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### Informatization of Society as a Determinant of Global Changes in the Labor Market

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#### ABSTRACT

The work is devoted to informatization of society as a determinant of global changes in the labor market and the world of professions. The article reviews a number of existing ideas of informatization as a process leading to the transition civilization to a new stage of development – information society. Under the influence of informatization cardinal changes take place in all spheres of life and professional activity of people. There are clear signs of a new era of civilization development: there is public awareness of the priority of information; information is considered to become a foundation for all areas of human life – economy, politics, industry, culture, art, science, and education; information and communication technologies become the most important means of increasing production efficiency and strengthening the competitiveness of each enterprise; there is an increase in demand for knowledge, creativity and innovation; a developed market of information products and services has appeared; information economy and the world information space have been formed. The ongoing global changes in the economy, science, information technology and human worldview have an immediate effect on various markets, including the labor market, which today is undergoing a fundamental restructuring with a range of new professions and industries appearing and with the views of professional activity and the very definition of a professional changing rapidly.

*JEL Classification:* E20, E29, K31, M54.

*Keywords:* Informatization, information society, the labor market, new professions, professional orientation.

#### 1. INTRODUCTION

An important feature of the present stage of society development is its informatization. Beginning in the last quarter of XX century, in recent years the process of informatization has acquired a global character and covered not only all the developed countries of the world, but also many developing nations.

Rapid technological development of human civilization has allowed to make a fundamental leap towards a new era of social development – the era of the information society with radically changing values, attitudes, lifestyle, thinking and behavior of each individual. Transition to information society is simultaneously a realistic prospect and an urgent need (Mashuryan, 2012).

In today's information-rich world there are ever more clear signs of a new era of civilization development: public awareness of the priority of information; its consideration as a fundamental principle of all areas of human life – economic, political, industrial, cultural, scientific, educational; information and communication technologies becoming the most important means of improving the efficiency of production and strengthening the competitiveness of each enterprise; increase in demand for knowledge, creativity and innovation; appearance of a developed market of information products and services; formation of the information economy and the world information space (“The most incredible profession of the future”).

Rapidly upcoming information-technological future will radically change all the traditional areas and segments of human activity in the near future. Futuristic forecast made by Raymond Kurzweil is built in chronological order from 2019 to 2099, and predicts a revolutionary range of expected transformations of the world, including personal computers reaching the processing power of the human brain (2020), mass market of gadgets implants (2025), the robot become an everyday home assistant (2027), artificial intelligence similar to the human (2029), nanotechnologies used extensively in industry (2030), 3D-printers printing human organs (2031), robotic people (2038), etc. (Eliseeva, 2010).

Global changes in the economy, science, information technology and human worldview have an immediate effect on a variety of markets, and the labor market is not an exception.

Today we are witnessing a fundamental restructuring of the labor market, the formation of a class of new professions and industries, changes in the definitions of professional activity and professional.

The present study deals with the features of informatization of society as a determinant of global changes in the labor market and the world of professions.

## **2. LITERATURE REVIEW**

Informatization as an objective global process affecting the global structure of society and the lives of individuals, requires a serious scientific study. Therefore, in recent years a number of scientific areas related to the comprehension of the social, economic and political consequences of the process of informatization and information technology development have appeared.

Both general and specific aspects of informatization of society are the subject of research done by a number of foreign scientists: P. Drucker, R. Inglehart, H. Kahn, M. Castells, R. Katz, Y. Masuda, F. Machlup, M. Porat, A. Touraine, D. Tapscott and others (Mashuryan, 2012; “Top 10 Future Professions”).

Among Russian authors, dealing with the informatization of the society, we consider it necessary to mention the works of R.F. Abdeev, V.L. Inozemtsev, I.N. Korneyev, N.N. Moisseev, I.A. Negodyaev, I.V. Sokolova, A.I. Rakitov, A.D. Ursul, M.N. Shmatkov (Mashuryan, 2012; Sokolova, 1999).

Informatization of society is a process of saturation of all spheres of social life with information resources and technologies. A.I. Rakitov, for example, defines informatization as a “process of progressive

increase in the use of IT for the production, processing, storage, and dissemination of information ...” (Averyanov, 2003).

In our work we adhere to the definition of information given by Academician A.D. Ursul: “Informatization is a systematic process of acquisition of information as a resource of management and development using informatics tools for the purpose of building the information society and, on this basis, the further progress of civilization.

The boldly coming world of information technology is a world of endless transformations and changes, the world with rapidly changing products and services, appearing and disappearing market segments. In this world, each person must be prepared, instead of choosing a career for the entire life, to tune in to probable multiple transitions from one professional direction to another, to be able to draw up and implement a personal list of micro careers, independently “collect” and “design” their specialty from different skills and abilities (“Prospects for the development of science and technology in the near future”).

In the new information civilization, the most important skills will be multilingualism (knowledge of 2 or more languages) and programming; creativity will be in demand, as well as quick decision making, and working in the conditions of full uncertainty and considerable complexity of the environment.

The world of professions will change significantly in the coming decades. The experts-futurologists define as the most likely ones such profession as nanomedik, designer of body parts or a specialist in cyber prosthetics and manufacture of implants, spacecraft pilot, space tour guide (kosmoguide) cyber-researcher, cosmobiologist, expert in climate change, drone operator, personal digital curator, infostylist, virtual teacher, educator of curiosity, trader of alternative currencies, videodramatizer, expert in information garbage, 3D-printing master, agro cybernetician, GMO farmer, expert in renovation of old buildings, etc. (“Everything is going according to plan: what you need to know from Ray Kurzweil forecasts”; “Already by 2018 robots will take away some professions from the human”; “Futuristic predictions from Dave Evans: “By 2030, there will be more robots than people””).

According to foreign experts’ predictions, in the next 20 years up to 45 percent of workplaces in developed countries will be replaced by robots and computer programs.

The information era will be characterized by intensive development of a number of sectors – space industry, aviation, biotechnology, medicine, new materials and nanotechnologies, robotics, mechanical engineering, IT sector, power generation and energy storage, management, the financial sector, construction, security, culture and art, tourism and hospitality, media and entertainment, agriculture, etc. (“Atlas of New Professions Electronic resource”).

Thus, informatization of society defines different, never existing before, tasks of training specialists in innovative ways in entire industries.

A closer study of the phenomenon reveals other changes in social and economic life: the increase of the share of the national product created on the basis of the fifth technological order, changes in the sectoral structure of production and creation of new jobs, the spread of modern information infrastructure, in particular, global data transmission networks, increasing globalization, the development of a fundamentally different – innovative type of economic growth. All these and other phenomena occur at different speeds

and intensities in different countries, but in general, are characteristic in all of them, and therefore deserve a deep and comprehensive analysis (“Prospects for the development of science and technology in the near future”).

In its core, informatization of society is a process of forming a new instrumental base of human activity – different linguistic forms – based on the use of new information technologies. The peculiarity of this instrumental base is that it allows to produce systematically new knowledge, new forms of communication, and thus new elements of productive forces.

Information, as well as other forms of scientific and technological progress, is a qualitative change in the productive forces of humankind, which receives new information means of production, while the economy becomes IT-driven.

We can say that informatization is organically “embedded” into the market communication mechanism that stimulates innovation processes. This can be explained by the following reasons.

Firstly, the constantly deepening social division of labor stipulates the development of the communicative function of the market. The increase in the number of business units in the modern economy, and the rise of complexity of the connections between them necessitates the presence of more sophisticated means of communication and ever increasing amounts of information.

Secondly, the perfection of the market mechanism depends on the information processes occurring in it. Ultimately, this relationship is based on material incentives of market participants and on the competition between them in the process of maximizing profits, which are impossible without a constant search for new ideas and exchange of information.

Research on the relationship of labor relations and information has been presented in the works of Russian and foreign scientists: A.I. Anchishkin, D. Bell, D. Blumenau, N.S. Romanova, T. Stonier, A. Toffler, K. Arrow and others (Vladimirskaya, 2015; Ursul, 2001).

The work of these researchers demonstrated that a modern labor market functions in a qualitatively new information environment, leading to its fundamental restructuring, the formation of a class of new professions and industries, changes in how professional activity a professional are viewed (Vladimirskaya, 2015; “Everything is going according to plan: what you need to know from Ray Kurzweil forecasts”; “Already by 2018 robots will take away some professions from the human”; “Futuristic predictions from Dave Evans: “By 2030, there will be more robots than people””).

The development of information technology has a significant impact on the processes of employee-employer interaction: there are new forms of employment, changes in the labor force structure, the number of people employed in the IT-related fields is increasing, new employment search techniques appear (Ursul, 2001).

These changes, associated primarily with the development of information and communication technologies, require that more attention be paid to the labor market.

Adaptation of aggregate of labor relationships to the conditions of informatization of society and the ability of the labor market to quickly and flexibly respond to the economic dynamics are now prerequisites for improving the efficiency of its functioning.

### 3. RESULTS AND DISCUSSION

Based on the analysis of works of leading foreign and domestic scientists, we have formulated 12 trends that will affect the global labor market in the next 5 years and the labor market in Russia under the influence of the process of the global informatization of society:

1. *A new attitude to property:* Luxury and competitive consumption become the lot of backward economies and poorly educated segments of the population, which is followed by the changes in attitude to property. The middle class in developed metropolitan areas today tries to take loans, maintaining a relative independence and freedom from circumstances that, as shown by recent history, can change at any moment.

Behavioral attitudes of young people change towards mobility, the ability to change your life at any time, without bureaucratic delays and time loss. People are becoming increasingly aware that the most valuable things are not their possessions, and that of highest importance in today's world are information, personal relations, communication, and invest in their development much more readily than in the expensive attributes of la dolce vita.

It is obvious that today this behavior is not yet typical for the majority of Russians, but the younger generation, who can think independently, have the opportunity to travel and get education abroad, and observe the behavior style of trendsetters, will change their patterns of behavior in the near future. While choosing their employment this generation will be motivated by the opportunity to develop, to build professional and business connections, and to have a relative degree of freedom in the work environment. Considering this, the employer should not expect that the loyalty of these professionals can be bought with money alone.

2. *Innovation:* Experience shows that those who are armed with innovative tools can quickly adapt to the changing conditions of the modern world. The enormous economic success of companies that made their bet on new technologies demonstrated how powerful the presence of experts in innovation in the company can be. Therefore, innovation-oriented managers, strategists, able to foresee how trends will develop in the years to come, and not afraid to take creative solutions, are in great demand among the most competitive employers.
3. *Investments:* Despite the increasing popularity of startups, it should be borne in mind that today's venture capitalists are no longer willing to take risks with money, as it was earlier this century. Investment will depend on whether the project has proved viable, and, even more importantly, whether cash flow has shown growth.

Only startups that have passed the first stage of selection can rely on the interest of serious investors. Just a good idea is not enough – one needs to implement it promptly and properly, and there opens a unique opportunity for talented creative professionals to try their hand at a very hard, but very inspiring enterprise.

4. *Crisis expectations:* It is necessary to accept the fact that crises are cyclical, and in the modern world, the cycles are shorter. This means that we should expect economic shocks to be more frequent. While the oligarchs, banks and national corporations seek state support in the event of another crisis, the most daring entrepreneurs will consider it an opportunity to buy interesting objects

cheaply, to attract valuable staff with good experience, or to vie with larger competitors for a market niche, etc.

The crisis seems to be a good time to find out who is who in the market and how valuable all the company's strategies really are. Crisis managers and experts on risks will become the top management of organizations.

5. *Outsourcing is on the rise:* Outsourcing is not a new trend in attempts to reduce the time and financial costs for small and medium-sized businesses. However, as the world analysts predict, systems of global business services will continue to grow in popularity.

This contributes to the high demand for standardization of processes and cost optimization in the real sector. Furthermore, many entrepreneurs begin to live by the principle: "outsource everything you can outsource."

For Russian labor market, it means that more and more employees can work on a project basis, being employed as service specialists or experts for the customer service business. The most important thing is that outsourcing market itself should remain structured, and experts should possess a high level of professionalism.

6. *Combined employment:* Stereotypes of the working day and the distribution of work time are being broken down very quickly, even among employers. The desire to reduce the cost of rent, the unwillingness to sacrifice valuable human resources in case of their inability to spend 8 hours in the office, telecommuting and various mobile services all contribute to the fact that few employees work 9 to 5 these days.

According to research (Vladimirskaya, 2015), in 2013 as much as 23% of all employees in Russia worked flexi-time. At the same time, many specialists, especially in the fields of service and art, found it suitable to combine their employment, for example, 2 days a week working as a medical representative in the global pharmaceutical company, with 3 days a week as a pediatrician in private practice.

7. *Migration of staff:* Transparency of borders, associations of states and partnership conglomerates between countries contribute to the fact that people today are much more open to job offers abroad. For many today's professionals it is a personal and professional challenge – to be able to adapt and build a career in the new environment. Employees of international corporations a priori have the opportunity to work in projects carried out by their employer in the different countries, as well to build a vertical career at the head office abroad.
8. *Simplifying HR technologies:* The tools used by modern personnel departments are changing rapidly. Nobody believes in spending time on intensive procedures, which do not bring real value. However, it is the human capital that is the most important asset in today's business.

Therefore, good HR-metrics aimed at qualitative evaluation of specialists, and allowing to predict their behavior in future situations – are most desirable for many employers. Using them, personnel related decisions can be made much more accurately and faster.

9. *Education through gamification:* Management games, online simulations, and gaming technology steadily penetrate into staff development programs. These technologies allow to develop the

ability of decision-making, strategic thinking, and other competencies relevant for the modern manager, relatively quickly and cheaply.

According to analysts, today in Russia the market of business games development is evaluated as millions of dollars.

10. *Talent Management*: The limited high-quality human resources require that the employers should maintain a different approach to talent management. Retention of talent and nurturing talents within the company are the main goals today.

Today employees feel confident and are not afraid to look for a new job, preferring the more interesting options. Therefore, the programs of formation of personnel reserve and loyalty programs are of great importance in today's HR-policies in Russia.

11. *HR Brand – the only long-term recruitment strategy*: A well-established HR brand will work to the loyalty on existing staff on the one hand, and to the generation of a pool of outside candidates who can be attracted at any time – on the other. HR branding creates personnel security of a company.
12. *The creative position*: International events in recent years and even months show the fragility of the seemingly monolithic political and economic systems. The world is now quite vulnerable. Therefore, a purely consumerist attitude to the surrounding reality, which is firmly rooted in the minds of many modern people inevitably entails the sad results: financial loss, psychological exhaustion, professional burnout and excessive dependence on external resources and circumstances.

A new generation of managers, the Y generation, as it is customarily known, brings a very different worldview into modern business. They are moving away from the philosophy of the consumerism towards creativeness, realization of skills and creative potential.

Their position in life is not as self-centered as that of their predecessors – they are ready to realize their potential also for the benefit of others. This is a very powerful incentive to feel happy in life.

This approach is able to safeguard the organization from the destructive forces of the modern world, and in fact make the environment ecological. This is the challenge that people, expecting positive changes now face globally.

The trends discussed above and future changes in the global labor market and the labor market in Russia happening under the influence of global informatization of society emphasize the increasingly acute problem of forming a new class of professionals to accommodate the rapidly developing information society. This solution of this problem is linked to the establishment of high-tech basis for professional education, updating its structure and content, development of practice-oriented educational programs, maintaining at the same time the fundamental character of specialist training. It is also necessitates the formation of a continuous education system, ensuring openness and accessibility of educational resources, creating conditions for student-oriented education, the transformation of the educational process into a powerful stimulator of creativity, invention, and innovation.

The most important solution, in our view, is to include the informatization itself, as the trend of social development, into the system of vocational education as a priority of its renovation. This should result in the formation of information-educational environment, which would provide a graduate with competitive

advantages by equipping them with a system of cutting-edge practice-oriented knowledge, helping them to develop a creative way of thinking and activity, as well as by development of their autonomy, motivation for self-education and self-development in the presence of high-level information and communication culture (Averyanov, 2003).

We agree with S.Ya. Averyanov's, S.P. Novikova's and other researchers' opinion, that it is necessary to focus on the foreground areas of informatization of education, such as e-education, intensive development of enterprise university networks, further development of university Internet centers, active use of automated systems and complexes in the learning process, automatization of information and methodological support, the use of ICT as a didactic tool and a tool for modeling various objects and processes, automatization of computational and information retrieval activities, the use of ICT as a stimulant and optimizer of creative, innovative and research activities (Averyanov, 2003; "The most popular profession of the future").

Understanding the essence of vocational training as the ability to meet the public demand for training of specialists for the rapidly developing sectors (Neuro Web, Energy Net, Aero Net, Health Net, etc.), modern universities should undergo a major restructuring to ensure educational preparedness for the "professions of the future" market, instead of following corporate commercial interests and established trends of "training managers, lawyers and economists. In this regard, the universities "need to stop thinking past and learn to look into the future" ("The most popular profession of the future").

Vocational guidance activities aimed at providing comprehensive help for the younger generation and adults in choosing a profession, as well as in their professional self-determination should be in close connection with the state educational and advocacy support for upcoming information civilization ("The most incredible profession of the future").

#### **4. CONCLUSIONS**

One of the main distinguishing features of the present stage of development of a society is its global informatization, which occurs under the influence of radical changes in all spheres of life and professional activity of people.

Informatization gives impetus to the development of the market as a communicative system towards a more complete implementation of its informational nature. The market mechanism of the post-industrial era is undergoing significant changes associated with the use of modern information technologies; it becomes more flexible and innovation-oriented. There are no characteristics of the modern market, not affected by informatization, from its spatiotemporal boundaries and structure and ending with the various sides of the market mechanism.

The ongoing global changes in the economy, science, information technology and human worldview have an immediate effect on a variety of markets, including the labor market, which is characterized today by fundamental restructuring, formation of a class of new professions and industries, changes in view of the professional activity and the professional.

Under the influence of the process of the global informatization of society in the next 5 years in the global labor market and the labor market in Russia the following trends should be expected to emerge: a new attitude to property, an explosive growth of various innovations, priority of investment in viable projects, expectations of crises, increased outsourcing, popularity of combined employment, migration



of staff, simplification of HR technology, programs of the development of staff through gamification, a different approach to talent management, the spread of HR branding as a long-term recruitment strategy, creative attitudes of the Generation Y to the realization of their abilities and creativity.

The manifestation of these trends and adaptation of employment relations to the informatization of society, the labor market's ability to promptly and flexibly respond to the economic dynamics are now prerequisites for improving the efficiency of its functioning.

Future changes in the labor market and the world of professions from the point of identifying the demand of certain professions in the new information society and the new market segments and sectors of the innovation economy require from state, public and educational institutions to adapt to new professional realities, activating vocational guidance with a view to targeting the selection of future career for high school graduates and university enrollees.

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