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Formation and use of intellectual capital as a factor of the innovative development of Russian the transport complex enterprises

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Abstract

Intellectual capital is a key development factor and a competitive advantage of the national innovation economy. Global experience shows that the effectiveness of any process depends on how developed, demanded and implemented intellectual capital, taking into account its expanded reproduction, since the strategic importance of the latter is to ensure the competitiveness of both the individual in particular, and the company and society as a whole. Conceptual approaches to the formation and use of intellectual capital should contribute to the constant generation of intellectual assets in all business processes of Russian enterprises of the transport complex: production, marketing, finance, human resource management in order to fully and effectively use the advantages of their core competencies and transform them into increasing competitiveness in modern conditions. The paper defines an approach to the concept of “intellectual capital” as a structured set of intangible factors of production that form the core of modern economic relations, allow creating new surplus value, as well as use them as a long-term sustainable competitive advantage. The priority directions of the formation of intellectual capital in global practice and problems of its use in Russian companies are analyzed. Based on the structural approach, which includes the assessment of each individual component and the calculation of the integral indicator of the total level of intellectual capital, a methodology for assessing the intellectual capital of a research and production company in St. Petersburg, whose activities is aimed at the development and implementation of additive technologies in the production processes of industrial enterprises of the transport industry, are presented.

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1. Introduction

The modern global economy, which is based on the application of knowledge as the main intangible asset, is characterized by the ability to use intellectual resources to meet human needs and create breakthrough solutions for its innovative development. The continuous search for new opportunities to improve the efficiency of business processes and promising areas of activity related to the production, storage and exchange of knowledge, as well as the intellectualization of the technologies used, which provides a significant increase in the efficiency of the activities of leading global and domestic companies, is of great importance.

The new intelligent economy, which is based on the use and active dissemination of knowledge, is characterized by the rapid growth of science-intensive products, the digitalization of the technologies used, the shortening of the life cycle of goods and key professional skills that provide a multiple increase in labor productivity, as well as the formation of a large segment of the market for intelligent products and services. Elena Sergeevna Balashova, a professor at the St. Petersburg State Marine Technical University, believes that “flexible management is the most effective management methodology in the context of the fourth industrial revolution. This is a strategy, the goal of which is to achieve sustainable development of the company by adapting to any unpredictable changes” (Balashova and Gromova, 2018). In this regard, the formation and use of intellectual capital in order to generate profit has become a necessary direction in the activities of modern companies.

Despite the fact that the term “intellectual capital” is widely used in economic theory, there is no single definition of this term in practice, and there are various interpretations in the world economic literature, the study and comprehensive analysis of which allows identifying the main stages in the development of the concept of intellectual capital. For the first time this term was used in 1969 by the American economist John Galbraith, who defined intellectual capital as “something more than pure human intelligence and includes certain intellectual activity” (Sukhareva, 2020). In the 90s of the twentieth century, the concept of intellectual capital became widespread thanks to the works of Thomas Stewart, who defined it as follows: “... intellectual material - knowledge, information, intellectual property, experience - that a company can use to create value. Such collective knowledge is hard to identify and harder still to deploy effectively. But once you find it and exploit it, you win” (Ermishina and Orel, 2018). Until recently, researchers adhered to the model of the composition of intellectual capital presented by Annie Brooking, who defines it as “... a term for denoting intangible assets without which a company cannot exist, enhancing its competitive advantage. The constituent parts of intellectual capital are: human-centred assets, intellectual property assets, infrastructure and market assets. Human-centred assets are the collective expertise, creative and problem-solving capability, leadership, entrepreneurial and managerial skills embodied by employees of the organization” (Kuz'minov, et al., 2019).

Nowadays, in global practice, the greatest recognition is received by the three-tier structure, according to which the constituent components of intellectual capital are human (HC), structural (SC) and customer (CC) capitals (Alekseeva, 2019; Faisullin, et al., 2020; Andreeva and Garanina, 2017). Human capital is a set of general corporate, managerial and functional competencies of personnel (educational level, professional knowledge and skills, innovative and creative abilities, moral values, leadership qualities, results orientation, etc.), which are not the property of the organization, but are used to make economic profit. Structural capital determines the unique perception and appearance of the organization, which distinguishes it in the market and increases its competitiveness, characterizes the degree of use of human capital. Customer capital is often referred to as “relationship capital” because it includes information about customers, a history of reliable and mutually beneficial relationships with them, the image of the organization, its business reputation, brand, sales channels and order book, which together form a system of relations with consumers, aimed at the fullest possible satisfaction of their needs.

Note that such a division of intellectual capital is an effective analytical technique that allows analyzing and managing its individual elements. In practice, they exist and function together, creating a synergistic effect and forming that new quality that is inherent in intellectual capital as a whole. According to many foreign and Russian researchers (Berzkalne and Zalgale, 2014; Obeidat, et al., 2017; Ozkan, et al., 2017; Bontis, et al., 2018), the presence of these elements in the system of formation of intellectual capital are extremely important in the activities of modern enterprises that operate in a global economy, since in the absence or in a critical state of at least one component of intellectual capital, the organization will fail.

2. Materials and methods

The work used materials from specialized literature, scientific and practical conferences, statistical data reflecting current trends in the formation and management of intellectual capital in global and domestic practice. When assessing the intellectual capital of a research and production company, that develops and implements additive technologies for the transport complex enterprises, a structural approach was used, including an assessment of each individual component and the subsequent calculation of the integral indicator of the total level of intellectual capital.

3. Results

3.1. Current trends in the formation and use of intellectual capital in Russian and foreign companies

Within the framework of this study, the analysis of the most relevant trends in the formation and use of intellectual capital in world practice was carried out, the results of which are presented in figure 1.

The development of human resources is determined by the following factors: the formation of a strategy for the search and selection of personnel; increasing the level of professional and personal development of the company's employees; an increase in the costs of dismissing an employee; growing demand of applicants for interesting and socially significant work. As the required knowledge accelerates and becomes more complex, the competencies of employees in organizations become obsolete. Changes in business require the use of innovative tools and approaches. Therefore, the management of companies needs to be at the head of this process. In an unstable economic situation, companies must find ways to effectively operate in national markets that differ in social, technological and economic indicators.

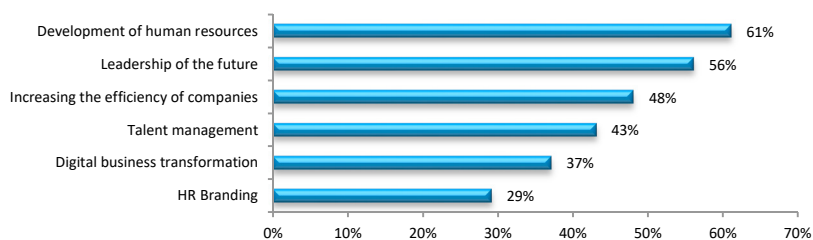


Fig. 1. Current trends in the formation and use of intellectual capital in the world's leading companies. Source: compiled by the author.

To determine the main trends and problems in the formation of intellectual capital in Russia, the author of this paper analyzed the results of a survey of RosExpert Executive Search and PwC Russia, conducted among 183 companies in 30 constituent entities of the Russian Federation (Fig. 2).

In general, across the regions, companies note a significant shortage of specialists in the labor market, the absence of highly qualified workers, and a general decline in the quality of personnel. PwC respondents noted such tendencies as inertia, low qualifications and lack of knowledge of foreign languages among applicants for vacant positions in companies.

According to the survey data, for the effective use of intellectual capital, the most priority ones are (Fig. 3): the development and implementation of programs for training and professional development of personnel (26%), the introduction or improvement of the personnel appraisal system (24%), and optimization of the organizational structure of the company (19%). Activities aimed at creating corporate culture are less popular. Only 13% of Russian companies plan to pay attention to this most important aspect of the formation of intellectual capital.

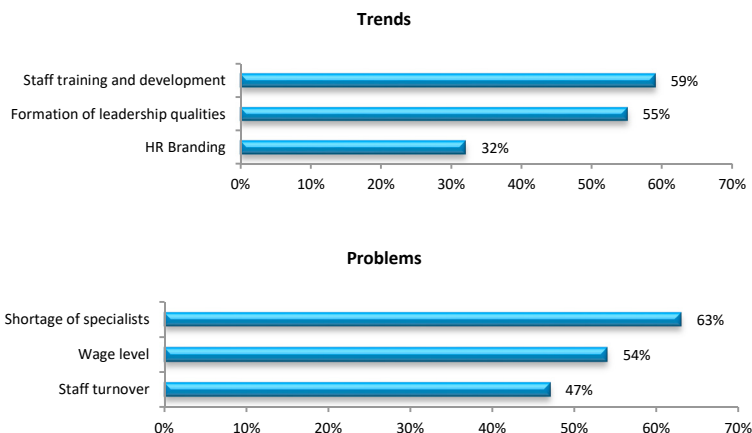


Fig. 2. Current trends and problems of the formation of intellectual capital in Russian organizations and enterprises. Source: compiled by the author.

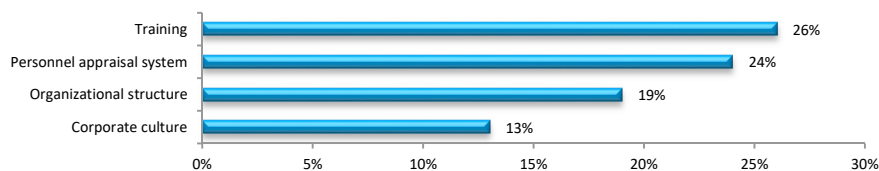


Fig. 3. Priority areas for the use of intellectual capital in Russian companies. Source: compiled by the author.

3.2. Method for assessing intellectual capital based on the structural approach

The analysis showed that in the conditions of an innovative economy, the formation and use of the intellectual capital of Russian organizations requires an understanding of a very significant number of factors. The authors of the article note that for the formation and reproduction of intellectual capital from the company's resources, only those are selected that have the potential to increase value without additional costs per unit of production. We are talking about a significant increase in the market value of an organization's capital, which is created due to its competitive advantage in the market for goods and services, as well as in the labor market. Competitive advantage is expressed through the ability of a company to create additional value for the consumer for each unit of product (or service) offered on the market, such that will significantly exceed the value created by a competitor, all other things being equal.

It is quite obvious that it is not enough for any organization to have intellectual capital if it cannot be measured. That is why a significant part of research and scientific work is devoted to the assessment of intellectual capital, since it plays an important role in the ability of enterprises to make a profit. The analysis of scientific sources makes it possible to distinguish quantitative and qualitative groups of approaches and methods for assessing intellectual capital.

Quantitative methods:

1. Market capitalization:

- the absolute value of intellectual capital, which allows performing a simple calculation of its absolute value;
- “Marketto Book ratio” method, which allows for a comparative analysis of companies in the same industry operating in the same markets and having a similar base of tangible assets;
- Tobin's coefficient (Q), which allows assessing the investment attractiveness of a company;

- a method for assessing intellectual capital using the average annual return on assets (ROA), which allows comparing the intellectual capital of a company with the normalized industry average;
- assessment of the value of intellectual capital based on information productivity, which allows separating a part of the net income from the total revenue of the company received from the intellectual capital of the decision-maker, the art of management.

2. The cost approach, which is the determination of value based on the costs associated with the formation of the company. This approach includes: the residual value method, the adjusted book value method, the replacement method, the asset accumulation method.

3. The market approach, which is applied when there is reliable and readily available information about the selling prices and characteristics of comparable companies and determines the value of the company based on the market price of the shares of the comparable companies. This approach includes: capital market method, transaction method, industry coefficient method.

4. Income approach, which allows determining the value based on the future benefits of owning the company and is applied if it is possible to predict the future earnings of the company with a certain probability. This approach includes: method of real options, method of discounting cash income, method of capitalization.

5. Direct measurement:

- approach to the valuation of intellectual capital based on accounting for intangible assets in the balance sheet at its cost;
- valuation of goodwill using an indicator of business activity, which includes the share of goodwill, trademark, etc.

6. Human resource accounting model (HRA):

- market method, which determines the value of intangible assets at the price of analogs;
- income method, including monetary models, implying an estimate of the present value of future cash flows during the remaining life of intangible assets;
- cost methods (HR value models) that determine the cost of the development of the company's personnel, calculate the value of the company's intangible assets and imply the combination of behavioral models with an economic value model.

7. The method of parametric assessment of technologically related projects, which is used in project analysis and involves the assessment of independent variables that can act as characteristics, functions or descriptive elements. They are used in evaluating the results at the early stages of project development, when there is a lack of detailed information.

8. Scorecard methods (SC-methods), which allow monitoring intangible assets, performing an indicative analysis of all parameters (including factors of the internal and external environment) included in the balanced scorecard, as well as obtaining an integral assessment of the company's intellectual capital through a holistic value approach (HVA) and IC-index method.

Qualitative methods:

- The methodology for assessing the knowledge intensity of the economy (KAM), which is developed by the World Bank and includes more than 80 parameters to measure a country's readiness for the transition to a knowledge-based development model.
- A structural approach, which is not a final assessment, is used in non-financial models and includes an assessment of each individual component and the calculation of an integral indicator of the total level of intellectual capital.

The vast majority of approaches and methods belong to quantitative (value) methods of assessing a special type of intangible assets from the position of the market capitalization of a business. The emphasis is on the absolute and/or relative increase in the market value of capital over the book value (balance sheet currency). A number of methodologies attempt to clarify the influence of a separate component on intellectual capital as a whole. For example, the indices of the contribution of an individual intangible asset to the value of the entire intellectual capital of a company are given. A special place belongs to groups of methods for assessing human capital and human resources.

Due to the existing complexity and certain limited use of traditional approaches and methods for assessing intangible assets, the specifics of individual components of intellectual capital, as well as the lack of a single

universal methodology for their assessment, it is necessary to conduct additional research and form a new assessment concept, which is a symbiosis of quantitative and qualitative assessment methods.

Within the framework of this study, a methodology for assessing intellectual capital based on a structural approach is presented, which is justified by a number of reasons:

- the rapid dynamics of the creation, transformation, application and utilization of new knowledge as a type of intellectual capital;
- the need to classify companies that create, use, transform, and/or utilize new knowledge;
- the feasibility of assessing the speed and intensity of creation or use of new knowledge by employees of organizations.

Table 1 shows the indicators for assessing intellectual capital.

Table 1. Indicators of intellectual capital assessment.

No.	Indicator name	Characteristic
Indicators for assessing human capital (ICc)		
1	Personnel education level index	Educational level of the organization's personnel
2	Index of the level of innovative and creative abilities	Level of innovation and creativity of the organization's personnel
3	Engineering and scientific support index	Potential ability of personnel to solve engineering and applied scientific problems
4	Inventive activity index	Ability to generate technical and technological solutions that can form the basis of innovation
5	Knowledge update index	Compliance of the level of knowledge of employees with modern requirements
6	Human capital development reserve	Share of young professionals
Indicators for assessing organizational capital (ICo)		
7	Share of staff participating in corporate events	Activity of employees in the formation of the corporate culture of the organization
8	Management profitability index	Effectiveness of management by company's managers
9	Index of profitability of the organization from the use of trademarks	level of profitability of the organization from products sold using trademarks
10	Share of manufactured products based on intellectual property	Degree of implementation of the results of research and development in the production process
11	Information availability index	Level of employee access to databases of scientific developments, innovations, etc.
12	Share of investment in research and development	Financial sustainability and the organization's ability to engage in scientific activities
Indicators for assessing client capital (ICk)		
13	Economic efficiency in the formation of a positive image of the company (brand)	Return on investment in the formation of a positive image of the company in order to strengthen the organization's position in the market
14	Percentage of regular customers	Degree of customer commitment and trust in the organization
15	Share of products manufactured using trademarks	The presence and degree of use of the brand for recognizing the organization in the market
16	Percentage of customers who form the company's image	Relationships with customers who have a good reputation (or have well-known brands) and form the image
17	Cost-effectiveness of marketing activities to attract new and retain old customers	Profitability from customer building measures (customer acquisition and retention)
18	Customer retention index	Customer satisfaction with the first order and the stability of customer relationships

In our opinion, the structural approach is complex, but at the same time sufficiently detailed and demonstrates the share of the contribution of each individual component of intellectual capital, since its calculation includes human, organizational and client capital. Each of these components can be presented as an aggregate indicator reflecting the level of development of a certain type of intellectual capital.

In the collective monograph "Economics and Management of Intellectual Capital" researchers and scientists of the St. Petersburg State University of Economics an assessment of the intellectual capital of an organization using a multidimensional average can be applying out by means of calculations according to formula 1:

$$Z_{IC} = \sqrt[3]{ZICc * ZICo * ZICk}, \quad (1)$$

where: ZIC – integrated index for estimating the cost of intelligent capital of the organization; ZICc – general index of human capital; ZICo – general index of organizational capital; ZICk – general index of client capital.

This approach allows calculations in cases where none of the private coefficients can be zero, otherwise the integral coefficient will be equal to zero. In this regard, it is proposed to allocate three levels of intellectual capital of the organization (Table 2).

Table 2. Range of values of integral indicator of intellectual capital of the organization.

Z-index value	Intellectual capital level	Characteristic
$0.67 > Z = 1$	High	Sufficient for accelerated growth
$0.33 = Z < 0.67$	Average	Sufficient to ensure the stability of the organization
$0 = Z < 0.33$	Low	Insufficient, capable of damage to the organization

The use of the proposed method for assessing intellectual capital will determine the current state of intangible assets of the organization, track the dynamics of their development, identify strengths and weaknesses. Based on the analysis, it is necessary to implement the most optimal strategy for the formation of intellectual capital for timely adaptation to changes in the internal and external environment of the enterprise in accordance with the processes occurring in the global economy. It should be emphasized that this method also allows taking into account the intellectual potential of persons receiving management decisions in the absence of complete and reliable information in conditions of uncertainty. Therefore, in our opinion, it is advisable to study the intellectual potential of the organization through the activation of the “brain center” of persons who take important strategic decisions.

3.3. Assessment of intellectual capital of a research and production company engaged in the development and implementation of additive technologies for the transport complex enterprises

Enterprises of the transport complex, which includes objects and subjects of transport infrastructure and vehicles, are currently one of the main consumers of high-tech products, thereby providing support and development of the economic, scientific and technical potential of Russia.

Transport as component of the economic infrastructure includes railway, sea, road, air, river and pipeline types.

Industrial and urban public transport are also elements of the transport complex.

As part of this study, the intellectual capital of the Research and Production Company of St. Petersburg was carried out. The results of the innovation activity of this company aimed at developing additive technologies through introducing industrial enterprises of the transport complex enterprises to the production processes are:

1. Growing high-precision products from refractory materials, as well as materials with high thermal conductivity: metal powder materials, for example, based on tungsten, rhenium, etc., copper alloys, aluminum super-eutectic alloys ALSi, ceramic refractory materials.

2. Growing the compound metal / polymer and metal / ceramic products. The system can be used, for example, for the manufacture of elements of electric motors (windings and insulators), relays, heating elements with fundamentally new approaches to the design of such products.

3. The use of heavy lasers to implement the process of additive cultivation of products made of metal and ceramic powder materials has recently been a new direction of development of selective laser growing technology. The principle of technology is based on high peak power in a picosecond/femtosecond pulse, over 1 MW, which allows the local temperature on a picosecond and subpicosecond scale to reach the local temperature above 7000 C, which allows instantly heating and melting any refractory material, but limiting the melting area on the scale of several units to several tens of micrometers. During the process, it is necessary to maintain the pulse energy just below the ablation threshold, and the amount of thermal exposure is regulated by the repetition rate and scanning speed at a given focal spot size.

4. Development of the design and production of an experimental technological complex for the implementation of an additive cultivation technology based on a short-pulse laser. This experimental complex includes the following components:

- fiber picosecond laser;
- scanner with focusing optical system for controlling the position of the laser beam on the sample surface;
- fiber picosecond laser control system;

- equipment management software.

5. Development and implementation of printing technology by selective laser sintering of compound metal/polymer and metal/ceramic products.

The use of additive technologies is widespread in the transport industry, since they are in demand at all stages of manufacturing, from the creation of finished parts or products to repair of specific equipment units by optimizing technological processes, improving product quality and environmental friendliness.

To analyze the change in the level of intellectual capital of the research and production company, a comprehensive assessment of its structural components is necessary. Table. 3 presents identified indicators for assessing human capital as the main element of the intellectual capital of the company under study.

Table 3. Assessment of indicators of human capital elements of the studied research and production company.

Elements of human capital	Indicators (%)	Number (ppl)	Index
Level of staff education	Share of developers	78	0.07
Index of the level of innovative and creative abilities of employees of the company	Share of workers who have successfully passed testing of innovative and creative abilities	46	0.04
	Share of developers who defended dissertation work	4	0
Index of engineering and scientific support of the company	Share of developers who have Scopus publications	17	0.02
	Share of employees who have RSCI publications	62	0.08
Personnel's inventive activity index	Share of developers who have applications for patents and innovation offers	20	0.03
Index of updating knowledge of employees of the company	Share of workers who have undergone training courses	63	0.06
Reserve of human capital development	Share of young scientists under the age of 39	44	0.04

The share of developers is calculated by formula 2 (Zaruchnikova and Glukhov, 2019):

$$A1 = D1 / Li * 100\%, \quad (2)$$

where: D1 – number of developers (ppl); Li – list number of employees (ppl)

$$A1 = 78 / 107 * 100\% = 72.3\%$$

The share of workers who have successfully passed testing of innovative and creative abilities is calculated by formula 3 (Zaruchnikova and Glukhov, 2019):

$$A2 = D2 / Li * 100\%, \quad (3)$$

where: D2 – number of workers who have successfully passed testing of innovative and creative abilities; Li – list number of employees (ppl)

$$A2 = 46 / 107 * 100\% = 42.9\%$$

The share of developers who defended dissertation work is calculated by formula 4 (Zaruchnikova and Glukhov, 2019):

$$A3d = D3d / Li * 100\%, \quad (4)$$

where: D3d – number of developers who defended dissertation works (ppl); Li – list number of employees (ppl)

$$A3d = 4 / 78 * 100\% = 5.13\%$$

The share of developers with Scopus publications is calculated by formula 5 (Zaruchnikova and Glukhov, 2019):

$$A3s = D3s / Lid * 100\%, \quad (5)$$

where: D3s – number of developers with Scopus publications (ppl); Lid – list number of developers (ppl)

$$A3s = 17 / 78 * 100\% = 21.79\%$$

The share of developers with RSCI publications is calculated by formula 6 (Zaruchnikova and Glukhov, 2019):

$$A3r = D3r / Lid * 100\%, \quad (6)$$

where: D3r – number of developers with RSCI publications (ppl); Lid – list number of developers (ppl)

$$A3r = 62 / 78 * 100\% = 79.49\%$$

The share of developers who have know-how, applications for patents and certificates of registration, rationalizing proposals and acts of implementation is calculated by formula 7 (Zaruchnikova and Glukhov, 2019):

$$A4 = D4 / Lid * 100\%, \quad (7)$$

where: D4 – number of developers who have know-how, etc.; Lid – list number of developers (ppl)

$$A4 = 20 / 78 * 100\% = 25.64\%$$

The share of employees who have undergone training courses are calculated by formula 8 (Zaruchnikova and Glukhov, 2019):

$$A5 = D5 / Li * 100\%, \quad (8)$$

where: D5 – number of employees who have undergone training courses (ppl); Li – list number of employees (ppl)

$$A5 = 63 / 107 * 100\% = 58.88\%$$

The share of young scientists under the age of 39 years is calculated by formula 9 (Zaruchnikova and Glukhov, 2019):

$$A6 = R6 / Li * 100\%, \quad (9)$$

where: D6 – number of young scientists under the age of 39 (ppl); Li – list number of employees (ppl)

$$A6 = 44 / 107 * 100\% = 41.12\%$$

The general index of human capital is determined by the summation of all obtained values.

$$HC = 0.07 + 0.04 + 0 + 0.02 + 0.08 + 0.03 + 0.06 + 0.04 = 0.34$$

Based on the indicators shown in Table 2, it is concluded that the general human capital index of the studied research and production company is in the mid-level range that is sufficient to ensure the stability of the organization.

4. Discussion and conclusions

Issues of formation and use of intellectual capital, primarily its assessment, are the most relevant in recent decades, which is associated with the digitalization of the global economy, therefore, with the transformation of vision, mission, the meaning of life and the activities of modern companies and the world as a whole. The role and importance of the “intellectual capital” factor demonstrate a steady tendency to increase, especially important formation and use of intellectual capital becomes in the conditions of digital transformation of the economy and the transition to the sixth technological way. Modern technological determinism creates the conditions of such changes, dictates the logic of the development of human civilization in the context of the implementation of the fourth industrial revolution, determines the dynamics and contours of possible transformations of socio-economic systems.

Currently, the basis of the innovation economy is high-tech production, the dominant role in which is belonging to the ability of organizations to create and use intellectual capital. Already since the beginning of the 2000s, for many international companies working in the field of high technology, the share of intellectual capital in total cost is constantly increasing, which is reflected in their market value, which may exceed the balance assessment of assets in hundreds and thousands of times.

In the process of studying the issue of the degree of direct and indirect influence of intellectual capital on the global economy, it was revealed that it was it who is the leading factor in the innovative development of any country in general and organizations in particular, since:

- Contributes to the transition of society to a new technological level by creating high-tech competitive products.
- Leads to an increase in the effectiveness of the activities of organizations and productivity of their employees.
- Forms an innovative type of personality thinking, a new system of personnel valuables, respectively, changes in the corporate culture of organizations.
- Leads to a change in the structure of demand in the labor market, since significantly increases the need for highly qualified specialists who can quickly adapt to changing conditions.
- leads to the formation of new markets at various levels of the economy: local, regional, national and global.
- Significantly accelerates the process of bankruptcy of non-competitive organizations, since only those enterprises will survive, which will have a sustainable competitive advantage in the market due to the intensive development and introduction of new knowledge, innovative technologies and equipment.
- It helps to establish a high price of innovative goods and services of a monopoly intellectual company.

In relevant trends in the formation and use of intellectual capital in global and Russian practice, both similarities and differences are present. In Russia, the attitude towards intellectual assets as the most important and promising capital is found only in projects that have the support of the state, companies operating in the field of information and communication technologies, as well as in sufficiently large financial organizations that diversify their activities and sufficiently focus on digital technology. Most of the companies of secondary and large businesses are still rarely considering the creation and management of intellectual capital as the main priority of strategic development. On the one hand, this is caused by the need for significant investment in research and development, and on the other, it requires a cardinal restructuring of the assets and management mechanisms, as well as changes in the paradigm of thinking of leaders and middle managers in accordance with the intensively developing innovation economies.

In global practice, emphasis to improving the efficiency of companies, the implementation of strategic HR integration, the preservation of the productivity of aging labor force, the management of talents that could be successfully applied to the activities of Russian organizations and enterprises is relevant. But usually managers are extremely skeptical about the fact that, introducing a strategy for talent management, it is possible to reduce personnel fluidity, as well as to increase the productivity of the company's personnel. At the same time, negative trends are characteristic of Russia, such as: a shortage of qualified specialists and personnel turnover, which, unfortunately, are leading. In recent years, the role of the employer's brand is increasing in Russian organizations, while in global management practice, HR branding has been practiced for a long time.

I would like to emphasize once again that the presence of intellectual capital of modern organizations is one of the main defining innovative development that ensure the stable strengthening of their position in the market. A distinctive feature of the innovation economy is that it is based on the exchange and use of the key resource of its development – intellectual capital. On the one hand, intellectual capital is a leading factor of production, a vital resource of economic activity; on the other hand, it acts as an independent object of economic and managerial

relations. The significance of intellectual resources in the management of modern economic relations is determined by their role in the execution of business processes, and the effectiveness of intellectual capital management is estimated on the basis of the analysis of these processes with the implementation of the organizational strategy.

In the studied research and production company of St. Petersburg, the identification of intellectual capital elements, the development of evaluation criteria, and the choice of targets were carried out on the basis of the organization's objectives taken by defining intellectual capital, the decomposition of its elements. The results obtained allow drawing the following conclusions. The general human capital index of the studied company is 0.34; structural capital – 0.23; customer capital – 0.17. The integrated intellectual capital index of the company is 0.74, which is sufficient for the accelerated growth of the organization.

To increase human capital indicators in the studied company, it is necessary to carry out personnel measures to form a staff selection strategy, develop a program for adaptation of young professionals, create an effective system of motivation and stimulating the labor of personnel, its professional development and training. Analysis of intermediate indicators of organizational capital, which is the basis of the company's innovative development, allows drawing conclusions that it is necessary to implement corporate culture improvement programs, increase staff loyalty, use technologies of effective team education, based on improving the confidence “personnel – personnel” and “personnel – management”.

The management of the company under study should pay attention to the management of organizational changes requiring the revision in connection with the processes of digitalization. To promote the intellectual product of the company, it is necessary to seriously accumulate customer capital, which implies the study of the market for additive technologies, the needs of Russian industrial enterprises, the use of modern methods in the field of marketing innovation.

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