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IMPROVING INSTITUTIONAL RELATIONS IN THE PROCESS OF INTELLECTUAL CAPITAL FORMATION

The article proves that among the basic institutions that determine the formation and development of intellectual capital, one should single out the institution of property, which ensures protection of the rights of creators of an intellectual product and also regulates liability for copyright infringement. It is determined that improvement of the intellectual property institute is especially necessary in the context of information technology development, since the use of the Internet complicates the identification of intellectual property rights, and, in particular, bringing unscrupulous agents to justice. In this regard, the use of modern digital technologies, such as blockchain, will increase the efficiency of the property institution. The development of education and R&D institutions raises certain concerns due to the loss of the state's leading positions in education and science. The ongoing reform of the higher education system has led to the loss of highly qualified personnel, which indicates a decline in the quality of intellectual capital. Despite the declared measures to support science and education, they are mainly of a targeted nature, with funding provided through grants, without ensuring equal opportunities for all educational institutions. The structure of R&D expenditures seems to be extremely unbalanced, with the main share of expenditures from the state budget, while in developed market economies, R&D investments are made by private companies. The article shows that the implementation of the strategy of increasing intellectual production should be ensured through the active spread of development institutions, whose main task is to finance innovation and investment projects in various forms, ranging from participation in the authorized capital of an enterprise to gratuitous tranches; stimulation of innovation and investment activities that ensure the expansion of intellectual capital should be carried out at all stages of the life cycle of development and production of intellectual products. To this end, not only the results of applied but also fundamental science should be used, which forms the key imperative of the country's socio-economic development.

Key words: *intellectual capital, institutional relations, innovative development, directions, impact, resources.*

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УДОСКОНАЛЕННЯ ІНСТИТУЦІЙНИХ ВІДНОСИН В ПРОЦЕСІ ФОРМУВАННЯ ІНТЕЛЕКТУАЛЬНОГО КАПІТАЛУ

В статті доведено, що серед базових інститутів, що детермінують формування та розвиток інтелектуального капіталу, слід виокремити інститут власності, який забезпечує захист прав творців інтелектуального продукту, а також регламентує відповідальність за порушення авторських прав. Визначено, що удосконалення інституту інтелектуальної власності є особливо необхідним в умовах розвитку інформаційних технологій, оскільки використання мережі Інтернет ускладнює ідентифікацію інтелектуальних прав, і, особливо, притягнення недобросовісних агентів до відповідальності. У зв'язку з цим застосування сучасних цифрових технологій, таких, наприклад, як блокчейн, підвищить ефективність функціонування інституту власності. Розвиток інститутів освіти та НДДКР викликає певні побоювання у зв'язку з втратою державою провідних позицій у галузі освіти і науки. Перманентне реформування системи вищої освіти призвело до втрати кваліфікованих кадрів вищої кваліфікації, що свідчить про зниження якості інтелектуального капіталу. Незважаючи на декларовані заходи підтримки науки і освіти, вони, в основному, мають точковий характер, фінансування надається за допомогою грантової підтримки, не забезпечуючи рівні можливості для всіх освітніх установ. Структура витрат на НДДКР видається вкрай незбалансованою, основну питому вагу займають видатки державного бюджету, в той час як у країнах з розвиненою ринковою економікою вкладення в НДДКР

здійснюються приватними компаніями. Досліджено, що реалізація стратегії нарощування інтелектуального виробництва має забезпечуватися за рахунок активного поширення інститутів розвитку, основне завдання яких полягає у фінансуванні інноваційних та інвестиційних проектів у різних формах, починаючи від участі в статутному капіталі підприємства і закінчуючи безоплатними траншами; стимулювання інноваційної та інвестиційної діяльності, яка забезпечує експансію інтелектуального капіталу, необхідно здійснювати на всіх етапах життєвого циклу розроблення й виробництва інтелектуальних продуктів, а саме: на всіх етапах розробки й виробництва інтелектуальних продуктів. З цією метою мають бути використані не тільки результати прикладної, а й фундаментальної науки, що формує ключовий імператив соціально-економічного розвитку країни.

Ключові слова: *інтелектуальний капітал, інституційні відносини, інноваційний розвиток, напрями, вплив, ресурси.*

Formulation of the problem. Recognition of intellectual capital as an economic resource capable of acting as a driver of development necessitates the improvement of institutional relations arising in the process of its expansion into key market segments. The formation of institutions of various types that regulate the development of intellectual capital is based on economic interests. In the process of satisfying their needs, economic agents inevitably enter into conflicts, due to the heterogeneity and contradictory motives of economic actors' behavior. Reconciliation and coordination of heterogeneous economic and institutional interests of economic agents is ensured by the system of institutions, the quality of functioning of which determines the realization of intellectual capital of firms and enterprises. Economic and institutional interests are of different nature. While economic interests are based on centrifugal forces determined by various goals of economic entities, institutional interests are designed to form a regulatory framework, giving the socio-economic system a centripetal character, while ensuring coordination and coherence of economic interests, which contributes to the formation of a balanced reproduction process. There is no doubt that there is a dialectical relationship between economic and institutional interests, despite their opposition and contradictions, they can exist only in unity. It is the duality of interests of economic agents that underlies any economic process, including those related to the production and sale of intellectual capital.

Analysis of recent achievements and publications. The problem of studying human capital in general and intellectual potential, in particular, as the basis for the process of building a modern information society has been the focus of research by the following foreign scientists: G. Becker, J. K. Galbraith, P. Drucker, F. Mahlup, A. Toffler, T. Schultz, etc. Separate approaches to identifying the content and significance of intellectual potential, its individual elements, the degree of research and factors influencing its development are reflected in the scientific works of domestic scientists A. Galchynskyi, Y. Gava, L. Dyba, I. Ivanova, I. Kaleniuk, E. Marchuk, Y. Mahomet, S. Mochernyi, T. Nosova, S. Pirozhkov, M. Poplavska, S. Filippov, O. Chupryna, I. Chukhna. The issues of intellectual potential formation are also widely represented in numerous theoretical and applied studies. However, despite a significant body of professional research, the problem of intellectual potential management at the level of the national economy should be considered insufficiently studied, which requires further research in this area.

The purpose of the research is to form a mechanism for managing intellectual potential in the national economy to further improve its development and use.

Presentation of the main material. In general, when it comes to the institutionalization of intellectual capital, it should be borne in mind that it is based on knowledge resources, which ultimately form the key institutions that determine the development of intellectual production. There is a knowledge-institutions dichotomy, according to which, on the one hand, "knowledge is a substantive characteristic of any institution, and on the other hand, all stages of its reproduction are institutionalized". Indeed, from the standpoint of the technocratic approach of the old institutional school, this duality cannot be ruled out.

Concentrated knowledge about previous ways of behaving and thinking is an institution. The accumulation of primary knowledge in the form of such a carrier as intellectual capital has a direct impact on all stages of social reproduction, since "only developed formal and informal institutions make it possible to generate, transmit and use new knowledge in production" [6].

As a result, there is a manifestation of the theory of reflexivity, when the cognitive function affects the expectations of financial market participants, and the actions of the participants themselves lead to changes in the influencing variable. The dichotomy "knowledge-institutions" implies a similar effect – not only do institutions influence the process of knowledge creation, but also the impact of the generated knowledge on institutions and their further development. T. Veblen, studying institutional development, noted that the ability of a person to engage in creative non-pragmatic activities and experimentation provides social, scientific and technical discoveries that ultimately lead to the progressive development of the socio-economic system. Schumpeter also sees the high potential of creative diverse activity of an individual when he studies the causes of innovation. New stereotypes change behavioral patterns, which leads to the formation of

new institutions, increasing the efficiency of existing ones. Economic agents, in their turn, through their "idle curiosity" also form new norms and rules, and these processes are evolutionary. Thus, the selection of the most effective rules and regulations in the competitive struggle consolidates basic institutions and makes them successful through innovation.

Institutionalization, as a phenomenon of ordering, helps to accelerate the production of new knowledge – the energy core of intellectual capital. The regulation of business entities within the institutional environment is the reason for the breakthrough in knowledge that precedes technological breakthroughs and added value. The development of social institutions creates the necessary preconditions for the transformation of intellectual capital into a systemic economic factor with a value nature.

There is a huge number of classifications of institutions, the totality of which forms the institutional environment, which influence the process of formation and development of intellectual capital. The key characteristics of the institutional environment are considered to be density and hierarchical fullness. Indicators of the state of these two components can be the subjective perception of individuals of the degree of regulation, sufficient or not, in a particular area.

There are manifestations of strong and weak saturation of the institutional space, which determine the degree of efficiency of institutions, including informal ones. Thus, "institutional weakness" due to insufficient saturation determines the formation of an institutional vacuum, which in turn generates institutional traps. The opposite situation, characterized by excessive density of the environment, carries the risk of contradictory and inconsistent rules and regulations. As a result of its manifestation, the consequences for the business community may be unfavorable – the coordination of economic agents is disrupted, and the economic system is out of balance. A generic feature of the institutional environment is the well-known problem of institutional interests of economic entities, which are a priori contradictory and inconsistent. At the same time, the unifying principle is the common interest in the sustainability of the institutional environment and the efficiency of the functioning of institutions for the realization of economic interests.

Thus, [4] notes: "each subject of a market economy... has not only economic interests, but is also interested in the functioning of institutions that make this possible in principle". The realization of their own institutional interests implies the establishment of institutional relations between actors based on rules and regulations, but the common nature of the goals – maximizing profits – also does not exclude contradictions and conflicts of interest. The contradiction of the institutional interests of economic agents is a powerful institutional barrier that significantly hinders the growth of intellectual property production. The negative impact of the inconsistency of institutional interests is exacerbated by a large number of various formal and informal institutions that fill the institutional space, the density of which in this case increases many times over.

The determining criterion for the optimal density of the institutional space is the minimum amount of transaction costs, or at least their negative dynamics, which is consistent with the theory of R. Coase on the efficiency of the market mechanism at zero transaction costs.

In the theory of property rights proposed by A. Alchian and R. Coase, the following types of transaction costs are distinguished [6]:

Information search costs. Conclusion of a transaction or contract requires certain information about potential buyers, sellers, prices. Such costs consist of the time and resources required to search for relevant information, as well as losses caused by the inevitable loss or imperfection of the information received;

Costs of negotiating and concluding contracts. The very process of making a transaction or concluding contracts requires certain funds from economic agents, especially if it is necessary to agree on non-standard requirements of counterparties;

Measurement costs. Any product or service is a set of characteristics. In the process of exchange, not all properties of goods or services are taken into account, so the valuation procedure is of great importance. In this case, the costs include the cost of measuring instruments or payment for the services of the relevant organizations involved in the valuation;

Costs of specification and protection of property rights. This includes legal costs in case of violation of property rights, payment for arbitration services, state authorities, etc. They also include the costs of maintaining and developing a consensus ideology aimed at creating a need in society to comply with established norms and rules, which is ultimately cheaper than constant strict control;

Costs of opportunistic behavior. The most difficult type of transaction costs is the one that can cause significant damage to the parties to a transaction. There are many types and forms of opportunistic behavior, the unifying principle of which is mainly the asymmetry of information.

Thus, if transaction costs are close to zero and property rights are clearly specified, the optimal density of the institutional space is achieved, which guarantees stable conditions for economic actors.

Today, in the context of the development of information technology, the protection of intellectual

property is of particular importance. The widespread use of the Internet leads to certain barriers in identifying the perpetrators of intellectual property infringement, namely their state jurisdiction. In addition, the issue of determining liability for infringement of copyright and related rights should be settled at the international level with the involvement of the relevant state authorities, which is quite difficult to implement for technical reasons. Blockchain technology can help improve the efficiency of the intellectual property institution. Storing an intellectual product in a public distributed ledger is very well suited for recording copyrights. Compared to the traditional deposit procedure that exists today, blockchain technology makes it possible to simplify the mechanism of fixing authorship, reduce its time and cost. Of great importance is also the fact that these records remain in the register regardless of the existence of the depository organization. Blockchain, like other modern digital tools, is still a new technology, and it is possible that not all authorities and judicial bodies are ready to accept proof of copyright recorded by distributed ledger technology. The main reason for the potential refusal is the lack of a specific legal status of the operators of such registries and their responsibility for the accuracy of the information contained therein. In general, the use of blockchain technology as a tool for protecting intellectual property seems to be very relevant and effective, especially in the context of the expansion of online commerce, the development of social networks and similar communities. Copyrighted works can be used in different jurisdictions, as mentioned above. In addition, the absence of the need to register intellectual property rights makes it difficult to find and record them, which makes it difficult to identify the right holders and obtain permission to use intellectual property.

It seems to us that the use of distributed ledger technology will certainly contribute to improving the functioning of the intellectual property institution, determining the development of intellectual capital.

The next social institution that forms the institutional environment of intellectual production is the institution of education. Despite the fact that according to the results of the correlation model built in the previous paragraph, intellectual capital does not demonstrate a direct dependence on the quality of educational services, there is no doubt that it is of high importance for the development of intellectual production. An important factor in the formation and reproduction of intellectual capital is the staffing of research activities, which can only be realized if domestic higher education institutions function effectively. It is the higher education system that creates the basis for intellectual capital, which is then reproduced in companies and organizations.

The institution of education as a special system of knowledge replication plays an increasingly important ethnogenerating role and ensures high efficiency of the reproduction process, as well as the integrity of the entire socio-economic system. Within the aggregate institution of education, one can distinguish the institute of vocational training, secondary specialized technical, medical, pedagogical education and the institutes of professional behavior of employees formed within this education. Another group is represented by higher education institutes of engineering, engineering and economic, and management profile. It should be noted that educational institutions are a system, not a set of "sub-goals". The reproduction of developed educational institutions is greatly facilitated by institutions that regulate the transformation of human intellectual resources, the intellectual capital of the enterprise and society as a whole.

Reducing the number of professors, in particular those with academic degrees, undoubtedly has a destructive impact on the formation of intellectual capital.

It seems to us that there is a need to develop a comprehensive strategy for the development of science and education based on in-depth theoretical research and analysis of the current situation in this segment. The current policy in the field of science and education leads to:

first, to huge disproportions in the development of regional and state educational institutions;

secondly, to discrediting teaching and research activities, and as a result, to a lack of motivation to obtain a degree

thirdly, to a shortage of highly qualified personnel, a decrease in the country's scientific potential;

fourth, the outflow of highly qualified specialists, first from the regions to the center and then abroad;

fifthly, it leads to increased exploitation of the teaching staff through a constant increase in labor intensity that does not correspond to the growth of wages.

In our opinion, the development of the institution of education should be accompanied by the state's great attention not only to the largest educational centers, but also to regional universities that accumulate the intellectual capital of the state's subjects.

The small amount of direct state funding for science and education also leads to the weak development of the R&D institution, which plays a key role in the formation and reproduction of intellectual capital. The model built earlier in the study shows the high importance of this factor.

The investment climate plays a significant role in the formation of intellectual capital, as any innovation initially emerges as a risky investment project

implemented in the form of a start-up and supported by relevant institutions, such as business angels or venture capital funds. In addition to private financing of investment projects in the form of venture capital investment, we believe that the key role is played by the state, which, using its public law and organizational and economic functions, is able to create an imperative for innovative development.

In 2020, despite the epidemiological restrictions, business activity in the venture capital market increased. The strong impetus for the development of remote technologies provided by quarantine restrictions was accompanied by an increase in deals around the world. Today, we are witnessing competition not so much between companies or technology giants as between global ecosystems as a modern innovative form of business model – a clear manifestation of the knowledge economy, with intellectual capital at its core. We believe that an increase in venture capital funding will have a favorable impact on the development of innovative enterprises and organizations, especially small businesses. Thanks to venture capital funds, small businesses do not exist in isolation, but in close cooperation and integration with the structural institutions of the national innovation system, such as business incubators, technology parks, territories of advanced socio-economic development, etc. Such cooperation is very effective, as these institutions are rather large centers that simultaneously fund many innovation programs.

Another parameter of the development of the institutional environment that determines the formation and development of intellectual capital is the indicator of the quality of regulation.

Thus, the key task of institutional regulation of the intellectual production market is to create the necessary conditions for the growth of investment resources, which are essential for increasing the rate of production of intellectual products. The development of public institutions and their effective functioning ensures a favorable attitude of society to the newly created intellectual services, which leads to the formation of a positive image of the enterprise as a producer of such services and the expansion of the market for intellectual products. The institutional regime for the formation and development of intellectual capital requires a comprehensive improvement of social and market institutions aimed at increasing the level of intellectual property protection, high-quality regulation of the intellectual production process, and efficient functioning of financial institutions that ensure the availability of investment resources for enterprise development. Improvement of institutional regulation, in our opinion, should include the following areas and measures:

recognition of education and science as the main drivers of the formation and development of intellectual capital; creation of the necessary conditions for the development of scientific and scientific-pedagogical personnel; organization of a network of information centers and licensing organizations for the dissemination of developments in the field of new technologies;

creation of a system of training and retraining of personnel and improvement of their qualifications for enterprises and organizations engaged in intellectual production;

clearer specification of property rights to intellectual products to ensure protection of the interests of product authors; creation of the necessary legal norms by improving the main regulatory acts and provisions with elimination of existing contradictions and ambiguities;

stimulating effective demand for goods and services of the intellectual market by increasing their availability to consumers;

use of an integrated approach to solving problems of intellectual production based on coordination of activities of state, public and market institutions.

Stimulation of innovation and investment activities should be carried out at all stages of the life cycle of development and production of intellectual products, including the results of not only applied but also fundamental science.

Conclusions. As a result, we can draw the following conclusions:

Recognition of intellectual capital as a driving force of socio-economic development necessitates improvement of institutional relations that form the institutional space. Increasing the efficiency of the functioning of key social and market interests is possible only as a result of reconciliation of numerous, diverse, and sometimes contradictory interests of economic entities;

institutionalization of intellectual capital is a knowledge resource, since, on the one hand, regulatory norms and rules are created by accumulating information, knowledge and experience of subjects, and on the other hand, they also provide regulation of all stages of reproduction of an intellectual product, accelerating the process of creating an intellectual product;

the development of social and market institutions that form the institutional space leads to the transformation of intellectual capital into a systemic economic factor. The saturation and density of the institutional environment are a kind of indicator of the effectiveness of formal and informal norms and rules, while the assessment of their activities is largely determined by the subjective feelings of economic entities regarding the comfort of the intellectual production process.

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