

Khvostenko V. S.

*Ph. D in Economics, Leading expert on intellectual property,
Scientific Research Department, S. Kuznets KhNUE, Ukraine,
patent attorney of Ukraine;*

e-mail: vladyslav.khvostenko@gmail.com; ORCID ID: 0000-0002-6436-4159

Kipa M. A.

*Ph. D in Economic, Associate Professor, Department of Finance,
S. Kuznets KhNUE, Ukraine;*

e-mail: mokipa@ukr.net; ORCID ID: 0000-0001-9822-0850

Aleksieienko I. I.

*Ph. D in Economic, Associate Professor, Department of Finance,
S. Kuznets KhNUE, Ukraine;*

e-mail: inna01alekseenko@gmail.com; ORCID ID: 0000-0002-8803-1615

FINANCIAL AND COMMERCIAL ASPECT OF THE TECHNOLOGY TRANSFER PROCESS

Abstract. This article provides theoretical synthesis and critical analysis of existing scientific approaches to the concept "technology transfer". The author's vision of the nature of this concept is proved. In the framework of clarifying the nature the list of objects of technology transfer is specified and its financial and commercial character is defined.

The article highlighted two approaches to technology transfer entity definition. According to the first scientific approach, technology transfer is defined as an innovative, technological, socio-technical process interaction and exchange, transfer and adaptation of knowledge, skills, experience, technology, information, industrial property, machinery and equipment on commercial or non-commercial basis.

Another scientific approach to defining the nature of technology transfer is its interpretation as the creation and transmission to the practical organizations or the intellectual property market of scientific and technological achievements, processes of their usage, ideas and concepts, know-how, property rights. The investigation of the nature of technology transfer revealed its basic kind – commercial. Nowadays, in the theory and practice the technology of transfer remains controversial issues of delimitation of concepts such as "technology transfer" and "commercialization of intellectual property".

We propose to interpret the concept of "technology transfer" as the process of changing the ownership of the object of technology or its component in a commercial or free form in order to achieve a new better economic or social impact, production or getting different result. The proposed definition allows determining the object and the subject of technology transfer and specifying its purpose as a form of economic activity.

According to the results of the study, the most controversial features of technology transfer are defined. They include objects and nature of the transfer. Based on the analysis of basic scientific approaches to determine the objects of transfer, their main types were found, including knowledge, property rights on intellectual property, information on commercial or non-commercial basis.

Keywords: technology, transfer, innovation transfer method, object, its financial and commercial transfer character, competitiveness.

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Хвостенко В. С.

*кандидат економічних наук, провідний експерт з питань інтелектуальної власності,
співробітник науково-дослідного сектору*

*Харківський національний економічний університет імені Семена Кузнеця, Україна,
патентний повірений України;*

e-mail: vladyslav.khvostenko@gmail.com; ORCID ID: 0000-0002-6436-4159

Kіna M. O.

*кандидат економічних наук, доцент кафедри фінансів,
Харківський національний економічний університет імені Семена Кузнеця, Україна;
e-mail: mokipa@ukr.net; ORCID ID: 0000-0001-9822-0850*

Алексєєнко І. І.

*кандидат економічних наук, доцент кафедри фінансів,
Харківський національний економічний університет імені Семена Кузнеця, Україна;
e-mail: inna01alekseenko@gmail.com; ORCID ID: 0000-0002-8803-1615*

ФІНАНСОВО-КОМЕРЦІЙНИЙ АСПЕКТ ПРОЦЕСУ ПЕРЕДАЧІ ТЕХНОЛОГІЙ

Анотація. Представлено теоретичний синтез і критичний аналіз існуючих наукових підходів до концепції «передача технологій». Обґрунтовано авторське бачення природи цього поняття. В рамках уточнення характеру зазначено перелік об'єктів передачі технологій і визначається його фінансово-комерційний характер.

Розглянуто два підходи до визначення сутності передачі технологій. Відповідно до першого наукового підходу, передача технологій визначається як взаємодія інновацій, технологічних і соціально-технічних процесів, обмін, передача і адаптація знань, навичок, досвіду, технологій, інформації, промислової власності, машин і обладнання на комерційній або некомерційній основі.

Іншим науковим підходом до визначення характеру передачі технологій є його інтерпретація як створення і передача практичних організаціям або ринку інтелектуальної власності науково-технічних досягнень, процесів їх використання, ідей і концепцій, ноу-хау, прав власності. Дослідження характеру передачі технологій дозволило виділити його основний вид — комерційний. В даний час, в теорії та практиці, технологія передачі залишається суперечливим питанням розмежування таких концепцій, як "передача технологій" та "комерціалізація інтелектуальної власності".

Ми пропонуємо інтерпретувати концепцію "передачі технологій" як процес зміни власника об'єкта технології або її компонентів у комерційній чи вільній формі для досягнення нового кращого економічного або соціального впливу, виробництва або отримання іншого результату. Запропоноване визначення дозволяє визначити об'єкт і предмет передачі технології та визначити його призначення як вид економічної діяльності.

За результатами дослідження визначено найбільш суперечливі особливості передачі технології. Вони включають в себе об'єкти і характер передачі. На основі аналізу основних наукових підходів до визначення об'єктів передачі були виявлені їх основні типи, включаючи знання, права власності на інтелектуальну власність, інформацію на комерційній або некомерційній основі.

Ключові слова: технологія, передача, метод перенесення інновацій, об'єкт, фінансово-комерційний характер передачі, конкурентоспроможність.

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Хвостенко В. С.

*кандидат економічних наук, ведучий експерт по вопросам інтелектуальної
собственности, сотрудник научно-исследовательского сектора
Харковский национальный экономический университет им. Семена Кузнеця, Украина,
патентный поверенный Украины;
e-mail: vladyslav.khvostenko@gmail.com; ORCID ID: 0000-0002-6436-4159*

Kіna M. A.

*кандидат економічних наук, доцент кафедри фінансов,
Харковский национальный экономический университет им. Семена Кузнеця, Украина;
e-mail: mokipa@ukr.net; ORCID ID: 0000-0001-9822-0850*

Алексеенко И. И.

*кандидат экономических наук, доцент кафедры финансов
Харьковский национальный экономический университет им. Семе́на Кузнеца, Украина;
e-mail: inna01alekseenko@gmail.com; ORCID ID: 0000-0002-8803-1615*

ФИНАНСОВО-КОММЕРЧЕСКИЙ АСПЕКТ ПРОЦЕССА ПЕРЕДАЧИ ТЕХНОЛОГИЙ

Аннотация. Представлен теоретический синтез и критический анализ существующих научных подходов к концепции «передача технологии». Обосновано авторское видение природы этого понятия. В рамках уточнения характера указан перечень объектов передачи технологий и определяется его финансово-коммерческий характер.

По результатам исследования определены наиболее противоречивые особенности передачи технологии, а именно: объекты и характер передачи. На основе анализа основных научных подходов к определению объектов передачи были выявлены их основные типы: знания, права собственности на интеллектуальную собственность, информацию, передача которых может быть осуществлена на коммерческой или некоммерческой основе.

Ключевые слова: технология, передача, метод передачи инноваций, объект, финансово-коммерческий характер передачи, конкурентоспособность.

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Statement of the problem. Nowadays, technological leadership determines not only the country's competitiveness on world markets but also describes its economic potential in general. For CIS countries the transfer of industrial property is a relatively new area of economic activity but it should be taken into account that it's inextricable link with such field of economic relations as invention, intellectual property, innovation, investment and so on. In these circumstances an effective tool for technological development, as a separate company so the country in general, is technology transfer. This subject is becoming more particularly relevant in the periods of economic recession and worsening crisis, when growing need to ensure the accelerated pace of economic development in the context of limited resources and destabilizing impact of macroeconomic factors. High scientific and technical potential of Ukraine determines the leading role of technology transfer in the process of improving the competitiveness of domestic producers and, as a result, providing economic leadership of the country in global markets. For these intensifying commercialization issues of industrial property in Ukraine are becoming more relevant that primarily requires studying the nature of technology transfer and defining its nature as an economic category.

Analysis of recent research and publications. The problems of studying theoretical and applied aspects of technology transfer are investigated by domestic economists as A. Androsov, V. Denisyuk, A. Kamyanska, V. Solovyov, V. Tytov, A. Yarymchuk and others. The main areas of modern scientific research are the study of general approaches to technology transfer; it's characteristics of state regulation, the identification of sources of its financing and so on. But without compromising the academic achievements of these scientists till nowadays in the literature there is no any comprehensive approach to the interpretation of the nature of this concept due to several reasons including: firstly, it is due to a multidimensional process of technology transfer which covers both commercial and social components; secondly, the forms of technology transfer and transfer facilities are constantly evolving and mutating; thirdly, the significant impact on solving the definition has legislative framework which is under formation in Ukraine.

The purpose and objectives. The purpose of the article is to study the theoretical and methodological framework to define the concept "technology transfer", its analysis, unification and justification the author's determination.

To achieve the purpose of the research it is necessary to set and solve the following tasks:

- to study the existing scientific and practical approaches to determine the economic category "technology transfer" in the light of its key constructs;
- to explore the chronological development of the investigated concepts;
- to establish the nature of technology transfer;

to determine the list of objects of technology transfer;
to clarify the concept of "technology transfer".

Presenting the main material of the research. Domestic and foreign practice of commercialization of industrial property shows the great multitude of approaches to the interpretation of the concept of "technology transfer" and a large number of related concepts and categories, including in particular the scientific and technological transfer, transfer of knowledge, technological transfer, technology transfer and commercialization of technologies used to determine the only concept. Let's consider them in details.

According to the current legislation on intellectual property the transfer is defined as "technology transfer that is made by making between individuals and / or entities bilateral or multilateral agreement which establish, modify or terminate the property rights and obligations regarding technologies and / or its components" [11].

The group of scientists [35, 36, 31, 27, 39, 5, 6, 19, 7, 26, 3] agree with the mentioned approach and define the nature of the investigated concept as "transfer" but the main shortcoming of this definition is the lack of the role and purpose to implement transfer. Due to the dynamic development of technology transfer we believe that this approach is not sufficiently comprehensive and it is necessary to specify the objects and purpose.

Another common point of view in the framework of this approach is to define the technology transfer as a "process" [41, 20, 5, 7, 15]. Accordingly, in the scientific work [8], the technology transfer is understood as "the spread of technological knowledge of applied nature, as a rule, the production techniques, progressive ideas, models, algorithms and innovative products in the industry, between the sectors, regions or countries". This approach is interesting because of the specification of the object of technology transfer and focusing on the applied knowledge.

According to V. Denisyuk, the technology transfer should be understood as "a set of economic relations in the area of usage of the new system knowledge about production, process implementation or providing service between the owner and the consumer – residents in one country and for international technology transfer – residents and non-residents" [2]. This approach is shared by the group of other scientists [17, 13, 14, 9], that is: defining the nature of technology transfer as economic relations, O. Lyashenko considers this concept as " a system of relations between the agents of social exchange to transfer the cost-effective, new knowledge protected by intellectual property rights that are used by the recipients to obtain benefits" [9]. It should be noted that the approach, according to which the nature of technology transfer is determined by the category of economic relationship is typical for domestic scientific school.

Another scientific approach defines the technology transfer as a type of communication [20, 21]. In this context the study [23] should be mentioned, which defines the technology transfer by the key constructs such as technology transference, the process, the type of communication and interaction and activity. It should be emphasized that the concept of technology transfer is the most prevalent and covers the vast majority of scientific definitions.

The following definition focuses on fundamental and applied knowledge: "sequence of actions when the new knowledge is gained as a result of fundamental and applied research at the universities and research institutions, distributed or transmitted by providing scientific, technical services free of charge or purchased by enterprises to implement as a product or technology" [17].

The theoretical generalization of scientific approaches to determine the economic category of "technology transfer" according to components of its nature, object and nature of the transmission is shown in the table 1.

Table 1

Theoretical generalization of the scientific approaches to determine the economic category the
"technology transfer"

Author	Gist	Object	Nature of transfer
Shaposhnikov A. [22]	Procedures	Knowledge, experience, industrial property	Free of charge

Author	Gist	Object	Nature of transfer
Chun C. [26]	Transfer	Scientific or technological achievement or a new way to use them	Not specified
Mukhin A. [10]	It is used not where the development took place	Technology	Not specified
Das S. [28]	Production	Product	Not specified
Soloviev V. [14]	Relation	Industrial property, goods, engineering	Commercial
Mascus K. [38]	Access to information	Technical information	Not specified
Evdokimov E. [17]	Economic relations	Knowledge, skills, experience	Commercial
Denysyuk V. [2]	Economic relations	New system knowledge	Commercial
Rogova E. [13]	Economic relations	Technology in the form of product	Commercial
Sherman G. [42]	Application	Technology	Not specified
Hayden F. [33]	Investments to create a product	Knowledge, patents, scientific principles	Not specified
Hoffman K., Girvan N. [34]	Investment and development, new knowledge creation	Factories, machinery, knowledge	Not specified
Belokrylova O. [15]	Innovation process	Knowledge	Commercial
Akperov I. [1]	Tools of Economics	Achievements of developed countries	Not specified
Chukhai N. [21]	Communication between people	Knowledge	Not specified
Ignatiev A. Maksimtsev M. [4]	Scientific and technical process	Knowledge, experience	Not specified
Fedulova L. [19]	Transfer	Knowledge	Not specified
Kanyak E. [36]	Transfer	Know-how	Not specified
Chung W. [27]	Transfer	Know-how	Not specified
Jeannet J., Liander B. [35]	Transfer	Research results	Not specified
Kuzyk B. [6]	Transfer or creation of new industrial property	Knowledge, industrial property	Commercial
Gibson D. [31]	Transfer of NGOs to organizations	Information about technological innovation	Not specified
Phillips R. [22]	Moving from NGOs to the market	Ideas and concepts	Commercial
Roessner J. [40]	Moving from one organization to another	Know-how, equipment and technology	Not specified
Williams F., Gibson D. [43]	Moving to less developed countries	Knowledge and Concept	Not specified
Terebova C. [16]	The transition from fundamental knowledge to the technical means	Knowledge	Not specified
Redkina N. [12]	Procedure	Knowledge, skills, experience, technology	Commercial
Yanchenko S. [18]	Procedure	Knowledge, experience and high technology products	Not specified
Derakhsahani S. [29]	The acquisition, development and use	Knowledge	Not specified
Zhoa L., Reisman A. [44]	Production and Design	Knowledge	Not specified
Rogers E. [41]	The adaptation of innovations	Innovation	Not specified

Author	Gist	Object	Nature of transfer
Fonshteyn N. [20]	The process of interaction and exchange	Information	Not specified
Sushkov P. [7]	The process of transferring	Knowledge development	Commercial and free of charge
Kateshova M. Kvashnin A. [5]	The process of moving and adaptation	Technology	Commercial
Baranson J. [25]	TT result is the ability to produce new products	Know-how (knowledge)	Not specified
Lushnikova A. [8]	Dissemination	Knowledge, ideas, products	Commercial
Lyashenko O. [9]	The system of relations	Knowledge in the form of IP objects	Commercial
Hall G, Johnson R. [32]	The system of technology	People, products, processes	Not specified
Autio E., Laamanen T. [24]	The social component	Technological knowledge	Not specified
Levin M. [37]	Socio-technical process	Cultural skills, machines, equipment and tools	Not specified
Farhang M. [30]	The focus on production and it includes the transfer of staff	Knowledge in the form of process, specifications, know-how and personnel	Not specified
The law "On state regulation of activities in technology transfer" [11]	Making agreement	Property rights and obligations	Commercial
Dulepyn Yu. [3]	The form of transfer	Property rights	Commercial and free of charge

According to table 1 it is possible to conclude that there is no uniqueness of domestic and foreign scientists in determining the nature of the economic category of "technology transfer". According to the analysis and synthesis of total aggregate of concepts it is possible to group them into a certain scientific approaches (Table 2).

Table 2

Semantic analysis of economic category "technology transfer"

Constructs	Technology transfer			
	Scientific approach 1	Scientific approach 2	Scientific approach 3	Scientific approach 4
Gist	Innovative, technological, socio-technical process (a sequence of actions, communications) interaction and exchange, transfer and adaptation	Creation and transfer (distribution) to practical organizations or intellectual property market	Investments to create innovative products	The system of economic relations
Objects	Knowledge, skills, experience, technology, information, industrial property, machinery, equipment, tools	Scientific and technological achievements, the process of their usage, ideas and concepts, know-how, property rights	Scientific principles, patents, technology, property complexes	The objects of IP engineering, innovative knowledge systems
Character	Commercial / nonprofit / free of charge			

According to the first scientific approach, technology transfer is defined as an innovative, technological, socio-technical process (a sequence of actions, communications) interaction and exchange, transfer and adaptation of knowledge, skills, experience, technology, information, industrial property, machinery and equipment, instruments on commercial or non-commercial basis [4, 15, 21, 22, 12, 18, 41, 20, 5, 37]. Thus scientists clearly distinguish objects for transfer. In

particular, in scientific works [31, 38] transfer object is specified as information on innovations and technical information.

The other author [20] defines technology transfer as "a process of interaction and mutual exchange of information among people for a long time, taking into account the human factor". In this case, the object of transfer is specified by the information. It is not exhaustive because in this case there is a regular exchange of information.

Another scientific approach to defining the nature of technology transfer is its interpretation as the creation and transmission (dissemination) to the practical organizations or the intellectual property market of scientific and technological achievements, processes of their usage, ideas and concepts, know-how, property rights [26, 19, 36, 27, 6, 31, 22, 40, 43, 16, 7, 8, 30, 3].

As part of this approach the popular is the definition of the object of technology transfer of research results of Scientific and Research Work, which are often presented in the form of intellectual property [35, 33, 6, 11, 26, 14, 3]. Some scientists allocate separately know-how as the object transfer from the set of intellectual property objects [25, 36, 40, 30, 27]. The author [39] understands ideas and concepts as the object of transfer, so it should be attributed to the previous group as the ideas are protected as know-how.

It is interesting the fact that know-how as the object of technology transfer is mainly considered by foreign scientists. First of all, this is due to the fact that know-how is not provided by security state document and there is no much experience to protect objects without registration in the Office as in businesses and so in the scientific institutions.

The largest group consists of scientists who define the subject of technology transfer as "knowledge", considering it in one form or another. Some of them [2] emphasized that the knowledge must be new.

The result of grouping scientists' approaches to define the concept of "technology transfer" according to object transfer criteria is shown in the Fig. 1.

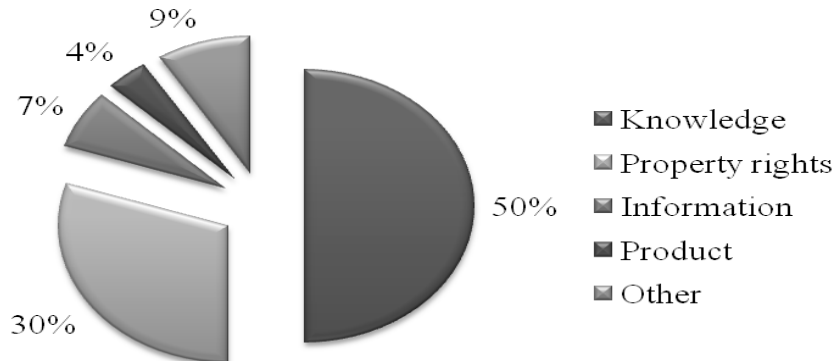


Fig. 1. Distribution of technology transfer definitions according to objects

Source: Compiled by authors

The Fig. 1 clearly shows that 50% of scientists define knowledge as the object of transfer. The objects of intellectual property (property rights) (30%) are on the second place. Information (7%) and product (4%) are less popular.

Such objects of technology transfer as knowledge and objects of intellectual property are embodied in their legislative definition according to which the object of technology is established as scientific and applied results, the objects of intellectual property rights (including patents, utility models, scientific and technical works, computer software, trade secrets), know-how which displays a list, timing, order and sequence of operations, production process and / or sale and storage of products, services [11].

The only part that is not included in the definition of the object the technology is a social component. Therefore, special attention should be paid to scientific approaches that involve to the

object of technology transfer human factor [32, 20] and the social component [37, 4, 17], representing the latest as the category of "experience".

The next scientific approach defines technology transfer as an investment in scientific principles, patents, technology, property complexes to create innovative products [33, 34].

And the latest scientific approach that can be identified on the basis of scientific synthesis of existing definitions is an interpretation of technology transfer as a system of economic relations over the redistribution of intellectual property, engineering, innovative systems knowledge, etc. [2, 9, 13, 14, 17, 19].

An important criterion to distribute concepts of technology transfer is the nature of the transfer. Thus, in the current period of 1970-2000 there are no definitions to indicate the nature of technology transfer. Further, in the later periods scientists' approaches to the specified criteria can be divided into 3 groups: 1) the first group of scientists, emphasizes only on the commercial character of the transfer [39, 5, 17, 6, 13, 2, 11, 14, 9, 12, 8]; 2) Another group believes that the transfer should be free of charge [22]; 3) We consider both options quite reasonable, the same position is shared by the authors [7, 3]. The results of the distribution of existing definitions of the technology transfer by the nature of transfer are shown in the Fig. 2.

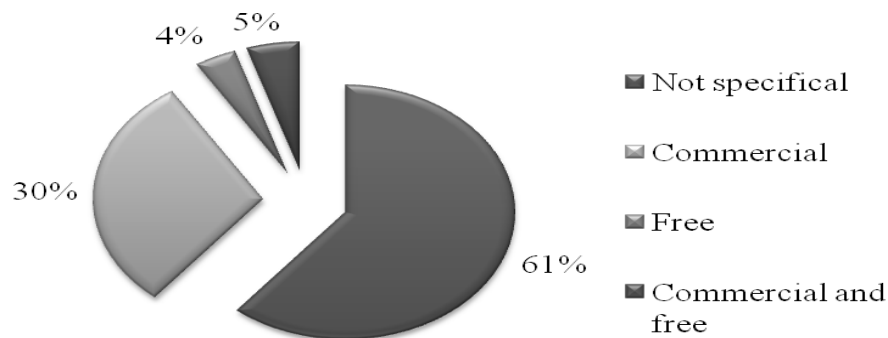


Fig. 2 Distribution of the scientific definitions of the economic category "technology transfer" by the nature of transfer
Source: Compiled by authors

The Fig. 2 clearly shows that the undisputed "leader" among the used objects of transfer is knowledge. However, due to the development of the protection practice of the intellectual property over the last 10 years, the subject of transfer is more often defined as the intellectual property rights. Also it is interesting the fact that the concept of technology transfer appeared in domestic science at the beginning of 1995 but in the world this category has been studying since 1970.

Based on the theoretical generalization of the main principles of the existing scientific approaches and taking into account the current practices we propose to interpret the concept of "technology transfer" as the process of changing the ownership of the object of technology or its component in a commercial or free form in order to achieve a new better economic or social impact, production or getting different result. The proposed definition allows determining the object and the subject of technology transfer and specifying its purpose as a form of economic activity.

Due to this connection it should be noted that nowadays in the theory and practice the technology of transfer remains controversial issues of delimitation of concepts such as "technology transfer" and "commercialization of intellectual property".

Conclusions. According to the results it was grounded that technology transfer is an important link between the science and the business. Its main purpose is to facilitate the financing of national science and increase the competitiveness of domestic enterprises or achieve social effect. The objective relevance of the processes of technology transfer confirms the significant number of approaches to define its concept.

According to the results of the study, the most controversial features of technology transfer are defined. They include objects and nature of the transfer. The basic approaches to the na-

ture of the technology transfer are revealed. Among them it is possible to distinguish the process, transfer, economic relations, communications and a sequence of actions.

Based on the analysis of basic scientific approaches to determine the objects of transfer, their main types were found, including knowledge, property rights on intellectual property, information and so on. Due to it should be stressed that first of all the subject of technology transfer is knowledge but its transfer is made in the form of information, intellectual property rights, results of scientific and research work and so on.

The investigation of the nature of technology transfer revealed its basic kind –commercial but the scientists have recently emphasized on the free (free of charge) form of technology transfer, which aims to achieve social impact.

The prospects for further research in this area are to determine the sequence of stages and procedures of modern research infrastructure to ensure the technology transfer in Ukraine.

Література

1. Акперов И. Г. Трансфер инновационных технологий: готовность, барьеры и возможности [Электронный ресурс] / И. Г. Акбаров, А. В. Петрашов. — Режим доступа: <http://elibrary.ru/item.asp?id=12975034>.
2. Денисюк В. Міжнародний трансфер технологій: сучасний зміст, аналіз закордонної та національної статистики [Текст] / В. Денисюк // Економіст. — 2005. — № 2. — С. 42-47.
3. Дулепин Ю. А. Стратегии трансфера инноваций в инновационных системах [Текст] / Ю. А. Дулепин, Н. В. Казакова // Инновационный вестник Регион. — 2010. — № 4. — С. 54—59.
4. Игнатъев А. В. Исследование систем управления [Текст] / А. В. Игнатъев, М. М. Максимцев. — Москва : ЮНИТИ-ДАНА, 2000. — 157 с.
5. Катешова М. Л. Инструменты для передачи технологий [Текст] / М. Л. Катешова, А. Г. Квашнин ; отв. ред. В. М. Бузник. — Новосибирск : Изд-во Сибирского отделения РАН, 2003. — 36 с.
6. Кузык Б. Н. Россия 2050: стратегия инновационного прорыва [Текст] / Б. Н. Кузык, Ю. В. Яковец. — Москва : Экономика, 2005. — 624 с.
7. Лукша О. Центр коммерциализации технологий - организационное развитие: как создать, управлять, организовать мониторинг и оценку деятельности [Электронный ресурс] / О. Лукша, П. Сушков, А. Яновский. — 2006. — Режим доступа: <http://ita.uz/downloads/Gidel.pdf>.
8. Лушников А. В. Роль центров трансфера технологий в развитии малого и среднего инновационного предпринимательства [Электронный ресурс] / А. В. Лушников. — Москва, 2012. — Режим доступа: <http://rier.ru/upload/iblock/213/2134a649c0c776665d4b2a5f1787a06d.PDF>.
9. Ляшенко О. М. Комерціалізація та трансфер технологій: категорії та методи інноваційної діяльності [Електронний ресурс] / О. М. Ляшенко // Інноваційна економіка. — 2010. — Режим доступу: http://www.nbuv.gov.ua/portal/Soc_Gum/inek/2010_5/8.pdf.
10. Мухин А. П. Коммерциализация исследований и разработок [Текст] : учебно-практ. пособие / А. П. Мухин, Н. В. Арзамасцев, В. П. Ващенко. — Москва : АМРИ, 2001. — 192 с.
11. Про державне регулювання діяльності у сфері трансферу технологій [Електронний ресурс] : закон України від 14 вересня 2006 року // Відомості Верховної Ради України. — 2006. — № 45. — Режим доступу: <http://zakon.rada.gov.ua>.
12. Редькина Н. С. Формирование концепции управления процессами в академической библиотеке [Текст] / Н. С. Редькина ; науч. ред. О. Л. Лаврик ; Государственная публичная научно-техническая библиотека Сибирского отделения Российской академии наук. — Новосибирск, 2012. — 284 с.
13. Рогова Е. М. Организационно-экономическое обеспечение технологического трансфера: теория и методология [Текст] : дис. ... д-ра экон. наук : 08.00.05 / Рогова Е. М. — Санкт-Петербург, 2005. — 384 с.
14. Соловйов В. П. Інноваційний розвиток регіонів: питання теорії та практики [Текст] : монографія / Соловйов В. П., Кореняко Г. І., Головатюк В. М. — Київ : Фенікс, 2008. — 224 с.
15. Теория инновационной экономики [Текст] / О. С. Белокрылова [и др.] ; под ред. О. С. Белокрыловой. — Ростов-на-Дону : Феникс, 2009. — 384 с.
16. Теребова С. В. Трансфер технологий как элемент инновационного развития экономики [Текст] / С. В. Теребова // Проблемы развития территории. — 2010. — Вып. 4 (50). — С. 31—36.
17. Евдокимов Д. В. Трансфер технологий: теория и современная практика [Текст] / Д. В. Евдокимов, М. А. Пивоварова. — Москва : МАКС Пресс, 2004. — 145 с.
18. Янченко З. Б. Совершенствование терминологических подходов к определению «трансфера технологий» [Текст] / З. Б. Янченко // Инновационная экономика. — 2013. — № 4. — С. 187—191.
19. Федулова Л. И. Экономическая природа технологии и технологическое развитие [Текст] / Л. И. Федулова // Экономическая теория. — 2006. — № 6. — С. 3—16.
20. Фонштейн Н. М. Технология коммерциализации. Мировой опыт российских регионов [Текст] / Н. М. Фонштейн. — Москва : Московские новости, 1995. — 228 с.
21. Чухрай Н. И. Трансфер и коммерциализация технологических инноваций [Текст] / Н. И. Чухрай // Экономика промышленности. — 2002. — № 3 (17). — С. 160—166.
22. Шапошников А. А. Трансфер технологий: определения и формы [Текст] / А. А. Шапошников // Инновации. — 2005. — № 1 (78). — С. 57—60.
23. Шкварчук Л. А. Теоретические подходы к определению характера трансфера технологий и его информационно-аналитическое обеспечение [Текст] / Л. А. Шкварчук, А. И. Гарасим // Устойчивое экономическое развитие. — 2013. — № 4. — С. 29—32.
24. Autio E. Measurement and Evaluation of Technology Transfer: Review of Technology Transfer Mechanisms and Indicators [Text] / E. Autio, T. Laamanen // International Journal of Technology Transfer Management. — 1995. — № 10 (6). — P. 643—664.

25. Baronson J. Technology Transfer through the International Firms [Text] / J. Baronson // American Economic Review Papers and Proceedings. — 1970. — P. 435—440.
 26. Chun C. L. Modeling the Technology Transfer to Taiwan from China [Text] / C. L. Chun // International Research Journal of Finance and Economics. — 2007. — № 7. — P. 48—66.
 27. Chung W. Identifying Technology Transfer in Foreign Direct Investment: Influence of Industry Conditions and Investing Firm Motives [Electronic resource] / W. Chung // Journal of International Business Studies. — 2001. — № 32 (2). — P. 211—229. — Available at: <http://dx.doi.org/10.1057/palgrave.jibs.8490949>.
 28. Das S. Externalities and Technology Transfer through Multinational Corporations [Electronic resource] / S. Das // Journal of International Economics. - 1987. - № 22. - P. 171-182. - Available at: [http://dx.doi.org/10.1016/0022-1996\(87\)90028-6](http://dx.doi.org/10.1016/0022-1996(87)90028-6).
 29. Derakhshani S. Factors affecting success in international transfers of technology a synthesis and a test of a new contingency model [Text] / S. Derakhshani // Developing Economies. — 1983. — № 21. — P. 27—45.
 30. Farhang M. Managing technology transfer to China: conceptual framework and operational guidelines [Electronic resource] / M. Farhang // International Marketing Review. — 1997. — № 14 (2). — P. 92—106. — Available at: <http://dx.doi.org/10.1108/02651339710170195>.
 31. Gibson D. Key Variables in Technology Transfer: A field — Study Based on Empirical Analysis [Electronic resource] / D. Gibson, W. Smilor // Journal of Engineering and Technology Management. — 1991. — № 8. — P. 287—312. — Available at: [http://dx.doi.org/10.1016/0923-4748\(91\)90015-J](http://dx.doi.org/10.1016/0923-4748(91)90015-J).
 32. Hall G. The Technology Factors in International Trade [Text] / G. Hall, R. Johnson. — New York : Colombia University Press, 1970.
 33. Hayden F. G. Corporate Networks: A US Case Study [Text] / F. G. Hayden. — Rotterdam : Erasmus University, Conference on the Dynamics of the Firm, 1992.
 34. Hoffman K. Managing International Technology Transfer: A Strategic Approach for Developing [Text] / K. Hoffman, N. Girvan. — IDRC, 1990.
 35. Jeannot J. Some patterns in the transfer of technology within multinational corporations [Electronic resource] / J. Jeannot, B. Liander // Journal of International Business Studies. — 1978. — № 3. — P. 108—118. — Available at: <http://dx.doi.org/10.1057/palgrave.jibs.8490672>.
 36. Kanyak E. Transfer of Technology from Developed Countries: Some Insights from Turkey [Text] / E. Kanyak. — CT : Quarum Books, 1985.
 37. Levin M. Technology Transfer as a Learning and Development Process: An Analysis of Norwegian Programs on Technology Transfer [Electronic resource] / M. Levin // Technovation. — 1993. — № 13 (8). — P. 497—518. — Available at: [http://dx.doi.org/10.1016/0166-4972\(93\)90065-4](http://dx.doi.org/10.1016/0166-4972(93)90065-4).
 38. Maskus K. Encouraging International Technology Transfer [Text] / K. Maskus // UNCTAD-ICTSD Issue Paper. — 2004. - № 7. - 56 p.
 39. Technology Business Incubators: How Effective Is Technology Transfer Mechanisms [Electronic resource] / R. Phillips // Technology in Society. — 2002. — № 24 (3). — P. 299—316. — Available at: [http://dx.doi.org/10.1016/S0160-791X\(02\)00010-6](http://dx.doi.org/10.1016/S0160-791X(02)00010-6).
 40. Roessner J. D. What Companies Want From the Federal Labs [Text] / J. D. Roessner // Issues in Science and Technology. - 1993. - № 10 (1). - P. 37- 42.
 41. Rogers E. Diffusion of Innovations [Text] / E. Rogers. — New York : The Free Press of Glencoe, 1962.
 42. Sherman G. Technology Transfer Innovation and International Competitiveness [Text] / G. Sherman. — New York : John Wiley & Sons, 1981.
 43. William F. Technology Transfer: A Communication Perspective [Text] / F. William, D. Gibson. — Sage : Beverly Hills, CA, 1990.
 44. Zhao L. Towards Meta Research on Technology Transfer [Electronic resource] / L. Zhao, A. Reisman // IEEE Transaction on Engineering Management. — 1992. — № 39 (1). — P. 13—21. — Available at: <http://dx.doi.org/10.1109/17.119659>.
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Алексєнко І. І.

References

1. Akperov, I. G., & Petrashov, A. V. (2008). *Transfer innovatsionnykh tekhnologiy: gotovnost', bar'ery i vozmozhnosti [Transfer of innovative technologies: readiness, barriers and opportunities]*. Retrieved from <http://elibrary.ru/item.asp?id=12975034> [in Russian].
2. Denysyuk, V. (2005). Mizhnarodnyi transfer tekhnolohii: suchasnyi zmist, analiz zakordonnoi ta natsionalnoi statystyky [International technology transfer: modern content, analysis of foreign and national statistics]. *Ekonomist — The Economist*, 2, 42-47 [in Ukrainian].
3. Dulepin, Yu. A., & Kazakova, N. V. (2010). Strategii transfera innovatsii v innovatsionnykh sistemakh. *Innovatsionnyi vestnik Region*, 4, 54—59. Voronezh [in Russian].
4. Ignatiev, A. V., & Maksimov, M. M. (2000). *Issledovanie sistem upravleniya [Research of management systems]*. Moscow [in Russian].
5. Kateshova, M. L., Kvashnin, A. G., & Buznik, V. M. (2003). *Instrumenty dlya peredachi tekhnologiy [Tools for technology transfer]*. Novosibirsk [in Russian].
6. Kuzyk, B. N., & Yakovets, Yu. V. (2005). *Rossiya 2050: strategiya innovatsionnogo proryva [Russia 2050: Strategy of Innovative Breakthrough]*. Moscow: Ekonomika [in Russian].
7. Luksha, O., Sushkov, P., & Yanovskii, A. (2006). *Tsentr komertsializatsii tekhnologii – organizatsionnoe razvitie: kak sozdat, upravliat, organizovat monitoring i otsenku deiatelnosti*. Retrieved from <http://ita.uz/downloads/Gide1.pdf> [in Russian].
8. Lushnikov, A. V. (2012). *Rol' centrov transfera tekhnologiy v razvitii malogo i srednego innovatsionnogo predprinimatel'stva [The role of technology transfer centers in the development of small and medium innovative businesses]*. Retrieved from <http://riep.ru/upload/iblock/213/2134a649c0c776665d4b2a5f1787a06d.pdf> [in Russian].
9. Lyashenko, O. M. (2010). *Komertsializatsiia ta transfer tekhnolohii: katehoriia ta metody innovatsiinoi diialnosti [Commercialization and Technology Transfer: categories and methods of innovation activity]*. Retrieved from http://www.nbu.gov.ua/portal/Soc_Gum/inek/2010_5/8.pdf [in Ukrainian].
10. Mukhin, A. P., Arzamastsev, N. V., & Vashchenko, V. P. (2001). *Kommercializatsiia issledovaniy i razrabotok [Commercialization of research and development]* Moscow: AMRiR [in Russian].

11. Verkhovna Rada Ukrainy (2006). Pro derzhavne rehuliuivannia diialnosti u sferi transferu tekhnolohii: Zakon Ukrainy vid 14 veresnia 2006 roku [On state regulation of activities in the field of technology transfer: Law of Ukraine on September 14, 2006]. *Vidomosti Verkhovnoi Rady Ukrainy — Information from the Verkhovna Rada of Ukraine*, 45 [in Ukrainian].
12. Redkina, N. S., & Lavrik, O. L. (Ed.). (2012). *Formirovaniie koncepcii upravleniya processami v akademicheskoi biblioteke [Formation of the concept of process management in academic library]*. Novosibirsk [in Russian].
13. Rogova, E. M. (2005). Organizacionno-ehkonomicheskoe obespechenie tekhnologicheskogo transfera: teoriya i metodologiya. [Organizational-economic maintenance of technological transfer: theory and methodology: Theory and Methodology. *Doctor's thesis*. Saint-Petersburg [in Russian].
14. Soloviev, V. P., Koreniako, G. I., & Golovatyuk, V. M. (2008). *Innovatsiinyi rozvytok rehioniv: pytannia teorii ta praktyky [Innovative development of regions: theory and practice]*. Kyiv: Feniks [in Ukrainian].
15. Belokrylovy, O. S. (Ed.). (2009). *Teoriya innovacionnoj ekonomiki [The theory of the innovation economy]*. Rostov-on-Don: Feniks [in Russian].
16. Terebova, S. V. (2010). Transfer tekhnologij kak element innovacionnogo razvitiya ekonomiki [Technology Transfer as an element of innovation development of economy]. *Problemy razvitiya territorii — Problems of development of the territory*, 4, 31—36 [in Russian].
17. Yevdokimov, D. V., & Pivovarova, M. A. (2004). *Transfer tekhnologij: teoriya i sovremennaya praktika [Technology Transfer: Theory and modern practice]*. Moscow: MAKSS Press [in Russian].
18. Yanchenko, Z. B. (2013). Sovershenstvovanie terminologicheskikh podhodov k opredeleniyu «transfera tekhnologij» [Improvement of terminological approaches to the definition of «technology transfer»]. *Innovacionnaya ekonomika — Innovative economy*, 4, 187—191 [in Russian].
19. Fedulova, L. I. (2006). Ekonomicheskaya priroda tekhnologii i tekhnologicheskoe razvitie [Economic nature of technology and technological development]. *Ekonomicheskaya teoriya — Economics*, 6, 3—16 [in Russian].
20. Fonshteyn, N. M. (1995). *Tekhnologiya kommercializacii. Mirovoj opyt rossijskikh regionov [Technology commercialization. The World experience to Russian regions]*. Moscow: Moskovskie novosti [in Russian].
21. Chukhrai, N. I. (2002). Transfer i kommercializaciya tekhnologicheskikh innovacij [Transfer and commercialization of technological innovation]. *Ekonomika promyshlennosti — Industrial economics*, 3 (17), 160—166 [in Russian].
22. Shaposhnikov, A. A. (2005). Transfer tekhnologij: opredeleniya i formy [Technology transfer: definitions and forms]. *Innovacii — Innovations*, 1 (78), 57—60 [in Russian].
23. Shkvarchuk, L. O., & Garasim, A. I. (2013). Teoreticheskie podhody k opredeleniyu haraktera transfera tekhnologij i ego informacionno-analiticheskoe obespechenie [Theoretical approaches to defining the nature of technology transfer and its informational and analytical support]. *Ustojchivoe ehkonomicheskoe razvitie — Sustainable economic development*, 4, 29—32 [in Russian].
24. Autio, E., & Laamanen, T. (1995). Measurement and Evaluation of Technology Transfer: Review of Technology Transfer Mechanisms and Indicators. *International Journal of Technology Transfer Management*, 10 (6), 643—664.
25. Baronson, J. (1970). Technology Transfer through the International Firms. *American Economic Review Papers and Proceedings*, 435—440.
26. Chun, C. L. (2007). Modeling the Technology Transfer to Taiwan from China. *International Research Journal of Finance and Economics*, 7, 48—66.
27. Chung, W. (2001). Identifying Technology Transfer in Foreign Direct Investment: Influence of Industry Conditions and Investing Firm Motives. *Journal of International Business Studies*, 32 (2), 211—229. Retrieved from <http://dx.doi.org/10.1057/palgrave.jibs.8490949>.
28. Das, S. (1987). Externalities and Technology Transfer through Multinational Corporations. *Journal of International Economics*, 22, 171—182. Retrieved from [http://dx.doi.org/10.1016/0022-1996\(87\)90028-6](http://dx.doi.org/10.1016/0022-1996(87)90028-6).
29. Derakhshani, S. (1983). Factors affecting success in international transfers of technology a synthesis and a test of a new contingency model. *Developing Economics*, 21, 27—45.
30. Farhang, M. (1997). Managing technology transfer to China: conceptual framework and operational guidelines. *International Marketing Review*, 14 (2), 92—106. Retrieved from <http://dx.doi.org/10.1108/02651339710170195>.
31. Gibson, D., & Smilor, W. (1991). Key Variables in Technology Transfer: A field – Study Based on Empirical Analysis. *Journal of Engineering and Technology Management*, 8, 287-2312. Retrieved from [http://dx.doi.org/10.1016/0923-4748\(91\)90015-J](http://dx.doi.org/10.1016/0923-4748(91)90015-J).
32. Hall, G., & Johnson, R. (1970). *The Technology Factors in International Trade*. New York: Colombia University Press.
33. Hayden, F. G. (1992). *Corporate Network: A US Case Study*. Rotterdam: Erasmus University, Conference on the Dynamics of the Firm.
34. Hoffman, K., & Girvan, N. (1990). *Managing International Technology Transfer: A Strategic Approach for Developing*. IDRC.
35. Jeannot, J., & Liander, B. (1978). Some patterns in the transfer of technology within multinational corporations. *Journal of International Business Studies*, 3, 108—118. Retrieved from <http://dx.doi.org/10.1057/palgrave.jibs.8490672>.
36. Kanyak, E. (1985). *Transfer of Technology from Developed Countries: Some Insights from Turkey*. CT: Quorum Books.
37. Levin, M. (1993). Technology Transfer as a Learning and Development Process: An Analysis of Norwegian Programs on Technology Transfer. *Technovation*, 13 (8), 497—2518. Retrieved from [http://dx.doi.org/10.1016/0166-4972\(93\)90065-4](http://dx.doi.org/10.1016/0166-4972(93)90065-4).
38. Maskus, K. (2004). Encouraging International Technology Transfer. *UNCTAD-ICTSD Issue Paper*, 7.
39. Phillips, R. (2002). Technology Business Incubators: How Effective Is Technology Transfer Mechanisms. *Technology in Society*, 24 (3), 299—2316. Retrieved from [http://dx.doi.org/10.1016/S0160-791X\(02\)00010-6](http://dx.doi.org/10.1016/S0160-791X(02)00010-6).
40. Roessner, J. D. (1993). What Companies Want From the Federal Labs. *Issues in Science and Technology*, 10 (1), 37-242.
41. Rogers, E. (1962). *Diffusion of Innovations*. New York: The Free Press of Glencoe.
42. Sherman, G. (1981). *Technology Transfer Innovation and International Competitiveness*. New York: John Wiley & Sons.
43. William, F., & Gibson, D. (1990). *Technology Transfer: A Communication Perspective*. Sage: Beverly Hills, CA.
44. Zhao, L., & Reisman, A. (1992). Towards Meta Research on Technology Transfer. *IEEE Transaction on Engineering Management*, 39 (1), 13—221. Retrieved from <http://dx.doi.org/10.1109/17.119659>.

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Aleksieienko I. I.