

Влияние цифровой экономики на трансформацию рынка труда

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Аннотация

Конец XX – начало XXI века олицетворяет наступление эпохи цифровой экономики, ознаменовавшей начало информационной эры. Недавние разработки в области искусственного интеллекта, робототехники и машинного обучения позволили автоматизировать множество процессов как в промышленных, так и в непроизводственных областях, чем способствовали многократному увеличению производительности. Однако такое течение событий имеет и более глобальные и неоднозначные последствия, поскольку структура и объем занятости населения в условиях цифровизации экономики претерпевает значительные изменения.

Ключевые слова: цифровая экономика, цифровая революция, рынок труда, автоматизация.

Impact of the digital economy on the labour market transformation

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Abstract

The end of the XXth – the beginning of the XXIst centuries personifies the advent of the digital economy era, which marked the beginning of the information era. Recent developments in artificial intelligence, robotics, and machine learning have automated many processes in both industrial and non-production areas, thereby helping to dramatically increase productivity. However, this course of events also has more global and ambiguous consequences since the structure and volume of employment of the population in the context of the economy digitalization is undergoing significant changes.

Keywords: digital economy, digital revolution, labour market, automatization.

Nowadays computers and robots are not only able to handle a range of routine physical tasks, but also are increasingly capable of performing actions that involve the use of cognitive abilities. Such robotization of enterprise activity reduces the number of errors, increases the speed and quality of work and in some cases becomes a way to achieve results that go beyond human capabilities. During periods of weak productivity growth, this would provide the necessary boost on the path to economic growth and prosperity. Moreover, in countries with an increasing proportion of the disabled population, this would help neutralize the influence of the demographic factor. According to McKinsey Global Institute scenario modeling, automation can increase global productivity growth by 0.8% to 1.4% per year.

For the detailed analysis of the potential impact of automation it is necessary to take into account the level of individual activities, not entire professions. Each occupation includes several activities, each of which requires automation. Given the technology currently demonstrated, at the moment only 5% of professions are suitable for full robotization. At the same time, almost every occupation has the potential for partial automation, since part of its activity can be optimized through the use of new technologies. Following estimations suggest that about half of all the activities for which people in the world are paid can potentially be automated, which amounts to almost \$ 15 trillion in wages.

In this regard, changes will be observed in the functioning of the absolute majority of the most diverse professions. As a result of the study, Deloitte has identified which industries have the greatest potential for automation: food production, automotive, oil and gas industry and metallurgy, pharmaceuticals, electronics, financial and banking sectors. At the same time, healthcare, education, communications and other humanitarian and creative spheres are less susceptible to automation, since in these areas robots have not yet managed to approach the skills and abilities of highly qualified specialists.

Research by the University of Oxford showed similar results – in their opinion, about half of the jobs in developed countries are in the risk zone. Low-paid professions are most susceptible to automation, least of all are specialists with advanced degrees (engineers, physicists, chemists, etc.) and doctors of various categories.

Thus, modern specialists are faced with a difficult task posed by the technological discoveries of previous years - they are required to continuously improve their professional qualifications even after receiving higher education degree. The skills of interacting with innovative computer systems are the most pressing for today's employers. Accordingly, in the labour market there is a demand for professionals of a new generation, whose main arsenal of daily work is digital

systems. Therefore, the priority for the labour market is to preserve such specialists who can take the jobs that have evolved as a result of digitalization and not to maintain the initial number of jobs.

Is Your Job At Risk? ²

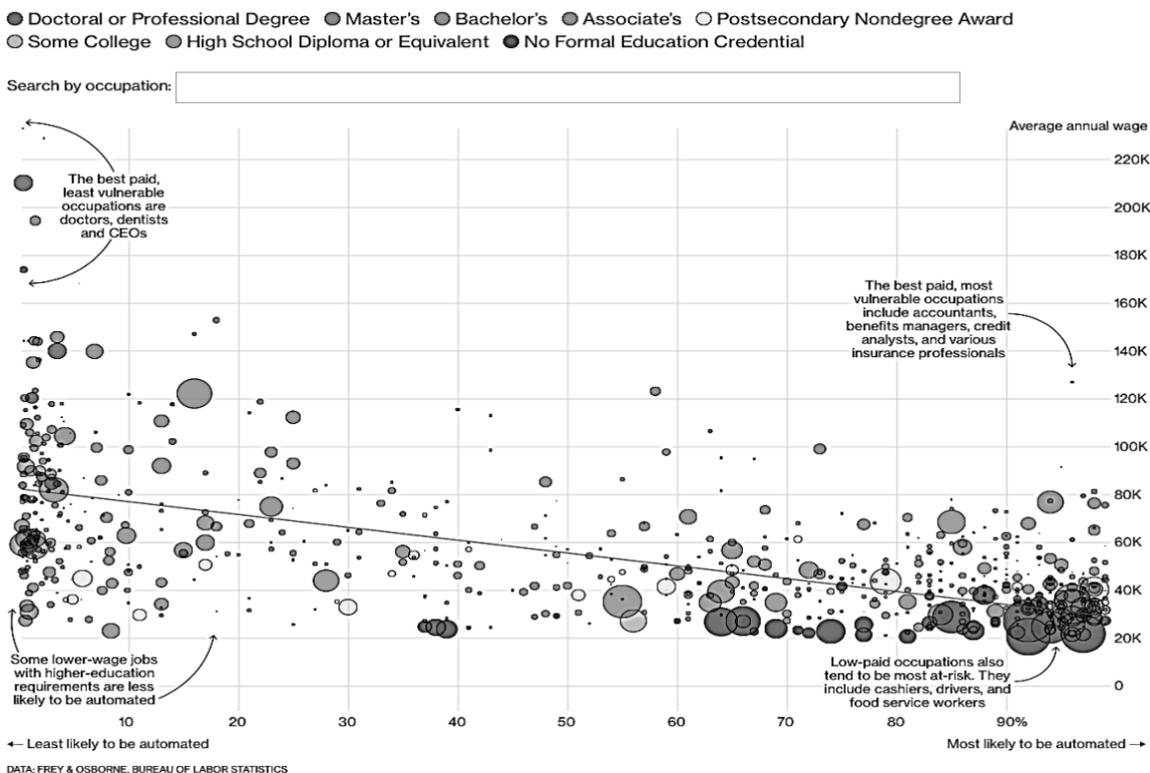


Fig. 1. Occupations exposed to automation

The importance of innovative technologies for the market under consideration directly affects the formation of new professions. This setting predetermines the high demand for programmers and engineers, whose professional competencies include the creation of systems for data analysis and their maintenance, as well as other technologies and tasks of the digital revolution. In addition, changes are expected not only for specialists directly involved in the scientific and technological process. At the same time, there is a growing demand for digital intellectual property lawyers and financiers and economists working with big data archives and advanced analytics. Moreover, according to the study of the World Economic Forum, it was revealed that employers, when looking for employees for emerging professions, also pay attention to the presence of the following 10 skills of the candidate: the ability to make decisions, critical thinking, solving complex problems, the ability to cooperate with a team, creativity, emotional intelligence, the ability to manage people, negotiation skills, service orientation.

Among the newly emerging demanded professions in the digital economy, the following can be noted:

- Specialist in machine learning – programmers directly involved in the implementation of automation in existing enterprise processes. Such a specialist works in the field of artificial intelligence creation and control. Their area of responsibility also includes the construction and

training of neural networks, statistical analysis and data processing, assessment of the quality of the resulting models.

- Developer of e-learning programs. With the global pandemic of 2020, resources providing fast and low-cost online learning tools have become even more popular. This has created a demand for specialists who develop distance learning techniques and select the necessary didactic material.

- Robotic engineer. According to IDC, the global market for robotic systems in 2019 amounted to \$ 95.4 billion, and in 2020 experts predict its growth by 17.8%, to \$ 112.4 billion. This situation on the market creates a great demand for specialists who develop automated technical systems. The range of tasks of robotics engineers includes programming and maintenance of smart systems, and among professional competencies, knowledge in the field of computer science, mechanics, electronics and cybernetics are the most important.

- Specialist in data processing, analysis and storage, or Data Scientist, today is rightfully considered one of the most demanded, promising and highly paid professions. The specialist is responsible for data processing, its structuring and analysis, storage and presentation of data in digital form and the subsequent use of artificial intelligence, database design.

- Network lawyer. Digitalization of all spheres of life of human activity undeniably entails the formation of a regulatory and legal field on the Internet. The lawyers of the digital society will need to understand all the intricacies of the companies functioning on the Internet, to know the principles of work of Internet startups, blockchain technologies. In the near future, any law university will have a program preparing such specialists.

- Information security manager will be in demand along with a network lawyer, because in the digital age, the problem of information security and protection against hacker attacks is especially acute. An information security manager is responsible for developing a company's information security concept, assessing information risks and ways to prevent them.

- Search Engine Advertising (SEA) Manager works with both potential clients and advertisers at the same time. For the potential clients specialist helps to find the goods or services of interest, and for the advertisers – to convey his proposal to the target audience. The SEA manager is responsible for placing advertisements in search engines and optimizing this process. The content of such advertisements should depend on the composition of the search queries of web users.

- Unmanned aerial vehicle operator. Drones are now helping to accomplish many tasks faster than traditional aviation. They are used for surveillance, video filming, chemical processing and cargo transportation. Drone operators first practice drone flight control on a flight simulator, after which specialists can make real launches. Drone pilots are especially in demand in emergency services, real estate advertising, environmental protection, construction and medicine.

However, automation will not happen overnight. It will take years for the impact of automation on day-to-day operations to fully manifest itself, even with the technical capacity. The rate at which automation is applied and its impact on workers will differ depending on the type of activity, profession, salary level and qualifications. Factors that will determine the pace and degree of automation include the continuous development of technological capabilities, competition with the labour force, including skills and supply and demand dynamics, technology costs, productivity gains, and social and regulatory acceptance. The McKinsey Global Institute estimates that half of today's workforce could be robotized by 2055. Yet this may happen 20 years earlier or later than the expected year, depending on the occurrence of various economic factors and conditions.

The effects of automation can be slow at the macro level, for example, across entire sectors or economies, but they can be quite fast at the micro level for individuals whose activities are automated, or for companies whose industries are undermined by competitors using automation.

While much of the current automation debate has focused on the possibility of massive unemployment, humans will need to continue to work alongside computers and robots to deliver the per capita GDP growth that countries around the world are striving for. Thus, performance estimates suggest that the people displaced by automation will find other jobs. Many professions will have to change, business processes will have to transform. However it is easy to notice that the forthcoming scale of labour force change that could be caused by robotics technology is not completely unprecedented – in terms of impact, it resembles the shift away from agriculture in the 20th century.

These changes did not lead to the establishment of long-term mass unemployment as they were accompanied by the creation of new types of work activities. It is impossible to be absolutely sure that this time everything will follow the same scenario, however, it is safe to say that human labour will still be needed. Only the joint work of people and machines can lead to a sustainable productivity growth. And this, in turn, will radically change the labour market we are used to today.

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