

The Impact of the Informatization of Society on the Labor Market

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Abstract: This article examines the transformation of the labor market under the influence of informatization of society. It is noted that in the conditions of globalization and informatization of the nowadays a post-industrial society has been formed, in which information is a determining factor of production.

New opportunities and challenges of the labor market in the conditions of information society development are analyzed. The informatization of society changes the conditions, nature and forms of work. Extensive digitalization, the use of cloud technologies and artificial intelligence systems are displacing traditional forms of employment towards teleworking, which makes workers more mobile and able to optimize working hours. It is established that the spread of technology increases the efficiency of the recruitment and searching job processes. Informatization of society contributes to the creation of a digital labor market, which forms the demand and supply of information and computer technology workers.

In the context of informatization of society, the labor market is characterized by an imbalance between supply and demand of labor due to structural changes in the economy. Among the challenges of the labor market are rising unemployment in the raw materials industries, robotics and automation of routine manual labor. The digitalization of the economy leads to the need to adjust government regulation of business and provide social guarantees for employees.

It is noted that the informatization of society provides more benefits to the labor market than obstacles. Solving the problems it raises, promotes progress and economic development.

Keywords: *globalization; digitalization; economy; information and communication technologies; labor resources; labor market; post-industrial society; digital labor market, teleworking.*

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1. Introduction

Recent history is characterized by constant transformational processes that have led to globalization, the consequences of which affect social and economic development. In the economic environment, globalization has subjugated the financial, investment, information spheres of activity, which is reflected in the formation of the world market of goods and services and the formation of the global information area. Business goes beyond national borders. There is a constant integration and migration of capital, production and human resources.

Globalization, inherent in modernity, is the result of rapid and comprehensive informatization, covering all areas of human activity. Knowledge becomes a key element of social wealth. As once the steam engine led to the industrial revolution and changed the living standards of all segments of the population, now high technology and innovation have penetrated into all aspects of everyday life and led to the emergence of a post-industrial society.

The key trend in the development of post-industrial society is the digital economy, the main resource of which is inexhaustible, accurate, reliable, truthful and timely information (Chmeruk, 2019; Nerubasska et al., 2020; Palamarchuk et al., 2020; Pantielieieva et al., 2019). The society itself receives significant benefits from the digitalization of the economy, because the end-users and consumers of digital products and services are the population (Rudenko, 2018). Deployment of information processes leads to an increase in the intellectual potential of employees, and therefore contributes to the increase of the intellectual potential of enterprises (Marchuk, 2012).

Contemporary high-tech industrial systems, digital platforms, innovation-oriented enterprises that are developing at a faster pace, make a significant contribution to increasing productivity, meeting growing human needs and improving the quality of life. It becomes obvious that the sectors of the economy, which include primarily standardized production processes, in the coming years should be changed within the framework of new Internet models of global value chains (Kniaziev, 2020, p. 158).

The most characteristic feature of the development of contemporary society is informatization associated with the global process of active formation and large-scale use of information resources and the transformation of the usual technological method of production into an innovative one (Freeman, 2002; Gerasymova et al. 2019; Hrytsenko, 2012; Nerubasska & Maksymchuk, 2020).

The main driving force of the digital economy is human capital, since it is the knowledge, talents, skills, abilities, experience and intelligence of people in the use of digital technologies that are the starting point of the digitalization process (Rudenko, 2021, p. 14).

Globalization, as an objective phenomenon, has not only positive features, but also negative ones. On the one hand, global economic efficiency is increasing due to widespread dissemination of innovation in technology, production and services, micro and macro management, exchange of ideas and cooperation, and on the other hand, it increases inequality and imbalances in individual markets. Thus, the digitalization of the economy and automation of production lead to rising unemployment among a certain layer of "outdated professions", and increase the demand for specialists in information and communication technologies.

Therefore, the aim of this article is to comprehend the "metamorphosis" of the labor market in the information society.

2. New opportunities of the labor market in the information society

Active informatization of society creates new conditions and opportunities for activities in the economic environment, as well as forms new requirements for all participants in economic activity. The rules of the game in the labor market are changing. The nature of labor and its forms are changing too.

The transition to a post-industrial society, the knowledge economy has led to the introduction of new forms of recruitment, which has become possible due to the widespread digitalization of personal space, the use of cloud technologies and artificial intelligence systems. Freelancers, stringers, gig-workers replace full-time employees, and outsource, outstaffing and crowdsourcing replace departments and branches of companies. Thanks to such transformations in the labor market, in contrast to the traditional form of employment with a fixed schedule, contemporary workers are free to choose their own schedule, independently manage when to work and for how long. This flexibility provides opportunities to work on several projects simultaneously, optimize working hours and balance it with leisure time, while increasing competition among professionals and responsibility for their actions.

The transition to a post-industrial society, a knowledge economy has led to the introduction of new forms of employee's engagement, which became possible due to the wide digitalization of the personal space of workers, the use of cloud technologies and artificial intelligence systems. Full-time employees are being replaced by freelancers, stringers, gig-workers.

Departments and branches of companies are being replaced by outsourcing, outstaffing and crowdsourcing. As a result of such transformations in the labor market, in contrast to the traditional form of employment with a fixed schedule, contemporary workers can freely choose their own schedule and manage their working hours independently. This flexibility makes it possible to simultaneously work on several projects, optimize working time and balance it with rest time. At the same time, competition among specialists and responsibility for their actions are increasing.

According to the World Economic Forum (2020), presented in the report "The Future of Jobs Report 2020" for the period 2019-2020, the labor market in OECD countries has undergone a significant transformation of working conditions under the influence of the gig economy. Progress was assessed at 48.7% in Argentina, 46.8% in Australia, 44.7% in Brazil, 36.1% in Canada, 28.2% in China, 49.7% in France, 41.6% in Germany, 38.5% in India, 45.6% in Japan, 45.6% in Mexico, 47.3% in Pakistan, 42.1% in Poland, 47.5% in the UK, 24.8% in the USA.

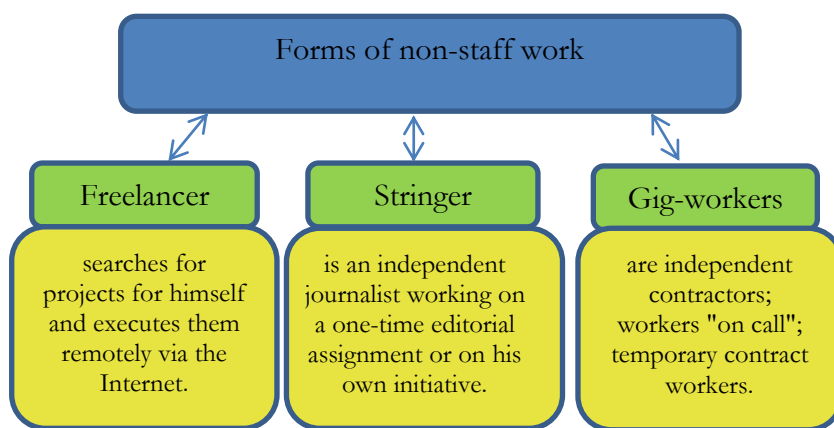


Fig.1 *Forms of employment that have emerged as a result of informatization of society (author's own conception)*

One of the fundamental elements that form the contemporary information economy are digital platforms that unite users and facilitate the exchange of products or services between them, contributing to the creation of value for all participants (Liashenko & Vyshnevskiy, 2018). In recent years, employment such as telecommuting using digital platforms has become more widespread, creating access to professionals from around the world and making the workforce more mobile.

Telework also provides employment opportunities for groups of the population characterized by a certain isolation from society, such as people with disabilities, women caring for young children, people living in remote areas. Remote employment opens opportunities to perform work from anywhere where there is access to the Internet.

Access to information and communication technologies is becoming increasingly important and offers many benefits to users. For a special category of users such as people with disabilities the development of information and communication technologies is extremely important in achieving social integration. Informatization of society promotes quality education, the acquisition of a profession and capability to employment that helps to ensure equal opportunities and promotes full participation of all citizens in economic, social and cultural life and gives them the opportunity to realize their potential (Isăilă, 2012).

Comprehensive digitalization of society contributes to the gradual overcoming of the problem of gender inequality and creates equal opportunities in the labor market among various social groups. Gender segregation is one of the causes of imbalances and inefficient use of labor resources in the labor market. Remote working conditions provide an opportunity for women to successfully realize their labor, intellectual and creative potential, combine work and family responsibilities, as well as work during maternity leave.

Adams (2018) notes that the spread of technology is changing the process of job search and hiring, as well as helping to monitor and manage efficiency after the establishment of employment relationships. The process of finding "yesterday's" employees was a long one and involved a mass collection of candidates' resumes and then a time-consuming multi-level selection of the candidate. Now the use of artificial intelligence is spreading in the recruitment process, chatbot technology is increasingly used, which allows to automate the selection of candidates for vacancies, to contact candidates, as well as to conduct a video interview.

The process of finding a job has changed radically under the influence of digitalization, namely, went online, became social and mobile. Social networks have become not only part of leisure, but also a platform that is actively used to find work. Candidates can apply for a vacancy through a social network or through job sites, take a video interview, complete an online test, and even sign an employment contract with an electronic signature. Candidates' communication with employers has become faster due to the emergence of various communication channels, which makes the process of job search and hiring more efficient.

Informatization of society contributes to the creation of a separate specific segment of the labor market, called the digital labor market which forms the supply and demand for information and computer technology specialists. The result of activities in the digital labor market is an information product (Azmuk, 2014). The digital labor market is characterized by the fact that the interaction of labor service entities is located on the Internet and on online information platforms. Information and computer technologies are used at all stages of work related to the search and execution of the order, the transfer of results to the customer and receiving remuneration. The organization of the process of digital work differs from the traditional by independence, flexibility, lack of regulation of the work schedule and the dependence of the employee on the manager. Among the features of the digital labor market is the mobility of labor resources, the movement of which takes place virtually and without the need for physical movement. The share and importance of the digital labor market is constantly growing, contributing to the development of the economy at a new level of interaction of all its elements.

Qualitative change in the level of digital skills as a global trend in the contemporary labor market leads to increased productivity. Thus, Herman (2020) found a strong positive correlation between the level of digitalization of the economy and society and labor productivity in the EU. The author emphasizes the need to develop digital skills, especially in developing countries that have lower rates of informatization of society.

Undoubtedly, the digitalization of the economy provides many advantages to the labor market, expressed in the formation of new forms of employment, the creation of equal opportunities for various social groups, and the optimization of the search and job offer processes.

3. Challenges of informatization of society to the labor market

In the classical sense, the labor market meets the demand and supply of labor, and with the help of the action of market forces, the price of labor is formed, which prevents long-term unemployment. However, the mechanisms of the contemporary labor market are not amenable to unambiguous interpretation and require research from different points of view.

In the conditions of informatization of society, the labor market is characterized by an imbalance between the demand and supply of labor, which is associated with a multitude of factors, among which the professional and qualification mismatch comes to the fore. Structural changes in the world and national economies affect the formation of the

aggregate demand in the labor market for skilled workers with a high level of intellectual potential and who can combine several professions, (Chorna & Chorny, 2020).

Ogonowski (2020) analyzes the dynamics of changes in the development of the information society among the countries of the European Union based on seven selected indicators characterizing the digital economy. The author came to the conclusion that the informatization of society has positive and negative aspects. Among the negative aspects, the author highlights the growth of unemployment in the raw materials industries in the new economy (Jung & Lim, 2020), examining the two-way causal relationship between the spread of industrial robots and the labor force, concluded that when labor productivity declines or when the pressure on the wages increases, firms are increasing the use of industrial robots. Also, the research revealed a tendency of the negative impact of the widespread introduction of industrial robots on the quantitative indicators of employment, at the same time, indicated a positive effect on the qualitative indicators of employment.

Borjas & Freeman (2019), comparing the impact of the labor supply of immigrants and robotization of the economy, found that robotization has a more negative impact on wages and employment than the labor of immigrants, who are usually low-skilled workers.

Chinoracký & Čorejová (2019) emphasize that the wave of technological progress brings with it new challenges that society faces. The authors consider it appropriate to consider the problem of the impact of digital technologies on employment and unemployment in the labor market not only from a global point of view, but also from the point of view of individual sectors of the economy.

According to the report "The Future of Jobs Report 2020" of the World Economic Forum (2020), more and more countries around the world are seeing an increase in the demand for skilled and analytical workers, which is simultaneously accompanied by significant automation of routine manual work. Empirical data for the period 2007-2018 in the United States, presented in Fig. 2, confirm this trend and show that a large layer of professions associated with mechanical data entry is "outdated" and subject to automation.

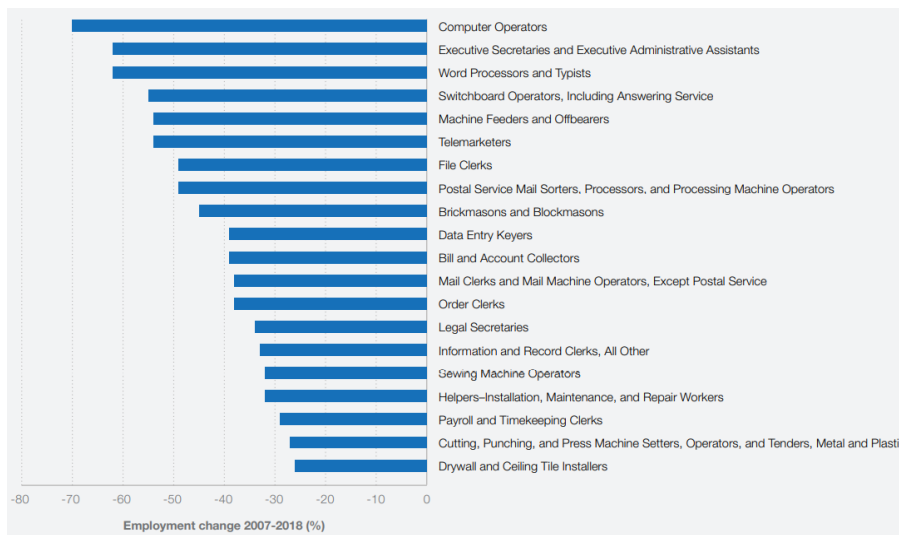


Fig. 2 *High-risk automation jobs in the United States, 2007–2018 (World Economic Forum, 2020)*

The work of Heyets et al. (2019) shows the feasibility of state regulation of the labor market in order to ensure optimal employment. The publication "Digitalization and working life: lessons from the Uber cases around Europe" notes that contemporary digital platforms challenge government regulation of business in various sectors (Adam et al., 2016). For example, the smartphone car service Uber, a successful example of a "sharing economy" company, has spread in the many EU member states in recent years. The authors suggest that these technological changes in the transport sector will be replicated in other service sectors. However, many employers and trade unions are concerned about threats to fair competition for other companies in the sector and worsening working conditions for drivers.

Berger & Frey (2016) note in their work that although there is ample evidence that technological progress has been a key factor in economic growth in different countries, rapid technological change in general and the expansion of the automation industry, in particular, can put pressure on public finances, if such progress leads to unemployment among certain groups of professions and an increase in the cost of retraining workers. Pleskach et al. (2020) note the special role of science funding for the development of the process of informatization of society. One of the main problems, in particular in Ukraine, is a gradual decrease in state funding for science, which leads to a reduction in overall scientific activity. Kolesnikov

(2012) considers it necessary to establish state management of the development of the information society as an independent part of the general process of public administration for the implementation of targeted and controlling influences on the sphere of public relations.

The widespread dissemination of new forms of employment associated with the informatization of the economy requires taking into account their peculiarities to ensure social standards and guarantees for workers, as well as the implementation of legislation that will regulate the labor market in contemporary conditions, ensuring the protection of all aspects of labor relations.

It should be noted that solving the problems that appear on the labor market as a result of the informatization of society contributes to progress and the achievement of economic development. Automation and robotization of simple, routine manual work is associated with its low productivity, and therefore promotes competition between the employee and the machine, as a result of which the abilities and talents of the employee, whose work becomes more efficient and creative, win. The demand for highly qualified intellectual work contributes to an increase in the prestige of knowledge and science, leads to qualitative changes in the general level of education in society.

4. Conclusions

The contemporary post-industrial society is being formed under the influence of the global trend of informatization, in which information and computer technologies are gaining an increasing role, affecting all aspects of economic activity. One of the most important factors of production is information and knowledge, which have a complex and ambiguous effect on other factors of production, especially labor. On the one hand, the introduction of innovations stimulates the growth of demand for highly qualified workers, on the other hand, entire layers of professions are disappearing due to the destruction of old methods of production. Globally, the proportion of jobs that are at risk of automation is growing, leading to the loss of activity for a certain part of the workforce. At the same time, the spread of digitalization facilitates opportunities for access to information, obtaining knowledge and education, and, consequently, retraining workers.

The informatization of society has a comprehensive impact on the labor market, transforming the content, forms and nature of labor. The contemporary labor market is characterized by an increase in the level of intellectualization and the role of creativity, while the share of hard and monotonous work is decreasing. The labor process is transferred to the

virtual space, which leads to the emergence and development of the digital labor market. The possibilities of digital platforms, information and computer technologies increase the mobility of labor resources, which can be employed anywhere in the world without the need for physical movement.

Access to labor is becoming more open, the process of finding and hiring workers is changing to a more efficient and faster one. In addition, the informatization of society integrates people with disabilities into the labor market, thanks to which they can realize their labor potential. The development of the information society leads to robotization of simple, routine manual work, which is associated with its low productivity. As a result, there is a problem of "obsolescence" of professions and the need to retrain workers. The digitalization of the economy changes the rules of the game on the labor market, creates the problem of social security for workers, compliance with decent working conditions and leads to the need to adjust the system of state regulation in labor issues.

The informatization of society is changing the world, and the labor market is changing radically. New forms and types of labor are rising, the requirements for the qualifications of workers and their productivity are growing. The economy is becoming global and open, labor is becoming remote and mobile. Information becomes the main factor in labor, with such qualities of an employee as intellectual and creative abilities coming to the fore.

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