ECONOMY

In the twenty-first century the international community formed a new system of values, gradually moves to the post-industrial era. The main factors of this process are innovations based on scientific and technical achievements and effective management system. Scientific and technological progress changes the scope and structure of production, has a significant impact on the entire global economy. It is obvious that in the twenty-first century innovation have become fundamental basis of economic progress and ensure positive socio-economic dynamics. Recently, the concept of "innovation" often appears in the scientific literature, but still there is no common opinion on this category that determines the relevance of this research.

A lot of scientific studies are devoted to research the essence of Innovations. In particular, should be highlighted works of such researchers Y. M. Bazhal, O. O. Drobyshevska, B. F. Zablotskyi, P. Drucker, M. D. Kondratiev, E. Mansfield, S. V. Onyshko, A. A. Peresada, I. V. Razumov, B. Santo, B. Twiss, I. Schumpeter, H. O Yarin and others. But mostly scientists approach the essence of the category "innovation" purely from technical and economic point of view. In our opinion, there is a need for a broader interpretation of the category for highly determining factors of national economies.

Aim of the study is to review the genesis of the main approaches to the category of "innovation", their synthesis and prompting author definition of the term, determine the impact of innovative factors to the highly competitive development of national economic.

It is believed that the term "innovation" was first introduced in scientific circulation in the 30s of the twentieth century by scientists I. Schumpeter. But even earlier, in 1911, in his

work "The Theory of Economic Development" Schumpeter used the term "new combination" (later identical to the concept "innovation") as a new scientific and organizational combination of factors, motivated by entrepreneurial spirit. However scientist distinguished five main types of combinations: the production of a new product, article, services for the consumer, on which entrepreneur focuses; introduction to the industry or trade any new production method; conquest and development of new market products; the use of new materials; introduction of new production [1, p. 159]. Fundamentally important is that Schumpeter introduced the idea of innovation as the driving force of economic development of society, through which the economy can get away from their "usual and dramatically change the trajectory of their own performance" [1, p. 153]. Scientific views of Schumpeter have become the theoretical basis for further study of the factors of economic growth which create national wealth. During the empirical research, researchers - economists concluded about decisive impact on economic growth such factors as scientific and technological progress. The theoretical and practical results of Schumpeter became the basis for distribution at this time of scientific direction, in which knowledge and information are considered as a source of wealth or as a main condition for its creation. Of course, not less significance is practical recommendations entities on the principles of innovation and disclosure of Schumpeter static-dynamic dualism of nature of innovation. On the one hand, innovation as a static phenomenon - is a concrete result of the micro level, the final stage of research and production cycle. Production introducing of innovation leads to change one or more product-process parameters and further become the catalyst of derived innovations. On the other hand, as a dynamic phenomenon of innovation - continuous cyclical process that periodically runs the mechanism of "creative destruction" of the current economic reality [2, p. 17]. Such systematic approach to the consideration of innovation leads to unity of understanding of innovation activities in micro and macro level.

A significant contribution to the development of innovative problems made outstanding Russian scientist M. Kondratiev. His proposed theory of "long waves" as basic prerequisites for social and economic development provides innovation of varying degrees of depth and innovation that trigger different orders deviation from initial equilibrium state of the economic system [3, p. 717-718]. M. Kondratiev theory not only deepened the understanding of the nature of social and economic development, but also singled out scientific and technological progress as a factor that influences its dynamics. The scientist believed that of innovation developed by its own laws. This, in its turn opened up perspectives for the study of innovation

as a complex, heterogeneous on the structure phenomena with certain hierarchy of temporal effects.

Scientific analysis of the sources of innovations research allowed to select treatment options for this concept. So, if we turn to the definitions that provide foreign scientists, in the broad sense innovations can be new products, new processes or organizational methods that enhance the profitability of economic activity [4, p. 9]. Historically, innovation activity centered on R & D (research and experimental development) profitability of results which scientists consider key characteristic of innovation. According to the American scientist E. Mansfield, innovation - is the first time announced changes in technology [5, p. 556]. Thus technological changes mean changes in the production or release of new products. From our position, such point of view on the essence of innovations is not quite justified, because the new equipment and technology used in production may change and develop not only by revolutionary way but also by evolutionary way, i.e. through modernization and improvement [6].

Should draw attention to the definition of innovation which belongs to the American theoretician of management P. Drucker, as some modern scientists believe that Drucker is the "founder" of the term "innovation" because the proposed version of definition is reflected on the points that explain coming of innovation as a concept that is often used practically in all spheres of human activity. P. Drucker has written more broad approach to definition of the category "innovation". In particular, scientist believed that innovation - it is rather, economic and social concept than technical, because even in the case of technical and technological innovations are changing value and consumer quality that consumers are extracted from the resources [7, p. 30].

It is hard to deny out the definition because in this interpretation emphasized the importance of social and economic innovation. In a broad sense, innovation Russian scientists consider I. V. Razumov and O. O. Drobyshevskaya who understand innovation under implementation in the production of goods and services of the latest products and advanced technologies for their production [8, p. 44]. Moreover researchers stress that "innovation" and "technology" should be interpreted in a broad sense, referring to them all that in a competitive environment can help expand marketing of products in value terms. In our opinion, the definition contains certain inaccuracy as not only "introduction" of new technologies, as

follows from the definition of the authors, may be an increase in sales, but increasing the amount of capital [6].

Comprehensively interprets the essence of "innovation" Russian scientist H. O Yarin, namely: innovation - "is the result of intellectual work: first, a new idea, product, service, and secondly, the introduction of new in the production system, resulting in changing the very production system goes into a new state" [9 , p. 14]. In this approach, innovation directly related to intellectual property, the essence of which is the results of intellectual work.

B. Santo defines innovation as "social, technical and economic process through the practical application of ideas and inventions to create better on the properties of products, technologies, and if it focuses on the economic benefits, income, its appearance on the market may bring extra income "[10, p. 28].

Similar in content is definition of scientists B. Twiss, B. F. Zablotskyi and A. A. Peresada. Thus, B. Twiss considered in innovation "process, in which the idea or invention acquires economic sense" [11, p. 36]. Ukrainian scientist B. F. Zablotskyi believes that innovation - is the actual process of creating new knowledge management systems and production, technologies and their implementation in economics or public administration or international commodity relations [12, p. 51]. This definition is advisable to supplement the interpretation that gives A. A. Peresada, namely: "Innovation - the process of proving scientific ideas or technical invention to the stage of practical use that brings income and the related with this process technical and economic and other changes in the social environment" [13, p. 160]. The named authors, unlike the others, consider innovation as a "process" and not as "change."

All of the interpretations if they evaluated comprehensively related primarily to production processes, technological development. For us, particular scientific interest is the description of the category "innovation" in the broad sense when it can be applied in the design and implementation of prospective directions for further socio-economic development. We consider interesting the definition that provides to innovation local researcher of this issue S. V. Onyshko: "In the deepest scientific and methodological context, innovation can be defined as a stochastic process of creating positive alternative possibilities of any open systems (economic, social, biological, anthropological, etc.)" [14, p. 90]. S. V. Onyshko believes that the opportunity given on the eve human impact on the dynamics of innovation processes, and their management is significantly limited. Integrative category "innovation" is defined by researcher M. I. Lapin, who saw it as a complex process of creation, distribution and use of new practical

tool for complete or already known better meet needs; as the process of changes associated with a particular innovation is materialized social environment in which there is its life cycle [15, p. 7]. We do not consider it appropriate to link the essence of the innovations with activities of create complex, but in this approach we are talking about innovation not only concerning the production, but also social sphere and "better meet the needs" sphere [6].

In world practice, there is the definition of the term, made by the management of Oslo, which is reflected in the statistics of international standards in science, technology and innovation. According to these standards, innovation - is "... the end result of innovation, which is reproduced in the form of new or improved product introduced on the market new or improved of technological process, which is used in practical activities of or for a new approach to social services" [16]. For comparison, the Ukrainian law has a definition of innovation, which is set by the Law of Ukraine "On innovation activity" of 4 July 2002 year No. of 40-IV: «Innovation - newly formed (applied) and (or) improved competitive technologies, products or services, and organizational and technical decisions of industrial, administrative, commercial or other nature which significantly improve the structure and quality of production and (or) social sphere".

In our opinion, important in the above two definitions is emphasis on the fact that the outcome of innovations applies not only to industrial and commercial sphere, but also social. However, analysis formulated in the law of Ukraine interpretation of the term "innovation" contains some contradictions, namely: about applied of innovations terms "newly created" and "applied" is different in substance and in law used interchangeably. Innovator can create something new, and it can be called a "new creation", but this new creation cannot be patented and cannot be applied thereafter. In terms of Ukrainian reality, such cases are not rare. So if new creation is not applied, it is just a novelty. From our perspective, the interpretation of the concept of innovations "newly created" and "applied" are going as a complement to each other, not as synonymous. The variety of approaches to the definition of the category "innovation" allows making a conclusion that in the economic literature has not reached unity on the contents and filling the concept of "innovation". Numerous researchers of this issue interpret the term "innovation" depending on the object and subject of the research. So, with of Schumpeter Mansfield believes that innovation - is a "change". Scientist H. O Yarin, describing innovation, uses the term "result" Instead B. Santo, B. Twiss, A. A. Peresada, S. V. Onyshko and B. F. Zablotyski consider innovation as "the process". In our opinion, the essence of the concept of

"innovation" can be seen in the narrow and broad sense. Thus, in the narrow sense, innovation is associated only with industrial production, new equipment, technology, products, is considered only from a technical point of view. In a broad sense, innovation acts as a new product or service and the manner and process a set of measures for their production, and innovation in organizational, financial, research, social and other spheres.

Genesis of the term "innovation" led to the emergence of derivative terms. For example, the application acquires a new term "innovating" [17] which is understood as a higher level of innovation activities within the globalization of the world economy and the formation of complex social and economic systems. According to the terms of intellectualization of national economies need for adaptation the national economy to world globalization needs to determine its competitive advantages and economic growth factors [18].

One approach that allows receiving reasonable description of the national economy in the world coordinate system is the use of indicators of competitiveness. Among the set of indicators particular attention deserves the Global Competitiveness Index, which was developed by a group of scientists led by Professor Sala-i-Martin of Columbia University.

Built on the methodology of the World Economic Forum Global Competitiveness Index is a tool that allows you assess the relative strengths and weaknesses of the national economy and compare them with other countries. According to the Global Competitiveness Index the country assessed on the following parameters, which are grouped into three groups:

- 1) basic requirements (government and private institutions, infrastructure, macroeconomic stability, health and primary education;
- 2) efficiency enhancers (higher education and vocational training, goods market efficiency, labor market efficiency, financial market sophistication, equipped with the latest technologies, market size);
- 3) factors of innovation and development (business sophistication, innovation).

According to the report «The Global Competitiveness Report 2014-2015» Ukraine ranked 76th among 144 countries, rising to 8 positions in the ranking compared to last year [19]. Closest neighbors of Ukraine in this year's rating were Slovak Republic and Croatia. Results of the study show that Ukraine raised position for all groups of components of competitiveness ranking from last year. Despite this fact on many components of the index Ukraine ranks low steps, namely macroeconomic stability indicators took 105 place. Negative impact on the competitiveness of Ukraine such factors as the level of institutions (130 place), very low

position for the component of goods market efficiency (112 place), the development of the financial market (107 place). Low place takes innovative component in rating - 92 step, indicating a substantial impediment to modernization of the national economy and socio-economic development. The main problems that hinder the development of innovations in Ukraine are actual direction of national policies to consolidate economic model, based on low-tech way of life, and poor development of market institutions. Results of research enable us to make the assumption that the economic system is influenced by external and internal fluctuations, which exceed its adaptive capacity and provoke volatility.

The reality of today confirmed that the efficiency and dynamism of innovative sphere is a crucial factor of ensure the competitiveness of the economy. Analysis of the main determinants of the index component of "Innovation" will provide an opportunity to identify the main constraints of competitiveness effective progress of Ukraine (Table 1). Results of research indicate about significant obstacles in the way to increased competitiveness of Ukraine's economy that happens on the background of the complex behavior of business environment, lack of effective and consistent state policy, available scientific, technological and innovation potential is not realized as the driving factor that affects low economic development.

Table 1

**The results of Ukraine on the component of the global competitiveness index
"Innovation" for 2013 -2015 years [19-21]**

Global Competitiveness Index and its components	2013- 2014		2014 - 2015		Deviation	
	Rating (from 148)	point (1-7)	Rating (from 144)	point (1-7)	Rating	point
GCI	84	4,1	76	4,1	+8	0
Basic requirements (40.0%)	91	4,3	87	4,4	-12	-0,1
Amplifiers of efficiency (50.0%)	71	4,0	67	4,1	+4	+0,1
Factors of innovation and development (10.0%)	95	3,4	92	3,4	+3	0
Innovation:	93	3,0	81	3,2	+12	+0,2
The ability to innovate	100	3,2	82	3,6	+18	+0,4
The quality of research institutions	69	3,6	67	3,8	+2	+0,2
The costs of companies to research and experimental development	112	2,7	66	3,1	+46	+0,4
Cooperation between universities and business of scientific research and experimental development	77	3,4	74	3,5	+3	+0,2
Procurement of high-tech products	118	3,0	123	2,9	-5	-0,1
Availability of scientists and engineers	46	4,5	48	4,3	-2	-0,2
Patents and inventions (per million people)	52	2,9	52	3,2	0	-0,3

It should be noted the low level of susceptibility of Ukrainian business for innovations of technological character. According to the State Statistics Committee of Ukraine in 2013 only 16.8% of business entities engaged in innovative activity in the industry, which is significantly lower than similar indicators for Germany (69.7%), Ireland (56.7%), Belgium (59.6%) , Estonia (55.1%), Czech Republic (36,6%) [20]. Quite a small proportion of companies - 1.8% direct investments in the acquisition of new technologies. Today, for Ukraine it is typical inert type of innovation behavior (borrowing ready technologies and so on), which identifies the Ukrainian system as an innovative simulation-oriented in nature, and not to create radical innovations and new technologies. Only 13.6% of Ukrainian industrial enterprises showed themselves as innovative and active, which is the lowest among OECD countries as Japan and Germany, the proportion of such enterprises is 35% in Belgium, France, Austria - 41-43% of Denmark and in Finland 51-55%. Traditionally low in 2013 was the intensity of R & D (share of expenditure on the implementation of research and development in GDP) - 0.75%.

These arguments prove the necessity of developing highly competitive effective innovation strategy of the national economy aimed at developing modern innovative system that ensures the competitiveness of the national economy through effective use of scientific and technological capabilities towards promoting good economic growth.

Література

1. Шумпетер Й. Теория экономического развития: Исследования предпринимательской прибыли, капитала, кредита и цикла конъюнктуры / Й. Шумпетер; пер. с нем. В.С. Автономова и др.; под общ. ред. А.Г. Милейковского. – М.: Прогресс, 1982. – 455 с.
2. Кириченко О.А. Системний розвиток інноваційної діяльності / О.А. Кириченко, Ю.І. Вигівська // Інвестиції: практика та досвід. – 2011. – № 11. – С. 16-20.
3. Кондратьев Н.Д. Большие циклы конъюнктуры и теория предвидения. Избранные труды / Н.Д. Кондратьев, Ю.В. Яковец, Л.И. Абалкин. – М. : Экономика, 2002. – 766 с.
4. Measuring Innovation Investment in the Service Sector and Policy Implications / Presented by Michael Gallaher at the Applied Policy Seminar «Promoting Innovation in the Service Sector». – Geneva, 2010. – P. 1–19.
5. Mansfield E. Economics USA / E. Mansfield, N. Behravesch. – 5th ed. – New York, 1998. – 664 p.
6. Сімахова А. О. Теоретичне обґрунтування підходів до сутності категорії «Інновація» / А. О. Сімахова // Європейський вектор економічного розвитку. – 2013. – № 1. – С. 159 – 165.
7. Друкер П. Рынок: как выйти в лидеры. Практика и принципы / П. Друкер. – М.: Бук Чембэр Интернэшнл, 1992. – 352 с.
8. Разумов И.В. Инвестиционная модель инновационного развития национальной экономики / И.В. Разумов, О.А. Дробышевская. – Ярославль: ЯФ МЭСИ, 2008. – 105 с.
9. Ярин Г.А. Экономика фирмы: инновации и инвестиции, прибыль и оплата труда, инновационно-инвестиционная стратегия, оценка финансовой устойчивости: учебник / Г.А. Ярин ; Федер. агентство по образованию, Урал. гос. экон. ун-т; 2-е изд., доп. и испр. – Екатеринбург: Изд-во Урал. гос. экон. ун-та, 2010. – 450 с.
10. Санто Б. Инновация как средство экономического развития / Б. Санто; пер. с венг. – М. : Прогресс, 1990. – 295 с.

11. Твисс Б. Управление научно-техническими нововведениями / Б. Твисс; сокр. пер. с англ. – М. : Экономика. – 1989. – 271 с.
12. Заблоцький Б.Ф. Економіка й організація інноваційної діяльності: навч. посіб. / Б.Ф. Заблоцький. – Львів: Новий Світ – 2000, 2007. – 456 с.
13. Пересада А.А. Управління інвестиційним процесом / А.А. Пересада. – К. : Лібра, 2002. – 472 с.
14. Онишко С.В. Механізм фінансового забезпечення інноваційного розвитку економіки України: дис. ... д-ра екон. наук : 08.04.01 / Онишко Світлана Василівна. – К.: 2004. – 448 с.
15. Лапин Н.И. Актуальные проблемы исследования нововведений в организационных системах / Н.И. Лапин. – М.: ВНИИСИ, 1980. – 114 с.
16. Понятие инновационного процесса [Электронный ресурс]. – Режим доступа: <http://www.management.com.ua/>.
17. Більська О.В. Соціальне інновування і його теоретико-методологічне забезпечення в Україні/ О. В. Більська // Вісник Одеського національного університету. Економіка. - Том 19. - Випуск 3. - 2014.- С.123-126.
18. Sardak S. E. National Economies Intellectualization Evaluating in the World Economy / S. E. Sardak, A. A. Samoilenko // The Economic Annals-XXI. – 2014. – № 9-10. – p. 4 – 7.
19. The Global Competitiveness Report 2014-2015. [Електронний ресурс]. - Режим доступу : http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf.
20. Наукова та інноваційна діяльність в Україні [Електронний ресурс]. - Режим доступу: <http://www.ukrstat.gov.ua/>
21. Скрипник Н. Є. Інноваційні фактори висококонкурентного розвитку економіки України. / Н.Є Скрипник Міжнародна науково-практична конференція «Економіка і менеджмент – 2013: перспективи інтеграції та інноваційного розвитку» : зб. наук. праць Міжнар. наук.-практ. конф., 24 – 25 квіт. 2014 р. : у 6 т. – Дніпропетровськ : Біла К.О., 2014. С. 119 -121.

References

1. Schumpeter, J. (1982) *Teorija jekonomicheskogo razvitija: Issledovanija predprinimatel'skoj pribyli, kapitala, kredita i cikla konjunktury* [The Theory of Economic Development: Studies of business profits, capital, credit and market conditions cycle]. Moskow: Progress. [in Russian]
2. Kirichenko, O.A., Vyhivska, Y.I. (2011) Systemnyj rozvytok innovatsijnoi diial'nosti [System development of innovation activities] *Investytsii: praktyka ta dosvid. - Investments: practice and experience*, № 11. - P. 16-20. [in Ukrainian]
3. Kondratiev, N.D., Yakovets, Y., Abalkin, L.I. (2002) *Bol'shie cikly konjunktury i teorija predvidenija. Izbrannye trudy*. [Big cycles conjuncture and the theory of foresight. Selected Works]. - Moskow: Economics. [in Russian]
4. Gallaher, M. (2010) Measuring Innovation Investment in the Service Sector and Policy Implications. *Applied Policy Seminar «Promoting Innovation in the Service Sector»*. – P. 1–19. [in English]
5. Mansfield, E. Behraves, N. (1998) *Economics USA*. – New York. [in English]
6. Simakhova, A.O. (2013) Teoretychne obgruntuvannia pidkhodiv do sutnosti katehorii «Innovatsiia» [Theoretical approaches to study the essence of the category "Innovation"] *Yevropejskyj vektor ekonomichnoho rozvytku - European vector of economic development*, № 1. - P. 159 - 165. [in Ukrainian]
7. Drucker, P. (1992) *Rynok: kak vyjti v lidery. Praktika i principy* [Market: how to become a leader. Practice and Principles] Moskow: Book Chamber International [in Russian]
8. Razumov, I.V., Drobyshevskaya, O. A. (2008) *Investicionnaja model innovacionnogo razvitija nacional'noj jekonomiki* [Investment model of innovative development of national economy]. - Yaroslavl: YF MESI, [in Russian]
9. Yarin, H. O. (2010) *Jekonomika firmy: innovacii i investicii, pribyl' i oplata truda, innovacionno-investicionnaja strategija, ocenka finansovoj ustojchivosti* [The economy of the company: innovation and investment, profits and wages, innovation and investment strategy, the assessment of financial stability] Yekaterinburg: Publishing House of the Ural Mountains state economical University Press [in Russian]
10. Santo, B. (1990) *Innovacija kak sredstvo jekonomicheskogo razvitija* [Innovation as a means of economic development]. - Moscow: Progress. [in Russian]
11. Twiss, B. (1989) *Upravlenie nauchno-tehnicheskimi novovvedenijami* [Management of scientific and technical innovations]. – Moskow: Economics. [in Russian]
12. Zablotskyi, B. F. (2000, 2007) *Ekonomika j orhanizatsiia innovatsijnoi diial'nosti* [Economics and organization of innovation activity] Lviv: New World [in Ukrainian]

13. Peresada, A.A. (2002) *Upravlinnia investytsijnym protsesom* [Management of the investment process] Kyiv: Libra [in Ukrainian]
14. Onyshko, S. V. (2004) *Mekhanizm finansovoho zabezpechennia innovatsijnoho rozvytku ekonomiky Ukrainy* [The mechanism of financial support innovative development of Ukraine's economy]: *Extended abstract of Doctor's thesis*. Kyiv [in Ukrainian]
15. Lapin, N.I. (1980) *Aktual'nye problemy issledovaniia novovvedenij v organizacionnyh sistemah* [Actual problems of the study of innovation in organizational systems] Moskow: VNIISI. [in Russian]
16. The concept of the innovation process [Electronic resource]. - Access: <http://www.management.com.ua/> [in Russian]
17. Bil'ska, O.V. (2014) *Sotsial'ne innovuvannia i joho teoretyko-metodolohichne zabezpechennia v Ukraini* [Social innovating and its theoretical and methodological support in Ukraine] *Visnyk Odes'koho natsional'noho universytetu. Ekonomika. - Bulletin of the Odessa National University. Economy*, 19, 123-126. [in Ukrainian]
18. Sardak, S. E., Samoylenko, A.A. (2014) National Economies Intellectualization Evaluating in the World Economy. *The Economic Annals-XXI*. № 9-10. – P. 4 – 7. [in English]
19. The Global Competitiveness Report 2014-2015. [Electronic resource]. - Access: http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf. [in English]
20. Research and Innovation in Ukraine [Electronic resource]. - Access: <http://www.ukrstat.gov.ua/> [in Ukrainian]
21. Skrypnyk, N.E. (2014) *Innovatsijni faktory vysokokonkurentnoho rozvytku ekonomiky Ukrainy* [Innovative highly competitive factors of economic development of Ukraine] *Prospects of integration and innovation*. Vol. Science of international works. science and practical. - P. 119 -121. [in Ukrainian]