EXCHANGE OF PROPERTY RIGHTS AND CONTROL AS A CONDITION OF THE INNOVATION PROCESS EFFECTIVENESS AT COLLABORATION BETWEEN UNIVERSITY AND ENTERPRISE

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INTRODUCTION

Currently, the innovative development of the enterprise is considered to be an urgent task. Implementation of innovation in the economic activity of the enterprise is a complex process. Thus, effective innovation process conditions and factors, as well as mechanisms of its control need further investigation.

METHODS

The study is based on general research methods such as the analysis and synthesis, the deduction and induction, the interrelation between historical and logical, laws of dialectics, and the analysis of cause and effect relationship. Special methods include the institutional approach, methods of the theory of property rights and the theory of innovation. The study is based on the works of scholars such as J.A. Schumpeter, N.D. Kondratieff, D.C. North, R.H. Coase, D. Hahn, S.Y. Glaz'ev, D.S. Lvov, J.L. Abalkin, K.S. Mullakhmetov, S.P. Robbins, M. Coulter, R.L. Daft, V. Horvath, and others.

RESULTS

Conducted study revels beneficial effect of property rights exchange in the innovation process. Property rights act as a vital institution of increasing confidence and values in the innovation process. The identified main stages of the innovation process are considered in a following sequence: idea $\rightarrow$ intellectual property asset $\rightarrow$ intangible assets $\rightarrow$ shares. The exchange of proprietary rights allows determining the required ratio of economic resources and create behavior scenario of the innovation process participants.

DISCUSSION

Special attention is paid to the transitions from stage to stage in the innovation process, as well as improvement of control procedures at each stage. It is found that the main risks occur during the transition of the innovation process from one stage to another. These stages should be

taken into account when exchanging and control of property rights. The authors distinguish between sales of knowledge and intellectual property management since property rights transformation in these two cases is different.

FINAL REPORT

The application of the institutional approach and the property rights theory to improve the effectiveness of the innovation process is a promising and relevant tool of economic activity of university and enterprise.

Key words: property rights, institutions, innovation, innovation process, intangible assets, shares, control.

JEL Classification codes: O 32; D 23; M 20.

INTRODUCTION

Currently, to maintain a high level of competitiveness, modern enterprises are forced to innovate. Every day world market is updated with variety of innovations, thoughh the lifetime and effectiveness of some of them is very small. They are not recognized by customers, and thus instantly disappear from the market. The problem is how to promote and retain innovation in the market. Risks and lack of financial resources hinders the successful innovative development of the company. To overcome these problems, modern companies are forced to cooperate with scientific organizations, universities, and state innovation-supporting institutions, as well as various investment and venture capital funds.

The term "innovation" was introduced into the scientific circulation by the Austrian economist Joseph Schumpeter, who considered innovation as a change aimed at implementation and use of new types of consumer goods, new production and transport means, markets and forms of industrial organization to meet new challenges (Schumpeter, 1947).

Nikolai Kondratieff, in his theory of large business cycles pointed to an existing relationship between long waves and technical and innovative development of production, involving into the analysis data on scientific and technical discoveries and showing wave-like nature of their dynamics (Kondratieff, 2002).

The social orientation of the innovation-based growth theory was developed by Peter Drucker, leading American management consultant, who invented the concept known as management by objectives and self-control, and has been described as the founder of modern management. Drucker was the first who systematized data about the introduction of the new and overcoming psychological resistance to this process (Drucker, 2002).

The effect of innovation on established rules and traditions was described by Douglass North. The scientist comes to the conclusion that innovation generates contradictions. On the one hand, these contradictions force to abandon old institutions, while, on the other hand, they generate and strengthen new institutions. This is how the evolution of the socio-economic system occurs (North, 1989).

Research conducted by Ronald Coase is of particular importance for the efficient organization of the innovation process. The scientist has proved the existence of high transaction costs in market transactions (Coase, 2013). Control and exchange of property rights in the course

of innovation advancement from idea to market allows reducing transaction costs and ensuring a return on investment.

One of the leading areas in the modern theory of innovative development is the concept of technological structure proposed by S.Yu. Glaz'ev (Glaz'ev, 1997) and D. Lvov (Lvov, 1990). According to them, periodic process of successive substitution of technological modes developed under the effect of radical innovations, defines "long-wave" pace of modern economic growth.

The concept of national innovation systems (NIS) formation is deemed to be one of the modern approaches and is associated with the scientists such as C. Freeman (1995), B. Lundvall (2010), and R. Nelson (2011). The authors of NIS concept have given an important role to learning and knowledge accumulation processes, paying special attention to their institutional aspect. According to them it is important to explore the institutions (exchange of property rights), which provide the interaction between the university and enterprise in the innovation process.

The effectiveness of the innovation process increases with the implementation of effective control procedures. Organization of control in the enterprise management system has been described in the works of D. Hahn (1997), K.S. Mullakhmetov et al. (2014), S.P. Robbins and M. Coulter (2004), R.L. Daft (2009), V. Horvath et. al. (2005) and others. The application of approaches developed by the above authors with regard to the organization of the control allows improving the efficiency of the innovation process.

Studies of L. Abalkin are focused on increasing economic security of the national economy and its enterprices, inclusive of more active use of innovative capacity (Abalkin, 1997).

Therefore, the innovation process consists of selling knowledge and using intellectual deliverables through the institution of property rights and competition. This article aims at formulating effective interaction principles between contemporary companies, universities, and innovation infrastructure entities in the course of knowledge sales and implementation of intellectual property assets.

METHODOLOGY

The conducted study uses general research methods such as the analysis and synthesis, the relationship of the logical and historical processes, the laws of dialectics, as well as the institutional approach used as a special economic method. According to the theory of institutions, innovation represents the process of moving innovative idea to industrial production, mass sales, and obtaining intellectual rent by the owners of innovation. The owners of innovation refer to the innovation process participants, who invest their economic resources in promoting innovation to the market and in return receive compensation in the form of intellectual rent. The investment of economic resources in the earlier stages of the innovation process has the highest multiplier of intellectual rent. The article proposes a methodological approach to the analysis of the innovation process as a set of constantly changing property rights moving from idea to diffusion of innovation in the external environment (Hagerstrand, 1966). The functions and the composition of the innovation process are constantly changing and stipulated by the objectives of an effective commercialization of innovations.

The control must be carried out at the beginning and the end of each stage of innovation. In this context, the aim of the present study is formulating recommendations for effective institutional factors and conditions, as well as providing control and effective commercialization of innovation for contemporary companies and the university.

RESULTS

Currently, the Russian economy recognizes the right to private property and the right to conduct entrepreneurial activity, and the state keeps out of pure competition (Sadriev *et al.*, 2016, Gapsalamov, 2015). An important factor in entrepreneurial activity is the motivation of all the innovation process participants. Motivation means the interest of market participants in obtaining of income on invested resources in the context of innovative risks. High risk of investments loss at early stages of the innovation process leads to shortage of investment. The innovation process consists of the following stages: the idea or knowledge → intellectual property asset (IPA) → intangible assets (IA) → shares.

This approach changes over the innovation process into the legal, economic, and accounting plane, where the innovation process participants are: the author → patent holder → IA owner → shareholder, while related structures include: universities → companies → state institutions to support innovation. In this case, the innovative process develops through a reallocation of private property rights. At the university and company level, IPA gains on valuation and turns into IA becoming the main capital of the contemporary economy in the form of shares or other securities. Passing each of the stage should be necesarely monitored. Input and output control should include a system of indicators generated depending on the stage of the innovation process.

This logic indicates the private property rights that are received by each innovation process participant, as well as shows how investment attracting process is carried out to promote IPA and turn innovative idea into IA and high profitability company shares (Matveev et. al., 2016b). This approach allows controlling and managing the motivation of innovation process participants, as well as reducing risks and attracting investments.

When developing innovations, erroneous focus on the short-term benefits is explained by the risk aversion and rejection of uncertainty. For most companies, the main objective is to use the innovation as well as to ensure clear understanding among decision makers of the benefits from use and implementation of innovation. Collateral value of intangible assets allows increasing the innovative capacity of the company.

The problem of innovation management, organization, and control is one of the most critical issues. Many companies attempt to innovate independently through specially established support structures or innovation centers (Makarov *et. al*., 2016). Here it is also necessary to determine the value of created intangible assets in order to ensure the mutually beneficial exchange of economic benefits, as well as carry out the innovation process control.

Currently, favourable conditions for joint participation of universities and companies in the innovation process exist in almost all countries (Matveev *et al.*, 2016a). The corporate innovative activity should be considered as the development and implementation of scientific and technological achievements, efficient utilization of enterprise capacity towards improving competitiveness of production and maximize profits. It is well known that products and technologies have a limited lifetime. Most companies attach great importance to the extension of the product life cycle. They are guided by the desire to maximize the return on invested capital. Registration of ownership allows reducing the risks of investments and not to miss the moment when it is necessary to cease production of obsolete goods. Control of economic and innovation activities also helps to reduce the risk.

The limited lifetime of products means that companies need to effectively organize the sale of manufactured goods at all stages of their life cycle, taking into account their

obsolescence, and develop new products in a timely manner (Khusainova and Ustyuzhina, 2015). The balance between the improvement of existing goods and development of new products is an important issue, though extremely challenging for any company. It is therefore necessary to establish sustainable cooperation with the university in order to purchase knowledge or exchange property rights.

Innovative activity, because of its character, should be organized separately from the main production process. It should have its own budget and special administration. In any case, the company should strive to achieve the organizational flexibility of the innovation process. In this case one may talk of different methods of innovation process organization and control.

First of all, it is necessary to examine the economic nature of knowledge and intellectual property assets management in the framework of the presented research scheme. There are some differences in the sales of knowledge and commercialization of intellectual property assets. When selling knowledge, innovator acts as a management process entity. In this case knowledge is inseparable from the person. When commercializing IPA, patent or another title of protection serves a management process entity. In the course of selling knowledge the customer is a specific person, while when commercializing IPA any market entity can be a customer. The purpose of selling knowledge is defined in advance, while when commercializing IPA, it depends on the extent of rights to IPA. The process of achieving goal while selling knowledge is determined by the innovator on the basis of the optimal way of obtaining the result, and may change. When commercializing IPA, process of obtaining the result is prescribed formally. When selling knowledge, their liquidity is low and increases only after the execution of the works. Commercializing IPA requires determining their value at the very beginning. When selling knowledge, knowledge holder is directly involved in transaction process. In the IPA commercialization process, the innovator may not be involved in the bargain or can act just as a consultant. In the sale of knowledge, the object of market transaction is the ability to perform future work, while that in the process of IPA commercialization is materialized result of human physical and intellectual abilities (Latyshev and Akhmetshin, 2015). The actors of economic relations when selling knowledge are employer and employee, while when commercializing IPA those can be several equitable owners of intellectual property assets. The formal basis in the sale transaction of knowledge is an employment agreement, while IPA is commercialized based on license. Scientific and technical risk in the sale of knowledge is presented in the very course of using knowledge (and skills), while risk associated with commercialization of IPA appears in the process of materialization of already acquired knowledge. There is no market risk in the sale of knowledge because the customer is determined and the demand for knowledge is known. When commercializing IPA, market risk is very high, because the market responce to innovation is not known in advance. The sale of knowledge is also associated with minimal managerial risk, because within the organisation there is a strict subordination according to the position responsibility write-up. When commercializing IPA, managerial risk is maximum, because commercialization requires a flexible and continuous cooperation while there is no initial formal rules of subordination and leadership. In the course of selling knowledge there is no possibility of obtaining fraction of income by the scientific community. In the course of commercialization of IPA, scientific organization can obtain a certain fraction of income. The involvement of the university in the innovation process when selling knowledge is carried out through its employees, while in the commercialization of IPA, university can act as an independent market agent.

In any case (sale of knowledge or intellectual property assets) registration and exchange of property rights is a key factor in the success of the innovation process and attraction of the necessary economic resources or new participants in market transactions. The organization of innovation process control should become an obligatory condition of cooperation between the university and enterprise.

DISCUSSION

In some companies, researchers and experts easily move from one innovation project to another, providing the extension or reduction in scope of work. The company faces a choice: either to continue the traditional production or starting innovation. In this case, the head officer should always give preference to current affairs. Thus, one of the basic principles of organizational innovation is the creation of autonomous group or team, which must operate beyond the current operating structure of production (Falyakhov and Shatunova, 2015). Similarly, certain investments to fund innovation should be allocated from the overall corporate budget. In this case the cooperation with the university may lead to the creation of a small joint innovative company with the fractional ownership of rights to future innovation (Krotkova *et al.*, 2016).

The following problems exist in the implementation of the proposed innovation stages (idea $\rightarrow$ IPA $\rightarrow$ IA $\rightarrow$ shares). The main problem consists in entering of the intellectual property asset on balance sheet of the company. This problem is relevant also to universities (Osadchy and Akhmetshin, 2015).

Another problem concerns transitions from stage to stage: idea $\rightarrow$ IPA, IPA $\rightarrow$ IA, IA $\rightarrow$ shares as well as control these transitions. The transition can be fulfilled only in case if there is a need for innovation in the market. This requires constant work to maintain the level of motivation in the innovation process participants (Shatunova and Shabalin, 2014).

In this case, the innovators and other participants of the innovation process will need assistance in the assessment of IPA and its promotion. The assistance can be obtained from state institutions supporting innovation. These include industrial parks, which consist of business incubators and technology transfer centres (Krotkova *et al.,* 2016). Universities and companies also need to cooperate with investment funds and certified management companies. The main task of the state in the short term is to improve the system of creating, fixing and protecting private property rights on innovative ideas and technologies. The need for the intellectual property market comes on the front burner (Khusainova and Ustyuzhina, 2013).

It is necessary to develop a set of indicators required to monitor the innovation process. For this task we can use the balanced scorecard (BSC) concept (Vasilev *et al.,* 2013). Performance benchmarks should reflect exchange dynamics of property rights and develop recommendations for necessary economic resources and the innovation process participants.

CONCLUSION

The exchange of property rights is the basis for the innovation process development in communication between the university and enterprise. To identify effective principles and forms of property rights exchange and control it is nesessary to differentiate between sales of knowledge and commercialization of IPA.

First, when selling knowledge, key elements include the innovator and his ability to apply this knowledge. The IPA is the materialized result of used innovative abilities and depends to a lesser degree on the innovator's idea. Accordingly, the financial support in the first case should be directed to the development of human capacities to create and innovate, while in the second case it should be focused on the development of supporting processes that ensure the emergence, evaluation, and promotion of IPA.

Secondly, when selling knowledge, the customer as well as the service fee are predefined that certainly reduces the market risk, while building economic relations on the basis of an employment contract also reduces managerial risk. The commercialization of IPA is accompanied by high risk in terms of the lack of market demand, possible loss of rights, and the opportunistic behavior of partners (Freeman, 1979). However, such high risks can bring consequently higher profits.

Thirdly, while in the commercialization of IPA, which is based on innovation, one must follow the definition of the invention, at the sale of knowledge, the innovator chooses independently the path of achieving the result that indicates the possibility of reducing scientific and technological risk. However, tangible IPA can be property to be conveyed that evidences about its high liquidity compared to the pure knowledge, while the use of licensing relationships allows obtaining alternative ways of commercialization and also reducing innovation risk.

Fourthly, from the university viewpoint, the commercialization of IPA allows redirecting the profit into the development of fundamental research and obtaining new knowledge, whereas the sale of knowledge is a tool allowing generating income by specific university employees. At that, they use university facilities, while their maintenance and modernization is the task of the university and the state.

Fifthly, selling knowledge and commercialization of IPA are the result of the continuous cycle: basic research → applied research → licensing → commercialization. At that, these stages should be provided by both infrastructure elements and a legal, financial, and consulting support including research chairs (budget financing) → research departments and scientific innovation training centers (funding based on commercial agreement) → patent department (university own funds) → innovation management, technology park, and business incubator (University Alumni Association, "business angels", budget and extrabudgetary venture funds).

Innovation is the most important driving force which promotes the sustainable economic growth of the country (Gapsalamov, 2016). The main ability of innovation is to create an effective intangible and tangible basis of life in the present as well as in the future.

Studying the possibilities of interaction between universities, companies, and public institutions to support innovation through the exchange of intellectual property rights is a crucial task. Reducing risks and attracting investment is possible only through a certain motivation in the participants of innovation process. The execution of these tasks is possible in the framework of implementing the following stages: idea → IPA → IA → shares. On the other hand, we should differentiate between sales of knowledge and commercialization of the IPA at interaction between the university and company. Noted differences may affect the strategy of innovative activity of modern company and university.

Another important task consists in control over the innovation process stages. It is necessary to develop a system of indicators controlling the exchange of property rights for all participants of the innovation process.

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