

1st International Scientific Practical Conference "The Individual and Society in the Modern Geopolitical Environment" (ISMGE 2019)

# Intellectual asset of Russian organizations

Valery Smirnov Chuvash State University, Cheboksary, Russia

Galina Dulina Chuvash State University, Cheboksary, Russia Anna Zakharova Chuvash State University, Cheboksary, Russia zaharova\_an@mail.ru Vladislav Semenov Chuvash State University, Cheboksary, Russia

Svetlana Petunova Chuvash State University, Cheboksary, Russia

Abstract - At the modern stage of the world economic development, the real wealth of leading countries is a population with a high intellectual level. Discussion of the problem of using the intellectual asset of an organization led to two conclusions: firstly, the total intellectual asset, as the intersectionality of the intellectual resource and information and communication technologies, along with other resources of society, it is necessary to learn how to use it effectively; secondly, intellectual asset is an operational and flexible tool for the formation of human thinking and the intellectual development of society. Intellectual asset is a complicated and complex phenomenon, which is not limited to the presence and development of only computer equipment. The total intellectual asset used in material production is associated with level of intellectualization of labor processes. the Intellectualization of work processes is closely related to social processes. An increase in the intellectual component in the work activity of a community member leads to changes in the assessment of its social status. The size of an organization's intellectual asset can be associated with the number of highly intelligent members and the information and communication technologies at their disposal. By investing in human capital, supporting the policy of reproducing qualified personnel, and thereby increasing professionalism, competence, initiative, creative approach to the work of specialists, paying attention to training and retraining, Russian organizations can maintain a high intellectual level of labor. As a result of the analysis of the total intellectual asset of Russian organizations using cluster and neural network analysis to the types of economic activity, intensive users of information and communication technologies with a total staff of up to seventy people are revealed.

Keywords - asset, intellect, information, cluster, communication, neural network analysis.

## I. INTRODUCTION

One of the multiple tasks of economic theory is the research of objective patterns of society's evolution. Each new phase of development of the economic system is associated with a reassessment of the role of dominant productive forces and industrial relations. The evolutionary and revolutionary processes occurring in economy and nature affect each individual subject, as well as humanity and civilization as a whole.

In the process of studying the objective economic patterns of the human civilization evolution, a significant role is given to problems related to the understanding the role of labor and to the attitudes towards it among the members of economic communities. It is essential to understand what forms of labor play a decisive role in the development of the human community and civilization as a whole.

In modern conditions, the progressive form of development of Russian organizations is intellectual and labor activity. It is necessary to distinguish between intellectual labor (a kind of labor aimed at changing information inherent in objects of the surrounding world) and the intellectualization of labor (increasing the share of intellectual labor in human activity).

The effectiveness of the intellectual and labor activity can be defined as the ratio of revenue to the total intellectual asset (TIA). TIA is the totality of intellectual resources (IR) and information and communication technologies (ICT) of controlled organizations for obtaining economic benefits in the future [1, 2].

IR is an intangible asset that includes knowledge, skills, information, technological and spiritual potential of people, the level and quality of their education, which can be applied to produce goods and their sale (patents, licenses, copyrights, skills of people, trademarks and etc.).

ICT is the processes and methods of interaction with information, which are carried out with the use of computing equipment, as well as means of telecommunication.

The source of IR is a person who develops in the production process – his experience is enriched, his knowledge is deepened, his skills are improved. At the end of the labor activity, he knows and is able to do much more than at the beginning. In the process of labor, the properties of human as a productive force are developed, the level of his qualification rises. These potential changes, accumulating, are ultimately reflected in the improvement of the means of labor, technology, and organization of the production process.

The applying ICT as a means of labor is a measure of the labor force development, is a consequence of its development level. Primary elements in the development of society are not material objects in themselves, but human activity, material practice, the process of interaction between human and nature. A kind of bifurcation of nature occurs in production. As an objective reality, not only subject opposes the human, but also the means of labor. The role of the means of labor is dual – in relation to the object of labor, it acts as a social power, and to the human as a power of nature.

### II. PROBLEM ANALYSIS

In the modern economy, creative, innovative labor is needed that can provide a breakthrough into the future. It should be the subject of special value, prestige, the primary means and condition of both social development and the improvement of a human personality.

Labor, in the process of evolution, is increasingly filled with intellectual content, the degree of which reflects its quality, value for the individual and the whole human community. Considering the issues of the intellectualization of labor and its role in modern society, it is impossible to do without such concepts as "information" – ICT. Intellect is a specific category of human labor, it should be considered more than "information", as a rule, in conjunction with ICT.

Intellectualization of labor is a process of continuous enrichment of knowledge that is in a dynamic state. The main factors for raising the intellectualization level of labor are education, the willingness to raise it, genetic abilities and taking into account the experience of previous generations.

The development of science, scientific and technical progress have led to the fact that intellectual labor has gained the form of TIA. The material production has become so complicated that even so-called physical labor requires only high qualification and more elements of intellectual labor embedded into it.

F. Engels argued that the production of ideas, views, and consciousness was originally directly interwoven into material activity and the material communication of people, into the language of real life. Engels points out that a person in his mental activity reflects material production not only from the content side, but also reflects the structure and form of production [3, 4].

The product of intellectual labor can be either in the form of an object or in the form of a tool of labor. It is important to understand that the product of intellectual labor acts as an instrument of reproduction. This means that human development is stimulated by the interests of the development of material production, and should occur at a faster pace with respect to the latter.

V. Leontief in his work "The Modern Significance of Karl Marx's Economic Theory" gives an explanation of Marx's main provisions on the evolution of economic systems. Continuous technical progress, accompanied by an increase in the role of fixed capital, and equally important, the undiminished amplitude of regularly recurring business cycles – an outstanding series of fulfilled predictions which modern economy with all its complex apparatus cannot oppose yet [5].

In the scientific work "Economic Essay", he formulated important provisions on that economic dynamics can be viewed as an evolution of scientific and technological progress. Historically, economic development occurred at a faster rate due to technological changes generated by scientific discoveries. Leontief noted that the implementation of machines was carried out with the simultaneous employment of highly skilled workers. He discovered the phenomenon of economic development which is the parallel movement of two excluding factors of production – "machines" and "human" [6, 7].

The specific feature of applying ICT is increasing human knowledge, improving organization in the environment.

W. Dizard believed that the "information society" was a civilization, at the heart of the development and existence of which lay a special non-material substance, conventionally called "information", having the property of interaction with both the spiritual and the material world of human [8].

The latter property is especially important for understanding the essence of a new society, because, on the one hand, information forms the material environment of a human's life, playing the role of ICT, and on the other hand, it serves as the primary means of interpersonal relations, constantly arising, changing and transforming in the process of transition from one person to another. Consequently, the TIA simultaneously includes the social, cultural life of a person and his material existence.

The current understanding of the TIA category is seen as the intersectionality of IR and ICT, which, in turn, are the main pivot of the evolution of this economic category, determining the appropriate development level of the production relations of society.

#### III. METHODOLOGY

The active use of ICT in Russian organizations started with accepting the Strategy for Information Society Development. The aim of the Strategy for Information Society Development is to create conditions for the formation of a knowledge society through the development of human potential; ensuring the safety of citizens and the state; enhancing the role of Russia in the global humanitarian and cultural space; development of free, sustainable and safe interaction between citizens and organizations, state authorities of the Russian Federation, local governments; improving the efficiency of public administration, development of economy and social sphere; the formation of a digital economy. The Strategy for Information Society Development expands the horizons of information accessibility for all categories of citizens and forms of organizations.

The basis of the TIA analysis methodology is the assessment of IR and ICT in the system of production relations, the possibility of eliminating the dichotomy between a human and scientific and technical progress.

We single out the main characteristics of industrial relations based on applying ICT IR and ICT. One of the features is that the physical movements will be replaced by information links, i.e. the movement of people will be replaced by movement of messages (signals sent by people). According to the experts, up to 90% of all transport movements of people are related to the informational aims (meetings, signatures, certificates, etc.). The application of ICT dramatically reduces the time during which people must

stay in the workplace. This will certainly require a radical rebuilding of the industrial process, a significant increase in the culture and consciousness of people and also the development of new valuable characteristics.

Due to changes in the system of production relations, there will be a need for continuous retraining of labor resources [11]. During the active life of a person in the information society, he will be forced to change his profession several times.

Requirements to the intellectual and creative abilities of a person, to his psychological characteristics are increasing [12]. There will be a problem with the unemployed people who are in active age, but whose abilities to work will not meet the new requirements. The larger this group, the more acute the problem of its employment.

There is a problem of adequately high payment of intellectual labor, readiness for this by employers. The emergence of information as consumer goods leads to qualitative shifts in consumption, lifestyle, synthesizes a new model of life activity of individuals.

An important feature of the applying IR and ICT in the system of industrial relations is associated with the formation of a new view of labor as a need in the conditions of information society: the need for achievement – the production of information – the action to achieve the aim – satisfaction – the development of information productive power – the need for achievement

In order for the TIA production system to remain competitive, able to maintain and develop the achieved positions, it is necessary to purposefully search for and select people interested in the process itself, in creative work with the further creation of favorable conditions.

This direction should have a priority, strategic nature for society, shape public opinion about the need for work activity and creativity, create conditions for continuous professional education and growth and improve the system of material and moral incentives.

As it is known, the source of economic progress is economic contradictions. One of the features of intellectualized labor activity is that a new problem appears – the problem of choice in the economy as a way to resolve contradictions. The need for choice in the economy is due to two objective reasons: the need and limited resources.

The society is always striving to define the optimal variant of economic development, i.e. one in which not only there will be no losses (direct and indirect), but also there will be the factors of production used in the best way (means of production and labor force). Society can achieve this only at the border of production possibilities, where the human is the final aim of social production.

The actual issue of the modern economic situation in Russia and the prospects for the economic development of Russian society is solved, one way or another, through the prism of TIA. The scientific community is beginning to form a concept of such a society as a reality for developed countries and in the near future for successfully developing countries. However, the TIA of Russian organizations has not yet been formed. Russian universities have not yet replaced industrial corporations as the basic institutions of a new society, the basic level of knowledge has not yet become the determining factor in the importance of the individual.

Under the influence of TIA, the forms of economic activity, kinds and types of organizations, the nature of the relationship between employers and employees, between staff and customers are changing. New effective means of communication provide flexible organization of production, making it more competitive.

### IV. RESULTS

TIA analysis of Russian organizations includes two stages.

The first stage is to assess the importance and the order of agglomeration of economic activity types. Cluster and neural network analysis of statistical data of the Federal State Statistics Service of the Russian Federation 2010 -2017 will allow us to assess the importance and order of agglomeration. (Table 1).

TABLE I.	USE OF PERSONAL COMPUTERS, THE INTERNET AND WEB
SITES IN ORGAN	VIZATIONS (2003-2017) (CALCULATED IN "SPSS STATISTICS"
BASED ON DA	TA FROM THE FEDERAL STATE STATISTICS SERVICE OF THE
	RUSSIAN FEDERATION, URL: HTTP://GKS.RU)

N⁰	Types of economic activity	Cluster analysis			Neural network analysis
		Merged cluster		Squared Euclidean distance	Normali zed importa nce %
1.	Extraction of fuel and energy mineral resources	3	11	0.59	31.9
2.	Extraction of mineral resources, except for fuel and energy ones	12	13	1.11	11.1
3.	Food production, including beverages and tobacco	7	25	1.7	25.4
4.	Textile and clothing manufacture	3	7	2.0	56.4
5.	Manufacture of leather, leather goods and footwear	20	24	2.3	14.8
6.	Wood processing and manufacture of wood products	12	22	3.1	40.9
7.	Pulp and paper production; publishing and printing activities	3	23	3.5	30.1
8.	Manufacture of coke and petroleum products	14	20	3.5	100
9.	Chemical production	3	9	3.8	15.8
10.	Manufacture of rubber and plastic products	3	14	6.1	16.8
11.	Manufacture of other non-metallic mineral products	15	21	8.1	37.1
12.	Metallurgical industry and manufacture of hardware	3	12	8.7	40.3
13.	Manufacture of machinery and equipment	2	17	9.6	15.4

N⁰	Types of economic activity		luster a	Neural network analysis	
		Merged cluster		Squared Euclidean distance	Normali zed importa nce %
14.	Production of electrical, electronic and optical equipment	3	10	9.9	65.4
15.	Production of vehicles and equipment	1	5	12.8	47.0
16.	Production and distribution of electricity, gas and water	3	8	15.1	67.3
17.	Building industry	18	27	16.6	36.4
18.	Wholesale and retail trade; repair of motor vehicles, motorcycles, household goods and personal use items	2	15	20.5	25.1
19.	Hotels and restaurants	16	19	23.9	20.9
20.	Connection	1	18	28.0	61.5
21.	Financial activities	6	16	39.7	92.9
22.	Research and development	1	2	47.3	56.9
23.	Governance and military security; social insurance	1	3	65.9	45.1
24.	Higher professional education	4	6	67.0	27.4
25.	Health care and social services	4	26	138.1	20.5
26.	Activities for the organization of recreation and entertainment, culture and sport Other activities	1	4	251.4	48.4

The spheres actively using ICT are: "Health care and provision of social services", "Metallurgical industry and manufacture of hardware", "Manufacture of coke and petroleum products", "Food production, including beverages and tobacco", "Building industry", "Financial activities", and "Pulp and paper production; publishing and printing activities".

The second stage is an assessment of the efficiency of applying ICT by the Russian organizations actively using clustering. This assessment is made by examining the dynamics of the relevant indicators. Analysis of the efficiency of applying ICT by the Russian organizations actively using clustering is associated with some complexity. This is due to the lack of consolidated statistics on profits as a result of ICT implementation. Compensation for this disadvantage is linked to the aggregation of macro indicators relative to the number of employees using PC. (Fig. 1.).



Fig. 1. Organizations with a specific weight of the number of employees used a PC (2003 - 2017) (built according to the data of the Federal State Statistics Service of the Russian Federation. URL: http://gks.ru).

The dynamics of organizations, with a specific weight of the number of workers used PC, makes it possible to highlight a change within the framework of mathematical error in organizations of 10-29 and 50-69 people. The growth in the number of workers used PC is demonstrated by organizations with 70-100 people, and the decline is observed in organizations with less than 10 workers. At the same time, it should be noted that in 2017 the organizations did not use PC were at the level of 2003.

### V. DISCUSSION

The analysis of the TIA of Russian organizations leads to the following conclusions: awareness level of the possibilities of applying IR and ICT has increased; accessibility and prevalence of PC has also increased; there have been changes in the forms of intellectual labor; new values and behavior patterns have emerged (the range of users, realizing the potential of TIA and its influence on the assessment of a person's professional level and cost of labor has broadened); The influence of ICT on the processes of social integration and differentiation is increasing.

The phenomenon of the Russian attitude to intellectual work is that even in those spheres of activity where work is purely individual and represents exclusively creativity (scientific work, invention, etc.). In this case, the highest intellectual, the creative rise is achieved by combining the efforts of creative individuals, in the interaction. Russian human most often meets intellectual needs in a team.

Intellectual creativity for a Russian person is a need that does not often require a decent financial assessment and can even be called "innate".

These subjective factors of the Russian mentality are an objective reality that must not only be considered but also be used purposefully to develop the country's competitive potential through appropriate forms of stimulation of the "intellect". In an unstable economy, difficulties regarding the allocation of resources for scientific research, as well as for professional retraining of workers have emerged. Without research institutions concentrating a critical mass of highly qualified and highly educated people, no country can provide real sustainable development on an endogenous basis, and developing and poor countries cannot, among other things, reduce the gap between them and industrialized countries. Knowledge sharing, international scientific collaboration, and new technologies can open up further opportunities to reduce this gap.

The reason for the use of ICT in Russian organizations is the fully formed fifth world economic structure, the characteristic feature of which is the increased expansion of capital. The multiple use of ICT has resulted in a digital revolution that reinforces this expansion. Russian organizations should actively use IR and ICT to preserve their competitive advantages.

The application of IR and ICT provides the necessary, timely and relevant information as inseparable results for making management decisions in the framework of individual management processes. The application of IR and ICT reveals a variety of possibilities in the field of information gathering and monitoring of the organization's activities.

Organizations that are under competitive pressure should fully use TIA in economic activity. The application of TIA increases the possibilities of technological modernization of enterprises that are striving to develop technological potential and move on to innovations. At the same time, with the development of technological capabilities, it becomes possible to implement larger-scale projects, identifying and eliminating problems in the work of organization and minimizing losses.

### VI. CONCLUSION

The forms of intellectualized labor, despite their seeming differences, have an important unifying feature – high information richness, the need for constant self-improvement and self-development of the person associated with them, the means of labor, and, as a result, the improvement of the objects of labor and the surrounding world.

Information as a component of intelligence is an important point for understanding the essence of the TIA of Russian organizations. At the same time, information itself, which is not processed by the human intellect, is not able to move social production forward, and therefore, to promote economic progress.

To analyze the conditions for increasing production efficiency, the problem of the adequacy of IR in the process of applying intellectual labor is important. Provided that the reality, the tools and the subject of intellectual labor correspond, there is no guarantee that the product of this labor will be adequate to the reality. It is possible to check the objectivity of this newly emerged subjective content, new knowledge, by applying it as an IR (tool of material production in practice).

The necessity of using ICT in Russian organizations is connected not only with the internal need for it by the organizations themselves but also with the state policy of developing the digital economy, in accordance with the Information Society Development Strategy, aimed at creating the conditions for the formation of a knowledge society.

#### REFERENCES

- S. Iranzadeh, F. Chakherlouy, and V. Kumpikaite-Valiuniene, "Determination of Intellectual Asset Dimensions in Tehran Stock Exchange Companies", in Procedia - Social and Behavioral Sciences, vol. 213, pp. 896-901, 2015.
- [2] Ch. Lee, D. F. Kogler, and D. Lee, "Capturing information on technology convergence, international collaboration, and knowledge flow from patent documents: A case of information and communication technology", Information Processing & Management, In press, corrected proof. URL: https://doi.org/10.1016/j.ipm.2018.09.007 (date of access: 27 September 2018).
- [3] J. Bonar, "Friedrich Engels", in The Quarterly Journal of Economics, vol. 10, iss. 1, pp. 95-97, 1895.
- [4] B. Wootton, "Friedrich Engels", in The Economic Journal, vol. 46, iss. 183, pp. 518-520, 1936.
- [5] W. Leontief, "The economy as a circular flow", in Structural Change and Economic Dynamics, vol. 2, iss. 1, pp. 181-212, 1991.
- [6] A. G. Armstrong, "Leontief (Wassily), Structure System and Economic Policy", in The Economic Journal, vol. 88, iss. 350, pp. 358-360, 1978.
- [7] M. E. Abel, "Leontief, Wassily. [Essays in Economics: Theories and Theorizing, New York, Oxford University Press, 1966, vii + 252 pp.]", in American Journal of Agricultural Economics, vol. 49, iss. 3, pp. 776-778, 1967.
- [8] W. Dizard, "The Coming Information Age: An Overview of Technology, Economics, and Politics", New York, Longman, 1989, 250 p.
- [9] P. Hanafizadeh, B. Khosravi, and K. Badie, "Global discourse on ICT and the shaping of ICT policy in developing countries", Telecommunications Policy, In press, corrected proof. URL: <u>https://doi.org/10.1016/j.telpol.2018.09.004</u> (date of access: 27 September 2018).
- [10] F. Pieri, M. Vecchi, and F. Venturini, "Modelling the joint impact of R&D and ICT on productivity: A frontier analysis approach", in Research Policy, vol. 47, iss. 9, pp. 1842-1852, 2018.
- [11] V. V. Smirnov, T. V. Talanova, A. N. Zakharova, G. S. Dulina, I. B. Getskina, and N. V. Huraskina, "Predictive Analysis of the Russian Entrepreneurship Development", Proceedings of the 32nd International Business Information Management Association Conference (IBIMA), 15-16 November 2018, Seville Spain. Vision 2020: Sustainable Economic Development and Application of Innovation Management. International Business Information Management Association Management Association (IBIMA), pp. 6949-6958, 2018.
- [12] A. Zakharova, T. Talanova, G. Dulina, V. Semenov, I. Getskina, and N. Semenova, "Psychological Features Of Competitiveness Of University Students", in The European Proceedings of Social & Behavioural Sciences EpSBS, vol. L, pp. 1416-1423, 2018.