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INTERNATIONAL TRANSFER OF TECHNOLOGIES AS A FACTOR OF TECHNICAL UPGRADE AND MODERNIZATION OF AGRICULTURAL ENTERPRISES

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Черевко Г. Міжнародний трансфер технологій як фактор технічного оновлення і модернізації сільськогосподарських підприємств

В умовах розвитку процесів глобалізації та інтернаціоналізації, зокрема у сфері економіки, особливої ваги набуває досягнутий рівень інноваційності підприємств, оскільки від нього залежить можливість виходу останніх на зовнішній ринок та ефективність функціонування на ньому. З огляду на це особливе значення має трансфер технічних і технологічних знань, а також методів і способів їх використання. Фактичний рівень інноваційності українських підприємств, особливо сільськогосподарських, надзвичайно низький. В Україні практично відсутня національна система трансферу технологій. У статті висвітлено основні результати дослідження проблеми технічного оновлення і модернізації сільськогосподарських підприємств на основі міжнародного трансферу технологій як методів підвищення рівня їх інноваційності. Викладенотеоретичну суть технологій, їх трансферу, міжнародної форми як

методу модернізації виробництва, показано типи, форми і канали трансферу технологій, в тому числі й міжнародної форми, роль транснаціональних корпорацій в його здійсненні, результати аналізу ситуації у сфері трансферу технологій в Україні і досвіду вирішення проблеми організації модернізації і технічного оновлення сільськогосподарських підприємств Польщі. Відображено основні пропозиції налагодження діяльності у сфері міжнародного трансферу технологій як шляхів до модернізації і підвищення рівня інноваційності сільськогосподарських підприємств в Україні.
Ключові слова: *трансфер, технологія, інновації, технічне оновлення, модернізація, сільськогосподарські підприємства.*

Cherevko H. International transfer of technologies as a factor of technical upgrade and modernization of agricultural enterprises
In the conditions of the development of processes of globalization and internationalization, in particular in the field of economics, the achieved level of innovation of enterprises becomes of paramount importance, since it depends on the possibility of these enterprises to enter and operate effectively on the external market. The transfer of technical knowledge is of particular importance in this respect and the methods and techniques used in this area. The actual level of innovation of Ukrainian enterprises, especially agricultural ones, is extremely low. In Ukraine, in fact, there is no national system of technology transfer. Therefore, the purpose of this article is to present the main results of the study of the problem of technical upgrading and modernization of agricultural enterprises on the basis of international technology transfer as a way to increase their level of innovativeness. The article describes the theoretical essence of technologies, their transfer, its international form as a way of modernization of production, types, forms and channels of technology transfer, including its international form, the role of transnational corporations in its implementation, the results of the analysis of the situation in the field of technology transfer in Ukraine and of the experience of solving the problem of organizing modernization and technical upgrading of agricultural enterprises in Poland.The conclusions provide the main suggestions for establishing activities in the field of international technology transfer as a way to modernize and increase the level of innovativeness of agricultural enterprises in Ukraine.
Key words*: transfer, technology, innovations, technical upgrading, modernization, agricultural enterprises.*

Черевко Г. Международный трансфер технологий как фактор технического обновления и модернизации сельскохозяйственных предприятий
В условиях развития процессов глобализации и интернационализации, в частности в сфере экономики, особое значение имеет достигнутый уровень инновационности предприятий, поскольку от него зависит возможность выхода этих предприятий на внешний рынок и эффективное функционирование на нем. В святи с этим важное место отводится трансферу технических и технологических знаний, а также методов и способов их использования. Фактический уровень инновационности украинских предприятий, особенно сельскохозяйственных, чрезвычайно низок. В Украине практически отсутствует национальная система трансфера технологий. В статье представлены основные результаты исследования проблемы технического обновления и модернизации сельскохозяйственных предприятий на основе международного трансфера технологий как пути к повышению уровня их инновационности. Изложена теоретическая сущность технологий, их трансфера, международной формы как пути модернизации производства, показаны типы, формы и каналы трансфера технологий, в том числе и международной его формы, роль транснациональных корпораций в его осуществлении, результаты анализа ситуации в сфере трансфера технологий в Украине и опыта решения проблемы организации модернизации и технического обновления сельскохозяйственных предприятий в Польше. Изложены основные предложения по налаживанию деятельности в сфере международного трансфера технологий как пути к модернизации и повышению уровня инновационности сельскохозяйственных предприятий в Украине.
Ключевые слова*: трансфер, технология, инновации, техническое обновление, модернизация, сельскохозяйственные предприятия.*
зяйственные предприятия.

Formulation of the problem. In recent years it has been observed that enterprises are became increasingly opening up to cooperation with external entities in the area of innovative activity. The transfer of technical knowledge is of particular importance in this respect as well as the methods and techniques used in this area. In Ukraine, due to the weak interaction of science and business, technology transfer has not found its proper development. Due to the insufficient dissemination of advanced technologies, the country loses its real and unique oppor-

tunity to use the strategy of building innovative potential in the priority areas of the scientific and technological progress, what threatens to consolidate the extensive model of economic development. This is especially true for agricultural enterprises, where the level of innovation in the industry has remained below 3% for a longer time, and the share of direct foreign investment in the development and modernization of these enterprises is less than 10%. The science-intensive production of Ukraine today does not exceed 0,3%, which is tens times less than the world level (Arkhijerejev and Tarasenko, 2007). It is clear that without establishing the necessary pace of technical upgrading of agricultural enterprises on the basis of technology transfer as a real way of solving the problem, there is no reason to speak about the possibility of proper modernization of these enterprises and at least to the level of technical and technological equipment of similar enterprises in developed countries and bringing the quality of Ukrainian agricultural and, therefore, food products to the required standards. Thus, in Ukraine there is a problem of the practical absence of technology transfer, especially international, as a determining factor for technical upgrading and modernization of agricultural enterprises, which in fact impedes the process of the level of innovation raising and reduces the possibility of their effective positioning in foreign markets. Therefore, the purpose of this article is to summarize the results of research on the essence of technology and international technology transfer, as well as the results of studying the experience of organizing and providing a practical solution to the problem of agricultural modernization in Poland and justifying the need to create conditions for its application in Ukraine. Therefore, the purpose of this article is to summarize the results of the study of the essence of technology and international technological transfer as well as the results of studying the experience of organizing and providing a practical solution to the problem of agriculture modernization in Po-land and the possibilities of its application in Ukraine.

Analysis of recent research and publications. The problem of raising the level of innovativeness of the agrarian economy and its modernization is the subject of attention of many prominent economists, among them: V. Voytiuk (2007), V. Yevtushenko (2012), T. Larina (2016), E. Mazur (2012), V. Rossokha, O. Spikuliak, O. Shubravska (2013) and a number of others. Their works outline the main results of the study of the essence of the phenomenon of modernization of agricultural enterprises and its characteristics, its main goals and indicators (Shubrawska, 2013), the task of modernization in the context of strategic goals (Larina, 2016), problems of the market of agricultural machinery as the main modern source of supply of agricultural enterprises of Ukraine by new technology and technology (Yevtushenko, 2012), existing technical service problems in the industry (Voytiuk, 2007) and the contemporary quality of its material and technical base (Mazur, 2012). In the scientific literature it is also to find the results of the study of the technology transfer problem as a precondition for Ukraine's integration into the world economy and existing trends in technological transfer (Arkhiyereyev and Tarasenko…), as an international science and technology exchange, the introduction into the production of foreign intellectual achievements (State ..., 2017), as the transfer of systematic knowledge about production, application process or service provision (Fedulova 2006), as a special type of communication, which involves the application of knowledge, their intended use and requires harmonization of acting of two or more individuals or functional units, separated by cultural, structural and/or organizational barriers (Chukhray 2003), as a process of commercialization of the intellectual product (Lukomskyy and Fedchenko, 1999). However, the results of the analysis of the state of innovation of agricultural enterprises and the possibilities of their technological upgrading and modernization indicate that it leaves much to be desired, which creates a broad field for further research in this field. In this plan can be very useful the results of scientific research on technological transfer and modernization of enterprises of such Polish scientists as P. Bozhek (1999), R. Gurbiel (2001), A. Jasin'ski (2006), A. Kochel (2012), K. Matusiak (2011), T. Musialik (2014), M. Pialucha (2001), A. Pomykal'ski (2001), J. Rymarchyk (2010), etc., who made a significant contribution to the development of scientific thought in the field of transfer technologies, including its international form.

Setting of objectives. The purpose of this article is to present the main results of the study of the possibility of resolving of the problem of technical renovation and modernization of agri-

cultural enterprises on the basis of international technology transfer in Ukraine taking into account some moments of polish experience in this activity.

Methodology of scientific research and materials. In the course of the research the complex of general scientific methods of its implementation was used, among which: the method of analysis and synthesis – in the process of studying the results of scientific researches of scientists involved in the declared problem, as well as during the processing of a wide range of statistical information; induction and deduction – in the process of existing views on the essence of technology, their transfer, its types, forms and methods of implementation considering; monographic – in the study of certain aspects of the problem on materials from selected countries or specific literary sources; scientific comparison and generalization – whilestudying the existing experience of the problem solving and the possibilities for its further application and dissemination. The materials of this study were information resources of statistical services, relevant databases and scientific publications on issues related to the declared subject.

Presentation of research results

The theoretical essence of technology and their international transfer as a way of production modernization. In the opinion of scientists, in every sphere of activity there is always a certain process, in which it is the basic, and implementation of which brings all necessary successes of this sphere of activity (Niziński, 2007, p. 145). In the field of modernization of agricultural enterprises, such a responsible process of a factor nature is a technical upgrade of production processes based on technology transfer, especially – an international transfer.

Technology (from the Greek τεχνολογια, derived from the Greek τεχνολογος; Greek τεχνη – skill, technique, λογος – (here) transmitted) – science («body of knowledge») about methods (the set and sequence of operations, their modes) securing the needs of mankind with the help (through the application) of technical means (tools of labor) (Technology, 2017). The basis of technology is: innovations – new products (processes) «of intellectual activity and their organizational implementation, innovations – new products (processes) as a result of the reproduction and commercialization of innovations (International …, 2017).

The concept of technology can be seen in two approaches, namely in broad terms and in narrow terms. In the first approach technology is understood as the general knowledge of a given branch of technology. In narrow terms technology means a detailed technical knowledge that can be applied in a specific process of certain goods producing (Musialik, 2014). This is generally understood as the transfer of specific technical knowledge to business practice. In the past, this term was understood as trading in patents, utility models, licenses and know-how, but nowadays it is moving away from such narrow treatment of the concept of technology transfer to a broader definition: «technology transfer includes all forms of diffusion of innovation and technical education, market process (...) which mainly takes place between the science and research sector and the sphere of production» (Bagiński, Buczacki, Sobczak and Szerenos, 2008).

According to Article 1 of the Law of Ukraine «About State Regulation of Activities in the Sphere of Technology Transfer,» technology transfer is the transfer of technology, which is executed by concluding an agreement between the natural and/or legal persons, which are established, changed or terminated property rights and obligations regarding technology and/or its constituents. (Activities ...: general ..., 2011). As the first acts of technology transfer are considered the universities programs for the training of agricultural and industrial workers conducted by American universities since the mid of twentieth century (Legal …, 2011).

According to W. Nasierowski and M. Nowakowski, international technology transfer means the acquisition, development and application of technological knowledge in a formal or informal manner by a country in which a technology has not originated. In other words, this is a multidimensional process, that results in implementation and dissemination of technology in the country, in which technology was previously not used (Nasierovski and Novakovski, 1994). It is assumed, that internationally it is the process of transferring specific technical knowledge (projects, inventions) from the donor country and using it after making necessary adaptations in the recipient country (Pomykalski, 2001, p. 10–13). That is, regardless of the scale of implementation, we are talking about the process of skills, knowledge, technologies, production

methods, production samples and technology components transferring between governments and other institutions in order to ensure scientific and technological progress (Technology …, 2016). Technically speaking, technology transfer is nothing more than the flow of information and techniques necessary for innovation.

Technology transfer between countries takes place in three stages. The first stage involves the transfer of technology by an investor to a new country. Stage two refers to the implementation of a new manufacturing method, and so – the combination of new production methods with existing ones. In the third stage, the new technology is transferred to other companies of the receiving country (Rymarchyk, 2010, p. 137). The transfer of new technologies to an enterprise should be treated as a continuous process, as only constant upgrading of products and technologies gives the opportunity to maintain a competitive advantage in the marketplace (Piałucha and Siuta, 2001, p. 122–123).

Technology transfer objectively contributes to solving the problem of raising the level of innovation of the economy, which, in turn, can greatly increase the level of reality of the modernization of its enterprises, including agricultural ones. In the agrarian sector of the economy modernization is carried out on the basis of its techno-economic and resource renovation, achievement of a high level of competitiveness and stable rates of development on the basis of the introduction of innovations, adhering to the principles of ecological acceptability and social orientation of the results of agricultural activity, and taking into account the specifics of agricultural production (and namely, on the fact that it provides the vital needs of the population), practically all sectors of this industry that meet natural conditions of Ukraine, have prospects of modernization (Shubrawska, 2013, p. 65). Moreover, since 2000, the process of positive dynamics has begun in agricultural enterprises, whose activities are profitable mainly through plant production (since 2008, livestock production has also become profitable) – such companies objectively have better financial possibilities for modernizing their production processes (Shubrawska, 2013, p. 67).

Types, forms and channels of technology transfer

Depending on a number of factors, there are commercial and non-commercial technology transfer. The commercial transfer dominates in the sphere of production and international economic activity. Non-commercial transfer – most often used in the field of fundamental and applied research, accompanied by minor costs, may be maintained by the state or conducted on the basis of personal or interagency contacts (Legal …, 2011).

Some of the forms of technology transfer are differentiated both in terms of organization and generated economic effects.

The transfer of technology in the active form is tantamount to a narrow understanding of the commercialization of technology. Transfer of technology in passive form includes: transfer of information; acquisition of knowledge and its protection; application development (Glodek and Matusiak, 2011)

Depending on the method of technology transfer, there is a direct transfer (the process of transferring technology from the owner directly to the end-product manufacturer) and an indirect transfer (the process of technology transfer, one of the key participants being an outsourcing organization, an intermediary between the source of the technology and the enterprise) (Legal …, 2011

By analyzing the transfer of technology, due to its direction and also depending on the entities involved in the transfer process, vertical and horizontal transfer should be distinguished. In the vertical transfer, the entire «resource» of comprehensive information is transferred from basic research through applied research, production of prototype products, implementation to production, and industrial development (Jasinski, 2006, p. 65–68). Information on the production of a given good is provided in a comprehensive manner and covers all stages of the manufacturing process, i. e. product design, application testing, prototype production, mass production and mass production (Matusiak, 2011, p. 301). Vertical transfer occurs when the transaction is between a research unit and an enterprise. It usually takes the form of licensing for inventions or utility models, but cooperation between research and business units can also involve contracting companies or contract research.

On horizontal transfer of technology, we say when there is a transfer between companies. It can mean the sale of patents, licenses or know-how, as well as the industrial co-operation, joint ventures and technical services. Horizontal

transfer involves the technology used to manufacture a particular product in one country for the manufacture of the same product in another country. This type of technology transfer is most commonly used in international relations (Jasinski, 2006, p. 65–68). The technology of production of a particular good from one country to another is transmitting (Matusiak 2011, p. 301).

The UNCTAD (United Nations Conference on Trade and Development) distinguishes the following forms of technology diffusion: contractual joint venture, franchising, subcontracting, information exchange and technical and scientific staff through technical cooperation programs support of external experts and consultations, equipment and machinery trade, production process licenses, know-how licensing and foreign direct investment (UNSTAD, p. 94).

International technology transfer can be carried out either in the «pure» form – in the form of knowledge, experience, scientific and technical information, or in «substantiated» form – in materials, machines, equipment (International ..., 2017) Moreover, it is going about knowledge transferring across borders.

The international transfer of technical knowledge is a relatively new phenomenon, whose relevance is currently very high due to the specific characteristics of technical knowledge as a manufacturing factor (Bożek, Misala and Puławski, 1999, p. 140–141). In this regard, transnational corporations (KTNs) play a key role in the area. of generating new technologies and conducting innovative activities. These companies are globalizing their technological activities by placing research and development functions outside the home country of the corporation (Kochel, 2012, p. 502). Technology transfer within transnational corporations in relations between countries is the most important channel of its transfer (Oleksiuk and Vaschenko, 2010, p. 42–44).

The sale of licenses and patents is another form of technology transfer. It enables the start-up and development of the production of certain products in the country of purchase. This usually involves the technical advice of the licensing country (Mińska-Struzik, 2012, p. 129).

A specific form of technology exchange is leasing. It should be treated as a method of financing the use of a particular object, clearly differing economically and legally from such methods of acquiring a good as its acquisition by way of repayment or by lease (Sur, 2012, p. 76–79).

Technology can also be transferred in the form of innovative products, most often capital goods (machines and equipment, technological lines) and their components. However, the most important vehicle for technology is people who, due to the accumulated knowledge and experience, contribute to the development of the intellectual capital of the economy (Mińska-Struzik, 2012, p. 131). By all forms of technology transfer, the most important issue for the country its obtaining is not only information to obtain and right to use the technology, but also learning «how to do it», i.e. acquiring specific skills and acquiring know-how production experience (Kochel, 2012, p. 503).

The situation in the sphere of technology transfer in Ukraine

Today all work and technology transfer activities in Ukraine are carried out by the Department of Innovation and Technology Transfer, an independent structural unit of the Ministry of Education and Science of Ukraine, whose main task is to create a favorable environment for subjects of innovation and technology transfer (Department …, 2017).

The determining factor in the formation of the resource potential of agricultural enterprises in Ukraine remains the state and structure of their machine-tractor park as the main element of the material and technical base of the industry. But for the period from 1992 to 2015, the number of tractors decreased by 68%, grain harvesters and forage harvesters – by 71% and 78%, respectively, the number of cultivators, mowers, plows, seeders – by 70%. It is clear that under such conditions the load on these machines have grown dramatically (Larina, 2016). The state of the material and technical base of agriculture in Ukraine can be characterized as unsatisfactory in both quantitative and qualitative terms, since the technology is physically and morally obsolete, besides, at the time of its creation, it yielded a class, quality, the efficiency of work with the best foreign samples (Bezhnar, 2007). The age of 62% of combines in Ukraine has already exceeded 20 years. 28% of tractors have reached the age of 15–20 years, and 51% – have served more than 20 years (Mazur, 2012, p. 28]. The existing system of tech-

nical service in the country is reduced to a large extent (with the exception of branded service) for the sale of spare parts ... The quality of spare parts in the domestic market has become a direction for super-profitable business and disaster for agricultural producers (Voytiuk, 2007, p. 108). Today, the profitability of spare parts trade is 10 times higher than the profitability in the sphere of technology sales (20–40% versus 2–3%) (Yevtushenko, 2012, p. 87). Accordingly, such a state of the material and technical base of the industry as a whole inhibits the process of transfer of modern technologies and the modernization of production in it.

In general, Ukraine has a negative tendency in acquiring new technologies and even worse in their transfer. In the ranking of the use of technologies and innovations, Ukraine remains on 83 positions for a long time, due to the low degree of innovation activity of enterprises, lack of a strategy of economic development of the country and the corresponding patent and licensing policy of the state and the legal basis. (Arkhiyereyev and Tarasenko, 2007). According to the State Statistics Committee of Ukraine, the amount of technology transferred by domestic enterprises since 2006 is steadily decreasing; the number of acquired technologies in two years decreased by 458 units. The bulk of the technology was purchased with equipment, a significant proportion in the form of research and development results, and contracts for the acquisition of patent rights, licenses for the use of inventions, industrial designs, utility models and know-how acquisitions. The facts of acquisition of technologies together with purposeful recruitment of qualified specialists are also recorded. Almost 40% of the total volume of new technologies needed for the modernization of the domestic economy is purchased outside Ukraine, of which 29% are patents and licenses, 10,6% are research and development, 52% are new technologies, know-how, 42,8% – equipment. In some years, these indicators were even significantly higher. Thus, domestic enterprises do not support their own science, but, in fact, finance foreign innovators. Almost a fifth of the scientific potential of Ukraine works for foreign orders (Legal …, 2011).

In Ukraine, a permanent reorganization of state management bodies of scientific activity has become extremely unfavorable for conducting consistent scientific-technical and innovation policy in Ukraine. In each highly developed country there is a state or political body that regulates the technology market in the interests of the state. In the United States it is the National Agency for Transfer of Technology, which controls and improves legislation in this sphere. For example, from 1975 to 2000 in the United States, more than 30 laws were adopted on the transfer of technology and the intellectual property market (Arkhiyereyev and Tarasenko, 2007). After the liquidation of the State Committee of Ukraine on Science and Intellectual Property and the transfer of its functions to the MES, the actual impact of the latter on the scientific and technological sphere has significantly decreased. The actions of the Ministry of Education and Science, the Ministry of Industrial Policy and the National Academy of Sciences of Ukraine in this area are not coordinated. This is due to the absence of a national technology transfer system in Ukraine. The existence of such a system in developed countries has proved its effectiveness. Effective national systems of technology transfer have already been created, which have formed the international technology market. The most powerful of these is the US system, whose annual revenue exceeds $ 100 billion, while the US auto industry revenue reaches only 60–80 billion dollars. Therefore, international technology transfer has long been the most profitable export item of the United States, Japan, Israel and the United Kingdom (Arkhiyereyev and Tarasenko, 2007).

The greatest attention in the field of innovation and technology transfer in the world today is attracted by neurocomputers, information and biotechnology (Legal …, 2011). In terms of biotechnology, Ukraine has relatively broad prospects, the implementation of which is facilitated by the availability of conditions for intensive development of agriculture and alternative energy using biomass of agricultural origin. However, implementation of that will be possible under the condition of development in the country of processing industry and appropriate assistance and specific support of the state.

Experience in solving the problem of modernization and technical upgrading of agricultural enterprises organizing in Poland

The level of modern agricultural development in neighboring Poland provides grounds for analyzing the factors that have positively in-

fluenced its development. Among these factors, the financing system for the technical upgrading and modernization of these enterprises with the European Union funds played a major role. Modern Polish agriculture is precisely formed as a result of the action of joining this country into the European Union, in the course of which there were significant transformational changes in its enterprises and the organization of the functioning of these enterprises and small individual producers. The average land area of agricultural land in the country in 2017 is 10,65 hectares. (Average …, 2017).

The largely achieved level of technical equipment of agricultural enterprises and individual producers of agricultural products is the result of the use of sufficiently strong financial support from the relevant EU funds through the implementation of a number of programs. The most important instrument of support provided to agriculture is direct subsidies financed from the first pillar of the Common Agricultural Policy. Polish farmers receive these subsidies since 2004. So far, they have received 122 billion PLN in direct payments. Applications for these subsidies are made by farmers to the ARiMR each spring and the Agency initiates their payment from December. Poland is paying direct payments fastest from all EU countries (The effects ... support, 2017).

The second key mechanism for financing agriculture, food processing and rural development was in the past: the Rural Development Plan for 2004-2006 and the Sectoral Operational Program «Restructuring and Modernization of the Food Sector and Rural Development 2004-2006», and has now played the largest role In the history of the country the Rural Development Program 2007–2013, whose budget is about 70 billion PLN. These funds come from the second pillar of the Common Agricultural Policy. This is the most important source of financing investments that improve, among other things, the competitiveness of farms and processing plants, the creation of jobs in rural areas, the development of environmentally-friendly farming methods and the preservation of culture and rural landscape (The effects ... support, 2017). The Rural Development Program 2007–2013, funded under the second pillar of the Common Agricultural Policy, is the largest aid program for the agro-food sector in Polish history, implemented by the Agency for Restructuring and Modernization of Agriculture. The budget of the Program amounts to over € 17,4 billion. It is made up of EU funds from the European Agricultural Fund for Rural Development (EUR 13.4 billion) and of co-financing from the national budget (about EUR 4 billion) (SAPPARD, 2017). Financial assistance from the RDP 2007–13 was provided to farmers, entrepreneurs and local authorities and forest owners for the construction of a modern, competitive agri-food and forestry sector, the pursuit of agricultural activities in line with environmental protection, the development of culture and the preservation of traditions in the countryside and measures to improve the quality of life of rural residents and their economic activation (SAPPARD, 2017).

A decisive role in the implementation of these Programs was played by a specialized structure created specifically for this purpose – Agency for Restructuring and Modernization of Agriculture (ARMA) – established in 1994, established by the Act of 29 December 1993 on the establishment of the Agency for Restructuring and Modernization of Agriculture (Journal of Laws of 1994 No. 1, item 2) agriculture and rural areas. It currently operates under the Act of 9 May 2008 on the Agency for Restructuring and Modernization of Agriculture (Journal of Laws of 2016, item 1512). ARMA was ap pointed by the Government of the Republic of Poland to act as an accredited paying agency. It deals with the implementation of instruments co-financed from the budget of the European Union and provides assistance from national funds. As a contractor of agricultural policy, the Agency works closely with the Ministry of Agriculture and Rural Development. ARMA is under the supervision of the Ministry of Finance in the field of public funds management.

ARMA manages the system of EU direct payments in Poland Since 2002, one of the main tasks of ARMA is to distribute EU assistance. Its beneficiaries are farmers, rural residents, processors from the agri-food sector, fish processing entrepreneurs, fishermen, shipowners and regional governments (Agency, 2017). Pursuant to the Act of 10 February 2017 on the National Centre for Agricultural Support and the Law – Provisions introducing the Act on the National Centre for Agriculture Support, the Agency is the only paying agency of the EU on the territory of the Republic of Poland since

1 September 2017. ARMA's tasks: investments in agriculture and related services and in agri-food processing, projects that create permanent jobs for the rural population outside of agriculture, rural infrastructure development, improvement of the agrarian structure, investments related to the construction of stock exchanges and wholesale markets, education and agricultural advisory and the dissemination and implementation of farm accounting (Agency …, 2017).

The Agency for Restructuring and Modernization of Agriculture, since its inception, since 1994, has provided its beneficiaries with EU and national funds of PLN 253,3 billion (The effects ... support, 2017)

In agriculture, just as in business, it is difficult to produce more, better and more profitable without making an investment. That is why Polish farmers put on «Modernization of agricultural holdings». It was precisely this activity realized within the RDP 2007-2013 that enjoyed the greatest interest. So much that the pool of money initially reserved for this purpose has been increased several times.

59000 farmers benefited from this form of assistance, which through ARMA received a total of over 8 billion PLN. This allowed them to invest about PLN 14 billion. For this money farmers have bought almost 34 thousand tractors, more than 222 thousand agricultural machinery and equipment, completed over 2,8 thousand construction investments, renovating already existing buildings and farm buildings and putting new ones (The effects ... increasing ..., 2017).

The Agency for Restructuring and Modernization of Agriculture carried out, during the period from 29 June to 28 July 2017, applications for aid for «Modernization of agricultural holdings» under the «Support for investments in agricultural holdings» program covered by the Rural Development Program 2014–2020. In the following areas: development of pig production, development of cow milk production, development of meat cattle production (For, 2014).

Conclusions and perspectives of further research

Regardless of the channel of technology transfer, the latest is today the most powerful and efficient interface and factor of technical renovation and general modernization of the company in every branch of the national economy of each country.

The international transfer of technical knowledge allows access to the latest technical ideas, which has a great impact on the functioning of enterprises in a continuous and volatile environment. At the same time knowledge alone does not guarantee success, knowledge must be appropriately used in action. In addition, to maximize the potential benefits of technology transfer, it is not only necessary to increase its size, but also to incorporate it into the process of technological change.

In order to ensure the necessary conditions that can contribute to the efficient development of technology transfer and modernization on this basis of the economy, including agricultural enterprises, it is advisable to create a state structure on technology transfer and intellectual property in Ukraine in order to streamline the legal framework for technology transfer and commercialization of intellectual property objects, state regulation and coordination of processes of technological transfer and centers of scientific, technical and economic information with the relevant state computer data network of data banks. In addition, it makes sense at the state level to create conditions for the active development of new technologies and their representation as objects of international technological transfer.

To the solution of the problem facilitating may also the state help by creating some opportunities for cooperation of Ukrainian technology market participants with the largest foreign operators in this market and by attracting of relevant investments into this process, as well as promotion of proper access to relevant databases and sources of funding obtaining, and the solution of this problem is of high interest as a subject of further research.

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