
Innovational Methods of Development of Intellectual Labor for Economy's Security

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Abstract:

The notion “development of intellectual labor for the purpose of economy's security” is viewed as development of society's intellectual potential that includes the protected socio-economic information, developed by a person or a group of persons. The social factors that reduce economic security and their consequences in economy are given, namely: negative dynamics of implementing new progressive technologies into production, insufficient coordination of work in the sphere of innovational development, etc.

The forms of intellectual development of human resources (intellectual development of personality, control over intellectual information) are offered, which bring the country's economy to competitiveness and security. The traditional and innovational methods of intellectual labor development are studied (studying in universities and colleges, increase of personnel's qualification in view of academic degrees (Ph.D., doctor of economics), as well as receipt of economic information through Internet resources, scientific publication, statistical information, etc.), as well as the methods of development of IT services and methods of prevention of intellectual diversions and violation of information confidentiality.

It is offered to implement the program of equal initial possibilities for intellectual development of human resources in view of access to higher education, creative activities, as well as legal protection for everyone, etc.

Analysis of implementation of innovational methods of intellectual labor development supposes planning activities in view of development of intellectual labor for the purpose of the region's economy's security.

Keywords: *innovations, intellectual labor, security of economy.*

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Introduction

One of the problems of socio-economic development of society is intellectual development of human resources for competition and security of economy. The notion “innovational methods of development of intellectual labor” is treated as provision of competition and security of economy by progressive formation of intellectual potential in the socio-economic, technical & technological, managerial, and other spheres of knowledge and skills of individuals and groups. This issue is very topical, because insufficient elaboration and use of the innovational methods of development of intellectual labor in the economic activity, the economy of the Russian Federation remains non-competitive, on the one hand, and on the other – unprotected from interests of other countries. Because of insufficient theoretical elaboration of the methods of development and usage of intellectual labor or human resources in the scientific literature and practical activity, there are contradictory treatments of this notion and risks of “brain drain” and ineffective use of the employees’ work (Khorev *et al.*, 2015; Fetai, 2015; Stroeva *et al.*, 2015; Dmitrishina *et al.*, 2015; Vasin *et al.*, 2017).

In certain scientific articles and monographs, the information, legal, and economic aspects of the innovational approach to development of intellectual labor in economic activity are viewed one-sidedly. At that, the category “intellectual labor” is seen as “labor”, “human resources”, “human capital”, and “human potential” of the whole society and a separate company. In this article, the category “intellectual labor” is treated as countries and companies that can form competitive and safe economy.

For economy’s security, the category “intellectual labor” is viewed in the studies of Elyakov (2007), Rogovsky (2008) and Petukhov (2008). The authors assign the leading role to the traditional forms of development of intellectual labor; innovational methods and forms that stimulate security of the country’s economy on the whole and the companies are insufficiently viewed in these works, which caused the need for detailed consideration of this issue.

Research methods

Developed intellectual potential or intellectual labor in the economic activity for the purpose of the country’s and separate companies’ security is created by formation and protection of socio-economic, technical & technological, managerial, and other information that acts on the basis of rules and laws of the country and separate companies (Serebryakova *et al.*, 2015).

The 1992 Law of the RF “On security” determined the basic notions and elements of the national security. In this document, the basic subject of provision of security is the state, which acts through the bodies of legislative, executive, and judicial power, and the threats to security are determined as totality of conditions and factors that created danger to vital interests of person, society, or the state.

The main principles of provision of security, according to the Federal Law “On security” dated December 28, 2010, No. 390-FZ, are the following:

- observation and protection of rights and liberties of human and citizen;
- legitimacy;
- systemic and complex character of application by the federal bodies of state power, bodies of the state power of the RF, and other state bodies, bodies of local administration of political, organizational, socio-economic, information, legal, and other measures of providing security;
- priority of preventive measures for the purpose of provision of security;
- interaction of the federal bodies of state power, bodies of state power of the subjects of the RF, and other state bodies with public associations, international organizations, and citizens for the purpose of provision of security.

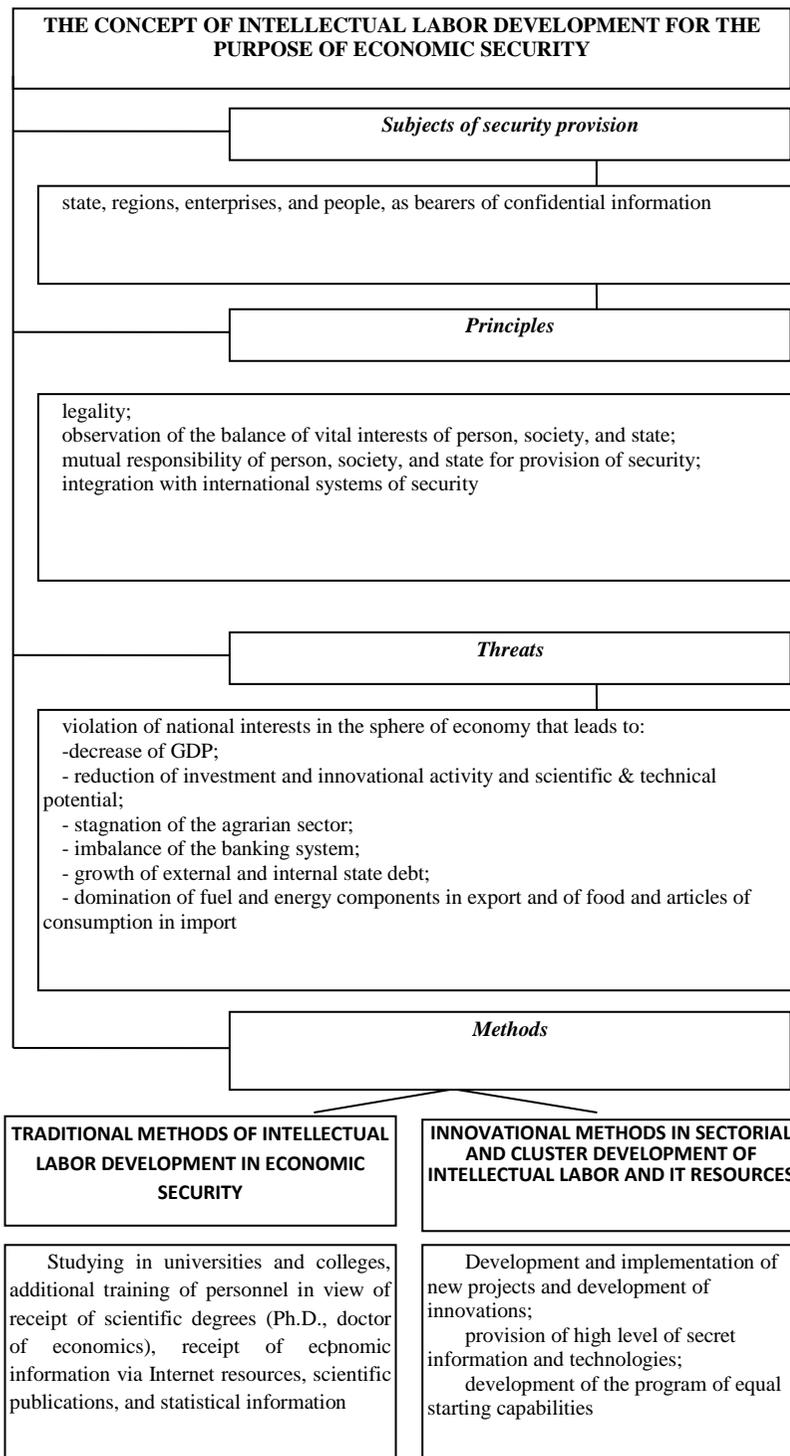
The offered concept (Figure 1) of development of intellectual labor for the purpose of economic security is based on the main ideas on threats to the country, observing the national idea and national values and traditions in the economic activity of companies and regions (Ovchinnikova and Kobeleva, 2012).

The Decree of the President of the RF dated December 31, 2015, No. 63 “On the Strategy of national security of the Russian Federation” gives an extended definition of economic security in the sphere of economy. In particular, it is noted that “... the threats have a complex character (the key role of the national interests in the sphere of economy) and are predetermined by significant reduction of gross domestic product, reduction of investment and innovational activity and scientific & technical potential, stagnation of the agrarian sector, imbalance of the banking system, growth of external and internal national debt, tendency for domination of fuel and energy components in export and of food and articles of consumption in import”. Such expanded definition of economic security supposes the legal and information protection of intellectual labor.

However, development of intellectual labor for the purpose of economic security is wider than observation of laws and rules, as achievement of the national interests should take into account intellectual development of each individual and the whole population of the country, which creates advantages and competitiveness of the economic structures (Ovchinnikova *et al.*, 2015).

The traditional intellectual development of human resources (without consideration of economic security) includes the following methods: studying in universities and colleges, increase of personnel's qualification in view of obtaining academic degrees (Ph.D., doctor of economics), receipt of economic information via the Internet resources, scientific publications, statistical information, etc.

Figure 1. *The concept of development of intellectual labor for economic security*



The indicators reflected in Figure 2 (compiled based on the data of the Federal State Statistics Service) show the equal number of university graduates in 2012-2015 (on the whole in the RF, in the Central Federal District, and in Voronezh Oblast); but as to economic activity in the RF and Voronezh Oblast, there are problems at certain enterprises, caused by using intellectual labor for provision of security of the country's and region's security. There's necessity for evaluation of intellectual labor and its usage in economic subjects – i.e., there's a necessity for improving the methodological approach (using the innovational method) of correspondence of the factor of increase of young people number with higher education (i.e., quantitative growth of intellectual labor) and its relation to sustainable growth of economy of the country, region, and companies (which is an attribute of economy's security). Up to this time, usage of such methods (e.g., the method of dynamic rows) hasn't led to such tensions, and the work at the leading enterprises that use intellectual labor is not oriented at universities' employees (Serebryakova *et al.*, 2016).

Intensity of labor (that shows the inclusion of innovational methods of development of intellectual labor) substantiates such indicator as “increase of labor efficiency”, but in Russia this indicator equals zero, and in the region, it is negative (-3%) (Figure 3), while its growth constitutes 3.1% at the Western companies.

Figure 2. Dynamics of the indicator “Production of specialists with higher professional education” (Ovchinnikova & Kobeleva, 2013)

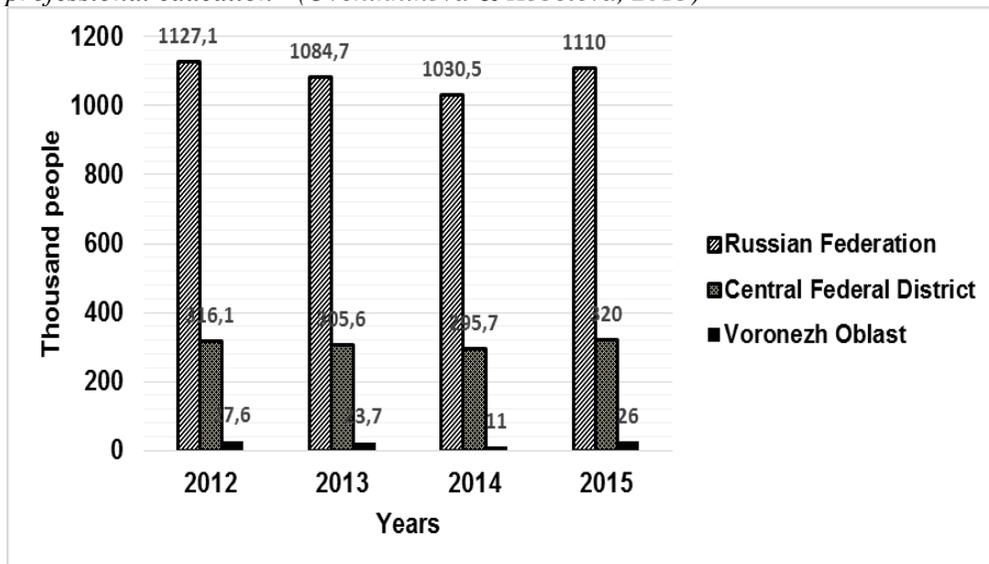
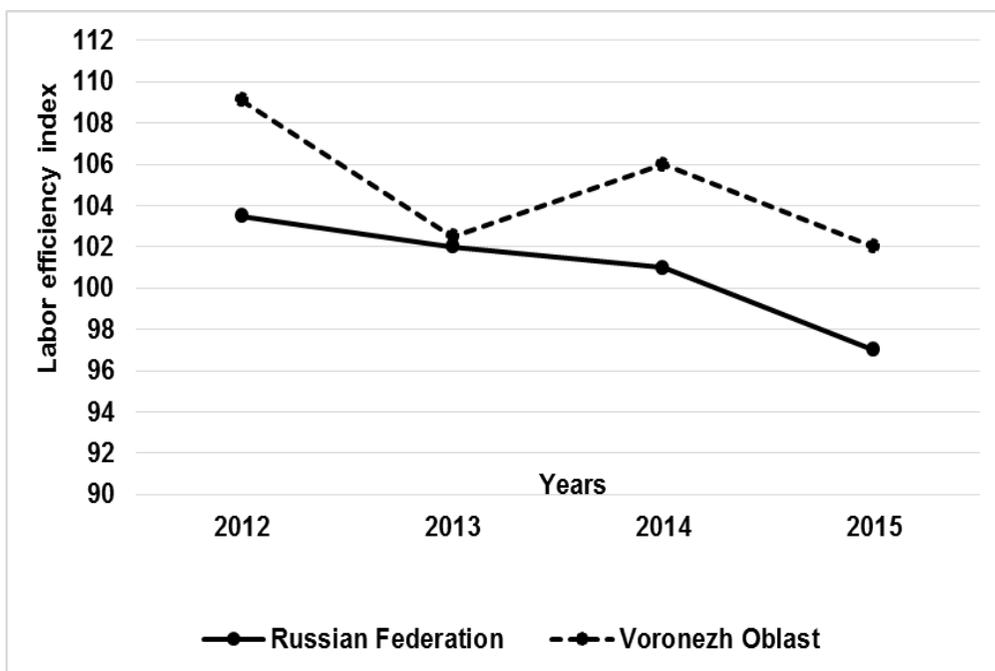


Figure 3. Dynamics of the index of labor efficiency in the RF and Voronezh Oblast (compiled on the basis of the data of the Federal State Statistics Service)



One of the innovational methods of development of intellectual labor, which substantiates economic security, is “determination of the level of development and implementation of new projects”. The economic activity of many companies realizes dozens of new large-scale projects that compete between each other, but low-quality education in universities is a risk not only for development and functioning of project implemented in regions but for the country’s economy on the whole (Serebryakova *et al.*, 2016).

The reform of system of higher education (similarly to the Western one) includes the effective and ineffective methods of development of intellectual labor at the level of universities, when counter-productive systems of testing are implemented, mandatory courses are deleted, the groups of 120-150 students are created, duration of studies is reduced, and the number of academic hours is cut – all this shows not so much financial economy in educational processes as low-quality education and further ineffectiveness of the national economy.

A special danger is posed by the universities with corruption, which does not allow intellectual potential to develop and is a threat to the national security due to unacceptability of amoral behavior of lecturers, undergraduates, and entrepreneurs.

Analysis results

Intellectual development of the youth who received higher education is related to increase of innovative activity. Analysis showed (Figures 1 and 2) that increase of the people with higher education and the indicator of labor efficiency do not correlate with each other, and further development of intellectual labor may face some serious obstacles which are not related to the risks in economy:

- negative dynamics of implementation of new progressive technologies into production, related not only to large expenditures for implementation of innovations but to weak receipt of the innovational approach in the organization of production (Kobeleva and Kononova, 2014). The task is very difficult due to weak intellectual preparation of companies' personnel:

- insufficient coordination of work in the sphere of innovational development as a result of violation of the principle of transparency by various executive bodies of state power and private institutions, when there's a need to unite all levels of innovational activity into one project (coordination) (Ovchinnikova *et al.*, 2012).

One of the methods of development of intellectual labor, related to economy's security, is development of information resources (IT resources) and preservation of confidentiality. Their potential is used in such spheres as development of software and provision of IT services. At that, the demand for this potential in the interests of development of the country and effectiveness of its use are insufficient.

For example, Voronezh is ranked 4-5th in the ranking of cities as to the number of companies and centers for software development (together with Moscow Oblast, after Moscow, St. Petersburg, and Novosibirsk). However, 2/3 of orders for development of IT services are performed for foreign companies. Forms and rates of development of the sphere should be reoriented at expansion of its presence at the regional and Russian markets with preservation of the information's secrecy.

The top-priority directions for application of developed intellectual labor for the purpose of economic security are such spheres as communications and information & communication technologies, applied in various spheres. The methods used for achieving intellectual security include the following:

- formation of a cluster on the basis of leading Voronezh IT companies and higher educational institutions which would be oriented at innovational development of the regional electronic society in view of the project's participant's signing the non-disclosure agreement;
- formation and development of the modern information and telecommunication infrastructure, provision of high-quality services and high level of secret information and technologies;
- creation of the unified infrastructure of state and departmental

information systems;

- development of scientific, scientific & technical, and other activity in the sphere of development of information & communication technologies;
- implementation of investment projects aimed at creation and development of the communication networks and infrastructure. Support for confidentiality of communication organizations;
- increase of the share of private companies, bodies of public authorities and local administration, which local networks are unified within the single information & telecommunication environment of the Oblast.

Apart from intellectual development of personnel based on development of IT technologies, the problems of economy's security, related to intellectual labor, include violation of information's confidentiality and intellectual diversions, which bring disinformation and damage. The forms of intellectual development of human resources in economic security are given in Table 1. They are threats (not only economic but physical) to the country's population and include the following: using intellectual capabilities of individuals (groups) and modern information and communication technologies for annihilation of other individuals (groups), as well as conducting damage, destabilization, and destruction of economic, scientific & technical, or social systems.

Table 1. *Forms of intellectual labor in development of economic security*

Forms of development of intellectual labor related to economic security	Processes of influence of innovational labor on various forms of activity
Possession of information resources (IT resources)	Development and implementation of software innovational products into various spheres of economy; provision of IT services and their implementation; information leak might lead to loss of finances and material damage
Using personnel's intellect for achieving the level of competences determined by the office. Control over information	Violation of information's confidentiality and intellectual diversions, characterized by sabotage and disinformation
Intellectual development	High-quality education in colleges and universities for additional training

The known facts of damaging the economy, destroying the carriers of information innovations and individuals, such as hacker attacks, network hacks, stealing intellectual property, and information leak (deliberate or undeliberate) show that humanity enters the age of formation of possibilities for development of intellect and possibilities for observation of the principles of security in the sphere of scientific & technical, innovational, and personal development and creation of economic potential of economic systems.

Due to increase of globalization of economy and development of competitive struggle over the recent years, it is necessary to increase the controlling functions of development of

intellectual labor for the purpose of economic security. It is known that intellectual labor is in high value, and intellectual development of human resources is a driver of progress in the conditions of globalization. While in the past the influence of development of intellectual labor on the regional, national, and international economy could be expressed indirectly and belatedly (Ovchinnikova *et al.*, 2010), for the ideas of a separate individual to become a direct factor of development, the factor of development of intellectual labor works otherwise now. In the globalizing world, an individual or group of individuals, using their intellect and modern information and communication technologies, may influence (in the positive or negative sense) the economic security.

Let us distinguish the tendencies of increase of risks related to lack of use or non-use of intellectual labor for the purpose of economic security:

- non-use of development of intellectual labor (in particular, the results of creative activity) in the economic systems where it may lead to significant reduction of economic systems' competitiveness;
- uncontrolled use of intellectual labor in the economic environment, which may lead to a criminal situation.

One of the central problems of development of intellectual labor is the issue of increase of the role of a creative individual in the globalizing world, while economic development could depend on intellectual individuals (or their local groups) and their uncontrolled development might bring profit or damage to economy. A problem of development of intellectual labor arises which is related to real minimization of threats in the economic activity (Serebryakova *et al.*, 2016).

A complex problem of development of intellectual labor, related to innovational methods, which are complex and expensive, should be solved with application of the legal measures, constant monitoring of information and communication technologies, and simultaneous provision of the conditions for full and complete intellectual realization for the purpose of the country's economic security to the individual. This requires the program for individuals' realizing their creative capabilities, but this program should be implemented under the monitoring of the security department.

The program includes:

- personnel's access to creative (primarily, scientific) activity;
- legal protection of the intellectual product and the product's carrier.

Realization of the program is already under way: a unified system of school graduation exams is created, equal possibilities for applicants' entering the universities on the basis of their knowledge only are created, and information and communication networks are formed. The most topical (together with the issues of economic sovereignty and economic security of market structures) problem is interconnection of organs of government (federal laws, decrees of ministries, and regional laws) and scientific developments

in the sphere of management and activity of entrepreneurs.

The comparative analysis of different models and preconditions of their emergence and peculiarities of intellectual labor shows impracticability of the standard economic measures. However, despite the absence of the unified model of market economy, expedience and necessity for achievement in the socio-economic policy of the state and regions of the optimal combination of state regulation with market self-regulation creates preconditions for development of employees' capabilities and manifestation of possibilities to consider all conditions (Serebryakova *et al.*, 2016).

Domination of one of the concepts of (state or market) regulation bereaves regions and companies of their own choice and leads to ineffective use of intellectual labor – therefore, there's a necessity for multiple approaches to formation and functioning of innovational methods of intellectual labor development for the purpose of economic security.

Determining the development of intellectual labor in the process of economic security with the help of the integral indicator, based on resultant of criteria, is peculiar for the invariant list of factors, which include corpuscular elements (economic, scientific & technical, and social); it substantiates the various level of influence of the triad (social, economic, and scientific & technical factors) on development of intellectual labor.

The obtained result is peculiar for the functions that realize the development of intellectual labor, diversity of the spheres and objects of activity, and attributes of the subjects. The groups of factors that influence and stimulate the development of intellectual labor in the economy of Voronezh Oblast are distinguished; they are given in Table 2.

Table 2. Grouping of factors that determine the usage of intellectual labor at the enterprises of Voronezh Oblast

Group of indicators	Criteria	k_i	λ_i , %
Economic	1.1. Growth of the products' sales volumes	3	30
	1.2. Profit from the licensed activity	4	10
	1.3. Profit from implementation of inventions, know how	4	7
	1.4. Profit from realization of innovational products	2	17
	1.5. Improvement of usage of production capacities	4	10
	1.6. Reduction of terms of innovations' return	2	3
	1.7. Growth of investments' profitability	1	3
	1.8. Growth of company and its share's cost	3	7
	1.10. Increase of company's competitiveness	4	13
Scientific & technical	2.1. Increase of the share of own and purchased patents, know how, licenses	5	20

	2.2. Increase of the share of information technologies	2	7
	2.3. Increase of the share of new technological processes	4	20
	2.4. Increase of the level of authomatization of production and management	3	10
	2.5. Increase of the organizational level of production and management	5	12
	2.6. Increase of the products' quality	3	15
	2.7. Increase of products' competitiveness	4	16
Information	3.1 Development and implementation of program innovational products into various projects	4	25
	3.2.Provision of IT services	3	20
	3.3. Cases of violating confidentiality of information that deals material damage	5	10
	3.4. Cases of information diversions that deal material damage	2	15
Social	4.1. Growth of average salary of the company's employees	4	25
	4.2. Increase of the level of personnel's motivation for innovative activity	5	30
	4.3. Increase of qualification of employees	4	20
	4.4. Improvement of the conditions of personnel's labor and rest	3	15
	4.5. Increase of jobs	3	10

Let us determine the influence of indicators' groups on economic activity of a company as:

$$S_{ep} = \frac{\sum_{i=1}^n k_i \lambda_i}{\sum_{i=1}^n \lambda_i},$$

where k_i - score in points of the i-th indicator of effectiveness,

λ_i - weight of the i-th indicator of effectiveness in this group, %.

If the values of weights of management levels in provision of innovational activity effectiveness (α_{ep}) are introduced, it will be possible to evaluate the general level of intellectual labor at the enterprises of Voronezh Oblast. The integral indicator will have the following form:

$$S = \frac{\sum_{i=1}^m \alpha_{2p_i} S_{2p_i}}{\sum_{i=1}^m \alpha_{2p_i}}.$$

At that, it is obvious that the value of the integral indicator can be in the range 1 - 5. The higher this indicator the better.

Table 3. Estimate values of the indicators of the factors' groups in development and usage of intellectual labor

Group of indicators	S_{2p}	α_{2p}
Economic	3.14	0.3
Scientific & technical	3.93	0.3
Information	3.4	0.25
Social	4.05	0.15

At that, the integral indicator $S = 3,76$.

As is seen from the estimate data, the largest influence on development of intellectual labor is performed by the social factors – such as wages of employees, stimulation of intellectual labor, improvement of labor conditions, etc.

The results of the performed evaluation of the influence of factors' groups on development of intellectual labor allow showing pros and cons of management of intellectual activity in the region (and company) (Table 4). It is offered to plan - on the basis – the use of innovational methods and to determine the level of achieving the indicators of economic effectiveness in the company's activity.

Table 4. Indicators of effective use of intellectual labor in the region

Level of achievement of targeted indicators of effectiveness	Effective/ineffective usage of intellectual labor in the region until 2020
Negative effect	Ineffective use of intellectual labor that supposes changing the approaches to structural & functional distribution and change of job responsibilities according to the employees' competencies
Small effect	Economic indicators show the necessity for development of intellectual labor and optimization of distribution of responsibilities in management
Positive effect	Economic indicators show the effective use of intellectual labor, when employees are optimally stimulated

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