

UDK 338.2: 004

*Sayyora Nasimovna Khamraeva**QarMII, Head of the Department of Innovative Economy, professor.*

THE CONCEPT AND DEVELOPMENT TREND OF THE FOURTH INDUSTRIAL REVOLUTION – “INDUSTRIYA-4”

Abstract. The main feature of "Industry 4.0" is the use of all components of the production process (enterprise equipment and its information systems - warehouse and logistics accounting, accounting, management, etc.) in the work of other systems and other systems to achieve a specific goal, while reducing human intervention consists in interacting with people. This article analyzes the principles of development of the fourth industrial revolution in developed countries and the results achieved today. Also, problems of implementation of "Industry-4" in the conditions of Uzbekistan were identified and proposals for the development of the "Internet of Things" in the future were substantiated.

Аннотация. Главной особенностью «Индустрии 4.0» является использование всех компонентов производственного процесса (оборудования предприятия и его информационных систем – складского и логистического учета, учета, управления и т.д.) в работе других систем и других систем для достижения конкретной цели, при этом сокращение вмешательства человека состоит во взаимодействии с людьми. В данной статье анализируются принципы развития четвертой промышленной революции в развитых странах и достигнутые сегодня результаты. Также были выявлены проблемы внедрения «Индустрии-4» в условиях Узбекистана и обоснованы предложения по развитию «Интернета вещей» в будущем.

Annotatsiya. “Industriya 4.0”ning asosiy xususiyati – ishlab chiqarish jarayonining barcha tarkibiy qismlarining (korxona uskunalari va uning axborot tizimlari – ombor va logistika hisobi, buxgalteriya, boshqaruv va boshq.) ishida insonning aralashuvini borgan sari kamaytirgan holda, muayyan maqsadni amalga oshirish uchun boshqa tizim va odamlar bilan oʻzaro faoliyat yuritishdan iboratdir. Mazkur maqolada rivojlangan mamlakatlarda toʻrtinchi sanoat inqilobining rivojlanish tamoyillari va hozirgi kunda erishilgan natijalar tahlil qilingan. Shuningdek, Oʻzbekiston sharoitida “Industriya-4”ni joriy etishdagi muammolar aniqlanib, istiqbolda “Buyumlar interneti”ni rivojlantirish boʻyicha takliflar asoslab berilgan.

Key words: "Industry 4", industrial revolution, Internet, "Internet of things", digital technologies, "smart industry", information technologies.

Ключевые слова. «Индустрия-4», промышленная революция, интернет, «интернет вещей», цифровые технологии, «умная индустрия», информационные технологии.

Калит сўзлар. “Industriya-4”, sanoat inqilobi, internet, “buyumlar interneti”, raqamli texnologiyalar, “aqlli sanoat”, axborot texnologiyalari.

The term "Industry 4.0" appeared in Europe in 2011, and at one of the industrial exhibitions in the city of Hannover, the German government announced the wide application of information technologies to production.

For this purpose, a special group formed with the participation of officials and experts developed a strategy to transform industrial enterprises in Germany into "smart" enterprises. Following this example, other countries have started to implement new technologies, and now the idea of "Industry 4.0" has begun to conquer the whole world. Let's understand what the term "Industry 4.0" means. There is a more general term "Internet of things" or "Internet of everything" which means the basis of reality, according

to which we understand the connection of ordinary things to the existing Internet network. This applies to everything - household appliances, appliances, cars, buildings and of course industry and agriculture.

Thus, "Industry 4.0" is the application of "Internet of Things" factors to production. To see an industrial example of this, imagine a piece of equipment that automatically fetches the software it needs for its workflow from the network, analyzes its own wear and tear, quickly orders spare parts from a warehouse, and autonomously adjusts itself to improve its performance. can also learn. In agriculture, transmitters (sensors) in the soil automatically control irrigation according to weather information. There are many such examples.

As a result of the development of the Internet and wireless communication technologies, we have "communication at any time", and smartphones and tablets have made it possible to implement the principle of "communication at any place". Now, we are on the threshold of a new revolution that will fundamentally change our lives, where machines will start creating other machines.

The reason why the complete transformation of the production sector is called a revolution is that the changes are not superficial, but radical, and the industry is rebuilt from the beginning to the end. Business models change, new companies appear, world-famous brands with many years of history fail and disappear before joining the ranks of new "revolutionaries".

The implementation of the principles of "Industry 4.0" helps to have several advantages that are not available in traditional industrial models. For example, companies can take an individual approach to orders, depending on the wishes of customers. Old plants and factories are now turning into "smart" enterprises and are starting to produce individual products according to specific orders. At the same time, the cost of producing a single product is reduced, and companies are able to produce a unique product at the price of a popular standardized product.

For example, from anywhere in the world, you can download the Nike application to your mobile device or go to the company's website, choose a sneaker model, paint it in the color of your favorite football team, pay for it, and receive it in a few days. Excluding the cost of shipping, it won't cost more than a regular popular sneaker from this company.

Engines, servers and anything else can be produced according to individual orders. At the Fujitsu Siemens plant in Augsburg, Germany, computer systems and servers are manufactured exactly for a specific customer.

The robotization of the factories of the company Tesla, which produces electric cars, allowed the company to organize its production in California, not in China. This was cheaper than using Chinese labor and then the travel costs of bringing in the finished cars.

The fourth industrial revolution is not only changing the business of individual companies, but also affecting the balance of power on a global scale. Who would have thought that Tesla, which was less than 10 years old, would surpass Ford Motors, the leader of the second industrial revolution, in terms of capitalization.

The introduction of new technologies made it possible for another famous company, Adidas, to return its production to Germany. In the opening factory, all processes are performed by robots.

Not all companies with a long history can survive these sudden changes. 52% of Fortune 500 companies in 2000 no longer exist. Successful adopters of new technologies will win twofold: consumers will be more interested in popular brands, and if they start working with customers in an individual approach, their customers will be ready to remain loyal to them in the future.

For example, despite the fact that the Harley-Davidson company experienced a sharp decrease in demand for its products due to the economic crisis, after switching to the principles of "Industry 4.0", the value of its shares increased sevenfold in six years. Now, customers can order the iconic Harley motorcycle in their favorite color, with the features of their choice, and pick it up directly from the factory six hours later.

People are gradually learning to live in "smart" houses, to solve any problem with a few movements of a finger on a smartphone. Undoubtedly, they want to apply such principles to their workplaces. Now is the time when the "Industry 4.0" market is emerging and now developing. Therefore, many companies that start to apply the principles of the new age industry will have an advantage. However, to become the company of the future, you need to start moving faster than others.

It should be said that China has taken a leading position in the field of robotization of production. In his speech at the Chinese Academy of Sciences in 2014, Chinese President Xi Jinping talked about the future robot revolution that will fundamentally change China and then the whole world, including:

"The Chinese government has tasked Chinese companies with accelerating the implementation of Big Data, cloud computing, Internet of Things technologies and developing intelligent manufacturing.) will be assigned the task of concentrating attention on organization".

In recent years, Chinese companies have dramatically increased the amount of investment in high-tech research around the world, as a result of which China's industrial robot market has become the largest in the world since 2013. By 2020, China is expected to have an average of 150 robots for every 10,000 industrial jobs. This means 3 times more than in 2015.

Now, it will not be easy for developed countries like the USA and Germany to surpass China in this regard. Industrial Internet Consortium (Industrial Internet) was established in the USA in 2014 and it is managed by such industry leaders as General Electric, AT&T, IBM and Intel.

In Germany, there are factories that offer not only "smart" industrial components, but also ready-made models of such factories. An example of this is the German Artificial Intelligence Research Center in Kaiserslauten. According to official data, the German industry will spend 40 billion a year until 2020 on the development of the Internet infrastructure. Makes investments in the amount of EUR. And this is 140 billion, which will be invested annually throughout Europe in the fourth industrial revolution. Makes a significant share of investments in the amount of euros.

Japan is not far behind in this regard and they are developing the concept of Connected Factories to develop their industry. In Russia, in 2017, the "Technet" special road map was adopted, and within its framework, the "Digital Economy 2024" program is being prepared. In neighboring Kazakhstan, the transfer of production to digital technologies and the "Industry 4.0" program have risen to the level of state strategy. An early consequence of the Fourth Industrial Revolution is the widening of the income gap between the winners and losers.

What place does Uzbekistan occupy in this innovative competition? Although the world industry is on the threshold of "Industry 4.0", all its technologies can be implemented only by those who have mastered the achievements of the previous industrial revolution "Industry 3.0". As for the economy of Uzbekistan, it must be admitted that we are now at the stage of transition from the level of "Industry 2.0" to the level of "Industry 3.0". Of course, this situation is a serious obstacle to the complete modernization of Uzbekistan's industry. Obviously, acknowledging and understanding the problem is a step forward.

President Shavkat Mirziyoyev declared 2018 as "the year of supporting active entrepreneurship, innovative ideas and technologies" in our country. In addition, the President defined a strategic plan to include Uzbekistan in the ranks of the 20 developed countries in the world. In order to achieve this huge and universal goal, it will be necessary to fundamentally change the economy and industry of Uzbekistan and widely implement the principles of "Industry 4.0".

Of course, it is not possible to solve the problems before us by introducing new terms and announcing new initiatives. To achieve specific goals, it is considered appropriate to take the following practical measures:

1. Involvement of "Fraunhofer-Gesellschaft", "ISO", "DIN", "PTB" and other foreign experts for the preparation of the relevant parts of the "Industry 4.0" strategy project and, together with them,

Germany, the USA, Canada, Japan, China, South Korea. Studying the experience of Korea and preparing legal frameworks and regulatory documents to support the introduction of new technologies.

2. Systematic establishment of cooperation in mutual scientific research between the main forces driving the society - the state, higher education institutions and representatives of the business world. Ensuring that higher education institutions are the main business incubators, where students, teachers and professors create new enterprises based on the technologies created in them. The state should assume the role of a venture investor. Business representatives, together with higher education institutions, undertake the task of developing fundamental and applied research in their laboratories and those of higher educational institutions.

3. It is necessary to develop the National Technological Development Program for the next 15-20 years, which will create conditions for Uzbekistan's regional and even global leadership, and start implementing it immediately. In the project, modern higher education institutions will be assigned special tasks - they will have to take on a new entrepreneurial function and create an economic and cultural environment that is 10-15 years ahead of others. Only then, higher education institutions can prepare people not for the past, but for the future.

List of references:

1. Xamrayeva S.N., Alimova M.Yu. "Raqamli iqtisodiyot" fanidan praktikum- O'quv qo'llanma/Qarshi. «Intellect» nashriyoti, 2023. –310 bet
2. Ergashev R.X., Xamrayeva S.N. Raqamli iqtisodiyot. – Darslik. Qarshi. «Intellect» nashriyoti, 2021.– 443 b.
3. O'zbekiston Respublikasi VM "O'zbekiston Respublikasida «Aqlli shahar» texnologiyalarini joriy etish konsepsiyasini tasdiqlash to'g'risida"gi 48-sonli Qarori, 2019 yil 18 yanvar Deutsche Bank opens its data store to external software developers (October 2016). [Elektronniy resurs]: <https://www.db.com>
4. Khamraeva S. N. Features and trends of digital economy development in uzbekistan and abroad //Academicia: An International Multidisciplinary Research Journal. – 2021. – T. 11. – №. 2. – S. 1198-1205.
5. Шваб К. Четвертая промышленная революция / Пер. с англ. М.: Эксмо, 2016