
The Labor Market and the Competence of Personnel in the Era of the Digital Economy

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Abstract: In the era of digital transformation, it is worth noting that, like other spheres, the economy of states is also being transformed. Digitalization of the labor market, digitalization and automation of workplaces naturally also contributes to this. The labor market is filled with new professions, which in turn leads to new approaches in personnel training. This article examines the trends in the labor market and the competence of personnel in the digital economy and provides examples of popular "digital" professions

Keywords: digitalization; labor market; retraining of personnel; transformation of the economy; analytics.

A key factor in the success of digitalization processes is the availability of highly qualified personnel in sufficient volume and appropriate jobs, as well as a system of training specialists with certain competencies for the development and implementation of digital technologies. The transition to the digital economy is significantly changing the labor market: along with the spread of information technology in all spheres of life, digital skills are becoming critically important from the point of view of employers. A large-scale transformation of the requirements for specialists is expected, since many operations that were not affected by the previous waves of digital technology adoption may be automated in the near future.

Big data analytics is becoming a key competence that determines the competitive advantages of companies of the future. Ability to work with large arrays of structured and unstructured information. The introduction of digital technologies causes significant changes in personnel needs and requirements for specialists:

- decrease in demand for professions related to the performance of formalized repetitive operations;
 - reduction of the life cycle of professions due to the rapid change of technologies;
 - transformation of competence profiles of certain categories of personnel (risk analysts, HR managers, marketing analysts, contact center operators, etc.) due to changes in the work tools;
 - emergence of new roles and professions;
 - increasing the requirements for flexibility and adaptability of personnel; — increasing the requirements for "soft skills"
 - the possession of social and emotional intelligence, i.e. ultimately those abilities that distinguish a person from a machine;
 - growing demand for specialists with "digital dexterity"
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➤ The ability and desire to use new technologies in order to improve business results.

The Uzbek labor market is expected to see an increase in demand for highly qualified IT personnel in the medium term. In particular, the need for personnel in such promising areas as artificial intelligence, big data analysis, robotics, virtual reality, and the Internet of Things will grow. Currently, there is already a significant shortage of labor resources with the necessary digital competencies. Uzbek universities annually graduate IT specialists, of which only about 15% are ready for immediate employment. The average period of adaptation of a graduate in the workplace is from 0.5 to 1 year. [1]

A serious barrier is also the shortage of specialists capable of teaching relevant skills in the field of digital technologies. Given the inertia of the formal education system and the dynamic change of technology, companies will experience a growing shortage of personnel. Analysis of the effects of the introduction of breakthrough technologies by leading corporations shows that the main consequence of automation and robotization is not the destruction of jobs, but their renewal.

Technical capabilities are often exaggerated, infrastructural, economic, regulatory and ethical barriers to the spread of technology are not taken into account. So far, technologies allow us to cope only with a narrow range of tasks, such as, for example, recognition of images, voice and other biometric data, assessment of the probability of bankruptcy, analysis of device data, prediction of technical failures (weak artificial intelligence), etc. Systems do not yet have the ability to recognize and modify themselves (strong artificial intelligence). The problem of "interpreted artificial intelligence" has not been solved — automatic systems are not able to give feedback and explain to users the logic of making certain decisions, which is critical in areas such as healthcare, security, and law. Taking into account such limitations, the development of technologies in the near future is likely to follow the path of increasing the efficiency of performing individual tasks within professions, rather than completely replacing employees. Specialists who perform high-level tasks — people management, communication with contractors, search for non-standard solutions, methodology development - and have the necessary set of "soft" skills will be especially in demand. Organizations and their personnel services will have to switch to a model of flexible career paths, taking into account the possible transitions of personnel from one functional unit to another due to the automation of their functionality partially or completely. [3]

According to the research results, among the promising highly qualified professions in demand by the market in the conditions of digitalization, we note the following.

The architect of the Internet of Things — ensures the connection to the network of many heterogeneous devices, the transmission and processing of data in real time, optimally organizes the storage of information, minimizes the cyber vulnerability of the system.

Bioinformatics — analyzes experimental biomedical data, develops and applies computational methods in practice to solve, in particular, tasks such as predicting the function of genes and proteins encoded in them, genetic diagnosis of diseases, the design of drugs, the construction of models of the origin of species.

Data journalist — creates various types of reports based on data, thanks to which the content of the text, the facts stated in it and the opinion of the author receive a quantitative justification.

Virtual environment designer (VR architect) — develops technical equipment and software for broadcasting the virtual world, creates its design, develops interactive storylines.

Voice interface designer — designs interfaces for voice interaction with digital assistants,

chat bots, personal robots, builds artificial intelligence response algorithms.

Internet of Things Interface Designer — designs interfaces of Internet of Things systems, taking into account the diversity of devices and the variety of ways to manage them.

Data Security Engineer — responsible for ensuring confidentiality, encryption and preventing unauthorized access to data both inside and outside the company.

An engineer-operator of robotics — solves the tasks of managing and maintaining the operability of robotic complexes in production and in the service sector.

A data researcher is engaged in processing and analyzing large amounts of data, using statistical analysis methods and mathematical models to find patterns and develop forecasts in order to solve business and science problems.

IT lawyer — is engaged in legal support of business in the digital economy.

Computer linguist — develops programs and algorithms based on natural language, creates text and speech recognition tools, translation systems, thereby participating in the development of artificial intelligence.

Robotics consultant — understands the moral, ethical, social and legal aspects of the interaction of robots and humans, develops solutions on issues such as determining the areas of responsibility of system architects, operators, owners for the "actions" of machines, the rights and freedoms of robotic systems, the definition of a robot as a subject of law, etc.

The developer of cyber prostheses and implants is engaged in the development of functional artificial devices (cyber prostheses) and organs compatible with living tissues.

Neurointerface developer — develops communication systems designed to read human brain activity and exchange information between the brain and external devices (computers, neuroprostheses, VR-neural helmets, household devices, etc.).

Digital logistics specialist — implements innovative solutions to optimize resources and added value in digital supply chains. [5]

Tissue engineer — is engaged in the design and cultivation of living functional tissues or organs outside the body for subsequent transplantation.

Digital marketer — promotes products and services through digital channels of interaction with the audience, including the Internet, digital television and social media, using various digital devices (smart phones, game consoles, smart watches, fitness bracelets, etc.).

Digital Producer — manages complex media projects involving multiplatformity and the use of digital content production capabilities, including mobile applications.

Among the representatives of professions that are characterized by a high probability of full automation and replacement with robotic or software solutions, first of all those that are associated with the performance of formalized repetitive operations. For example, the development of automated question-answering systems and voice biometrics contributes to the complete displacement of support staff that help customers solve the most common issues.

In the future, workers performing simple mental operations will be involved only in non-standard situations that artificial intelligence could not cope with. With the development of machine translation and speech recognition technologies, the profession of translator and call center operator will disappear in the future, even live guides will rather become exotic - they will be replaced by neural networks capable of producing adaptive content for each specific user.

Among the "disappearing" professions are a tour operator agent, a general analyst, an archivist, an auditor, a bank operator, a clerk, a building maintenance engineer, a cashier, a client manager, a credit manager, a notary, a security guard of administrative buildings, a recruiter, a telemarketer, a trader, a legal consultant. The development of technology, the digital transformation of companies, the growth of competition for jobs, the increase in life expectancy lead employees to the need to change the field of professional activity several times during their lives, acquiring new competencies and skills. In order to remain in demand in the labor market, a person must acquire new knowledge faster than it was before.

Approaches to learning are being revised, educational models are being transformed. The key tasks facing education today include creating educational content that meets the requirements of a dynamically changing labor market and human needs, as well as reducing costs through the use of technology. Among the most relevant trends in education are: lifelong learning or lifelong learning, omni-learning (learning using all possible communication channels), social learning, micro-learning, adaptive learning, neuro-learning, distance learning, mentoring, blended learning, project-oriented learning, "self-learning" organizations, Ed Tech startups, etc. [1]

The very concept of a profession is being transformed, since the set of competencies that an employee who has received training in a certain profession or specialty should possess ceases to be fixed, static; competence profiles become changeable, they are modified following technological and organizational changes, turn into "dynamic portfolios". In this situation, the role of a qualitative approach to forecasting the staffing of the organization is particularly increasing. Companies should focus not on the staff, but on the organizational "skills stock", i.e. on the cumulative "portfolio of competencies" of employees of different professions, which allows you to form different sets of competencies for specific tasks and projects that are necessary in each case.

It is necessary to distinguish between skills related to simple digital literacy, understood as basic computer and Internet skills, and advanced digital skills related to the possession of digital technologies. Advanced skills are part of the job functions for professionals who support the operation of the digital environment. The possession of digital technologies can be understood as various skills: from working with basic office programs to applying the latest digital methods, from purely theoretical knowledge to practical everyday use.

In the digital economy, the possession of advanced digital skills (the ability to quickly master new IT tools and programming skills) becomes relevant, for example, for marketers (in order to optimize advertising management and predict the emotional reaction of users to advertising), lawyers (to automate the analysis of materials, preparation for litigation, etc.), geologists (for mapping complex mineral deposits, analysis of seismic data) and many other specialists. For engineers, professional digital skills, primarily programming, are an integral part of the skill set required by the employer.

Demand for data scientists capable of structuring data and extracting added value from it is expected to grow rapidly in all sectors of the economy. Their key competencies are in demand: a deep understanding of mathematical statistics, probability theory, analytical skills, skills for solving non-standard tasks, the ability to effectively present the results of work, curiosity and a penchant for working with data. The profession of a data researcher is becoming intersected oral, and the skills characteristic of it will have to be mastered by a wide range of specialists. As the tools of cybercriminals are constantly evolving, becoming more sophisticated and complex, the demand for cyber security specialists is increasing.

Digital skills have become an integral part of professional skills in both education and

science, as well as in industry. The implementation of breakthrough technological projects in the digital economy creates a demand for specialists who possess a complex of rigid, flexible and special digital competencies, including:

- ✓ a deep understanding of their field, as well as knowledge and experience in related fields ("T-shaped specialist"); [4]
- ✓ understanding the opportunities and risks associated with the use of new technologies;
- ✓ knowledge of project management methods;
- ✓ "digital dexterity";
- ✓ knowledge of big data tools and visualization tools;
- ✓ understanding the basics of cyber security;
- ✓ database skills;
- ✓ system thinking;
- ✓ emotional intelligence;
- ✓ teamwork;
- ✓ the ability to continuous learning;
- ✓ ability to solve turnkey tasks;
- ✓ Adaptability and work in conditions of uncertainty.

Thus, we can conclude that digitalization is changing all areas of our lives, which directly affects changes in the labor market and training. Digital transformation opens up many directions for the development and emergence of new professions.

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