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## PROBLEMS OF THE USE OF DIGITAL TECHNOLOGIES IN INDUSTRY IN THE CONTEXT OF INCREASING THE EXPORT POTENTIAL OF THE COUNTRY

**Abstract:** The aim of this research work is to conduct a systematic analysis of the use of advanced digital technologies in the industrial production process. The economic indicators of the main foreign trade partners of the Republic of Uzbekistan in the structure of the global innovation rating (Global Innovation Index) have been studied in detail from the standpoint of the use of digital technologies. Based on the use of methods of system analysis and comparison, statistical groupings and rating, the authors put forward a concept for the development of high-tech industrial production focused on increasing the export potential of Uzbekistan.

**Key words:** ADP technologies, Global Innovation Index, Inclusive and sustainable industrial development, ISID, frontrunners, followers, latecomers, laggards.

**Language:** English

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### Introduction

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In recent times, the concept of “digital economy” has been used many times. Indeed, in many developed countries, the digital economy has had a significant impact on their development factors. The digital economy plays an important role in the life of society

The rapid development of digital technologies is leading to huge changes not only in the economy but also in society as a whole. Digital technologies allow

for a sharp increase in labor productivity, while reducing transaction costs for the state, legal entities and individuals.

Adoption of new innovative technologies is the main driving force for the success of Inclusive and Sustainable Industrial Development (ISID). Digital manufacturing technologies include artificial intelligence, big data analytics, cloud computing, the Internet of Things (IoT), advanced robotics, and complementary manufacturing. Additive manufacturing) is changing industrial production

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(transformation)[1, p.1]. In particular, the convergence of automation and advanced digital technologies is expected to lead to the full development of cyber-physical systems and the growth of intelligent manufacturing[2, p.1]. Under the right conditions, developing countries can adapt to ISID by adopting these advanced digital technologies and ensure the success of the Sustainable Development Goals (SDGs)[3, p.2].

### Literature review.

UNIDO, Industrial development report 2020 (2020) highlights the impact of ADP technologies on developing countries, the development of a “one size fits all” policy strategy for inclusive and sustainable industrial development of new technologies.

Abdikeev N. M., Bogachev Yu. S., Bekulova S. R. (2019) analyzed the mechanisms of institutional support for innovative activities aimed at addressing the strategic objectives of scientific and technological achievements in the economy of the Russian Federation in the context of the digital economy.

Szalavetz A. (2019) explores the issues of changing the order of modernization of production subsidiaries operating on direct investment investments with advanced production technologies in the factory economy.

Agafonov F. (2017) studied the convergent and technological changes in the economy of natural resources to increase profitability, investment attractiveness and international competitiveness of industrial production.

Bryndin E. (2019) has extensively covered the concepts of “creative activity”, “creative skills”, and “creative education”.

Litvinenko V. S. (2020) studied the impact of the global digital economy on the technological development of the global mineral industry.

Kurpayanidi K. (2020) some issues of formation of a modern competitive national innovation system in the Republic of Uzbekistan are analyzed.

Muminova E. (2020) studied blockchain technology, digitization efficiency and basic principles of digitization and a set of blocks that require material resources to develop the national digital economy.

Ilyosov A. (2020) highlights some of the challenges in digital manufacturing and industrial product exports in the context of the digital economy.

**Research methodology.** Comparative-gradual analysis, statistical-mathematical, statistical grouping, rating, index, historical comparison and other methods were used during the research.

### Analysis and discussion of results.

In the Industrial Development Report, countries are divided into four groups according to the level of use of ADP technologies used in production (frontrunners, followers, latecomers, laggards), including two groups of producers (as producers) and users (as users) (Table 1).

The frontrunners are the 10 countries with the highest average number of applications in the global patent system. These countries also have an above-average share in the market of exports and imports of goods related to ADP technologies[4, p.2].

All other categories are grouped by six indicators: patent orders (regular and global patent families), share in international trade (exports and imports), and relative dominance in international trade (exports and imports). For each indicator, the country’s leading economies are analyzed and compared to the world average[5, p.3].

Followers are countries that have recorded above-average rates of applications to regular and global patent families for innovation. Once the frontrunners are identified, these average values are 10 and 20, respectively. Those with below-average but above-zero performance are considered late innovators[6, p.2].

For export and import activities, not only market share but also the degree of specialization in the sale of basic goods is taken into account as followers (relative advantage is higher than 1). The average share of the world market is 0.18% for exports and 0.29% for imports. Delays, in turn, should not be on both indicators at the same time, or the market share should be above average or relatively specialized in sales of basic goods[7, p.3].

All other countries are laggards.

Although the creation and distribution of ADP technologies is concentrated globally, some developing countries are taking the first steps towards applying these technologies. The 10 countries that are considered Frontrunners own 90% of patents and 70% of exports related to these technologies. Followers, that is 40 countries, are actively engaged in these technologies, but with very low intensity [8, p.52].

**Table 1 - List of countries by level of use of ADP technologies used in production [8, p.192]**

Frontrunners (10)	Followers (40)		Latecomers (29)		Laggards (88)
	As producers (23)	As users (17)	As producers (16)	As users (13)	
China (1)	Australia	Algeria	Bosnia and Herzegovina	Costa Rica	All other economies that, according to the United
France	Austria	Argentina	Bulgaria	Cote d'Ivoire	
Germany (7)	Belgium	Bangladesh	Chile	Ecuador	
Japan	Brazil	Belarus	Dominican	Egypt	

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Republic of Korea (4)	Canada	Colombia	Estonia	El Salvador	Nations Statistical Division, had more than 500,000 inhabitants in 2017
The Netherlands	Croatia	Hungary	Greece	Ethiopia	
Switzerland	Czech Republic	Indonesia	Kyrgyzstan (6)	Malawi	
Taiwan (China)	Denmark	Eron	Latvia	Serbia	
United Kingdom	Finland	Malaysia	Moldova	Tunisia	
United States	Hong Kong (China)	Mexico	New Zealand	Turkmenistan (10)	
	India	Portugal	Nigeria	Uganda	
	Ireland	Romania	Philippines	Uzbekistan	
	Israel	Saudi Arabia	Slovenia	Zambia	
	Italy	South Africa	Ukraine		
	Lithuania	Thailand	BAA		
	Luxembourg	Turkey (5)	Venezuela		
	Norway	Vietnam			
	Poland				
	Russian Federation (2)				
	Singapore				
	Slovakia				
	Spain				
	Sweden				

As can be seen from the table above, our country is listed in the column of users of "Latecomers". Therefore, it is expedient to further increase the export of industrial products in our country, increase product quality and competitiveness, further develop innovative and patent-related activities in industry.

According to the technological structure of production in 2018-2019, the share of high-tech industry in the industry will be only 1.6% in 2019 (1.4% in 2018), medium-high-tech 25.3% (27.8% in 2018), medium - 37.5% with low technology (32.1% in 2018) and 35.5% with low technology (38.7% in 2018) [9, p.4]. The share of the high-tech sector in the Russian Federation does not exceed 6.7%, and in the innovation sector - 11.7%. Technological systems 5 and 6 make up the bulk of the production capacity of developed countries. According to Academician Glazev, in the United States, the 5th and 6th technological systems account for 60% and 5%, respectively, while in Russia they are only 10% and 0.5% [10, p.5].

In our country, measures are being taken to increase the production and export potential of industrial products through the development of advanced digital technologies. In the first six months of 2020, the country's foreign trade turnover (TSA) amounted to 15855.8 mln. USD, which is 3528.0 mln. USD or 18.2% less than in the same period of 2019. The volume of exports within the TSA amounted to 6285.4 mln. USD (decreased by 22.6%) and the volume of imports amounted to 9570.4 mln. USD (decreased by 15.0%) [11, p.1]. The data shows that the country has a passive foreign trade balance.

Let's analyze the countries with the highest foreign trade turnover with our country and their place in the ranking of the Global Innovation Index (GII). The GII ranking takes into account dozens of parameters: the number of patent applications, the cost of developing and implementing innovations, and more. According to the results of this ranking in 2020, our country ranked 93rd out of 131 countries. So what is the situation with our main foreign trade partners? Let's look at Table 2 below.

**Table 2 - Countries with the highest foreign trade turnover with the Republic of Uzbekistan, their level of use of ADP technologies and their place in the GII ranking**  
 (January-June 2020, million USD, in %)

№	Top 10 Countries	Foreign trade turnover	Export	Import	Share, in %	Level of use of ADP technologies	GII rank <sup>1</sup>
	China	2 875,1	830,3	2 044,9	18,1	Frontrunner	14
	Russian Federation	2 592,0	663,9	1 928,1	16,3	Follower	47

<sup>1</sup> [https://www.wipo.int/global\\_innovation\\_index/en/2020/](https://www.wipo.int/global_innovation_index/en/2020/)

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	Kazakhstan	1 336,5	412,0	924,5	8,4	-	77
	Republic of Korea	1 130,9	21,0	1 109,9	7,1	Frontrunner	10
	Turkey	886,6	428,4	458,2	5,6	Follower	51
	Kyrgyzstan	395,2	338,3	56,9	2,5	Latecomer	94
	Germany	337,0	31,8	305,2	2,1	Frontrunner	9
	Afghanistan	333,0	331,7	1,2	2,1	-	-
	Tajikistan	224,0	182,9	41,2	1,4	-	109
	Turkmenistan	214,2	56,0	158,2	1,4	Latecomer	-

As can be seen from the table, our main foreign trade partners are China, the Republic of Korea and Germany, which are among the frontrunners group, and these countries are also among the top 20 countries in the GII rankings. It can be said that there is a close connection between the development of the use of ADP technologies and innovative development.

It is known that according to the Decree of the President of the Republic of Uzbekistan dated September 21, 2018 "On approval of the Strategy of Innovative Development of the Republic of Uzbekistan in 2019-2021" PF-5544, the task is to include our country in the GII ranking of 50 advanced countries by 2030[11, p.2].

Also, in accordance with the Decree of the President of the Republic of Uzbekistan dated October 5, 2020 "On approval of the Strategy" Digital Uzbekistan - 2030 "and measures for its effective implementation" PF-6079, two programs were approved:

- Digital transformation of regions in 2020-2022;
- Digital transformation of networks in 2020-2022.

On the basis of these programs in the framework of digital transformation of regions and networks in 2020-2022:

- the level of Internet access in settlements will be increased from 78% to 95% through the expansion of broadband ports to 2.5 million, the construction of 20,000 km of fiber-optic lines and the development of mobile networks;
- more than 400 information systems, electronic services and other software products will be introduced in various areas of socio-economic development of the regions;
- Training in the basics of computer programming will be organized for 587 thousand people, including 500 thousand young people under the "One Million Programmers" project;
- more than 280 information systems and software products for automation of management, production and logistics processes will be introduced at enterprises in the real sector of the economy;
- Relevant higher education institutions will be attached to the regions to improve the digital literacy and skills of governors, employees of government agencies and organizations, to train them in information technology and information security, and

12,000 of them will be trained in the field of information technology.

A number of tasks have also been set for the development of the digital industry. They are:

From November 1, 2020, Uzbekistan will provide training in information technology, development and implementation of hardware and software, export of information services via robotics, the Internet, as well as data storage and processing. Legal entities that are residents of the Republic will be able to receive.

By January 1, 2022, the digital transformation of commercial banks will be completed by providing a wide range of online services, including the sale of remote credit products, opening deposits and accounts.

### Conclusion and suggestions.

In conclusion, the development of production and export of high-tech industrial products is an important step towards the application of new technologies presented in the concept of Industry 4.0. This includes digitizing not only physical models of complex products, but also production processes, systems, sources, and other elements that are part of the product life cycle. This is the only way for manufacturing companies to respond to future technological challenges and increase efficiency in modern business. One of the important reasons for the digitalization of production is to establish effective communication between professionals who are responsible for solving common problems and successfully achieving common goals. This is primarily due to the optimization of products and processes, which leads to a significant reduction in production costs. In this situation, it is expedient for us to focus on the following in order to develop export activity in the country and improve our position in the GII ranking:

- Production of high-quality, innovative and competitive industrial products based on digital technologies in accordance with the requirements of foreign markets;
- search for new export markets through the development of digital platforms and in-depth marketing research in foreign markets;
- Development of a digital cluster system specializing in the export of modern industrial products;

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- Increasing the export potential of the regions by connecting local industrial exporters through a digital cluster system, etc.

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