Import substitution in digitalization

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Abstract. Under the modern conditions, it is impossible to imagine the development of the economy of any country without digital technologies. Digitalization is a modern stage of development of informatization with the predominant use of digital technologies of generation, processing, transmission, storage, and visualization of information, which occurs due to the emergence and spread (including increased economic and physical availability) of new technical facilities and software solutions. There are the perspectives for the use of digital technologies, as well as their position in the processes of import substitution of the Russian Federation in this article. In particular, this applies to the industrial sector of the economy.

1. Introduction
Digitalization is in the center of attention of the society and scientists today. In Russia, it occurs mostly due to the “Digital Economy of the Russian Federation” program, approved by decree № 1632-r of the Government of July 28, 2017. Until that moment, we only spoke about informatization, the successful implementation of which took place and continues to develop as a result of the State Program “Information Society” (2011-2020), as well as Decree of the President of September 5, 2017 № 203 “On the Information Development Strategy Societies in the Russian Federation for 2017-2030”.

Informatization is wider than digitalization, including information processes of various types, and not just relating to discrete and digitized information. In this case, we can assume that all laws, principles, methods and other tools for analysis and management of these processes are similar. The general prerequisites for digitalization at the state level are the following: globalization of the economy, functioning of existing and emergence of new economic zones and single economic space, active development of Internet technologies, widespread dissemination, use of mobile devices, etc. [1].

A comprehensive disclosure of the features of digitalization as a modern trend in world development includes the disclosure of the essence of digitalization, mechanism of its operation, features of digital presentation of information, possible positive effects of digitalization on Russia, description of the current state, and tasks of digitalization of the Russian economy.

Along with a huge variety of terms related to digitalization, the term “Third Industrial Revolution” (TIR) is very popular. Proponents of its concept are the following:

- first industrial revolution was associated with the extraction and use of coal;
- second industrial revolution was associated with hydrocarbon resources;
- TIR is associated with the introduction of some innovative technological solutions, and also relies on the further development and widespread use of digital, information, and communication technologies;
fourth industrial revolution is based on TIR elements and solutions.

The last two concepts suggest interconnected parts, since the TIR concept did not really have time to settle down, and ideas about the fourth industrial revolution already exist (most often it is associated with the “industry 4.0.”).

The main goal of digitalization is to improve the use of the potential of information and communication technologies to promote innovation, support economic development and stimulate scientific and technological progress and, as a consequence, its development.

2. Digital transformation as a way to survive in the global economy and a prerequisite for competitiveness

In connection with the current situation on the world and because of sanctions, digitalization is becoming almost the most important tool for the successful implementation of the import substitution program in Russia. The sanctions appeared after the Ukrainian crises are full-scale, very specific, and restricting the growth and development of Russia, but they are also a powerful impetus for import substitution (especially due to counter-sanctions).

First of all, import substitution is new business opportunities in the country, industrial and innovative development, and foreign trade in the Russian Federation.

Import-export dependence has become a pain point in the Russian economy. Several factors of its formation and functioning can be distinguished:

- skipping the information revolution in the 1970-1980s;
- anti-national comprador reform of the 1990s;
- dutch disease with a Russian corruption scale (strengthening of the national currency as a result of a breakthrough in a separate sector of the economy);
- pronounced tendency to oil revenues.

Experts have the opinion that in order to solve the problems of increasing the competitiveness of the Russian economy, it is necessary to move from an import substitution policy to an import independence one. Import independence should be a systemic mechanism of industrial policy, which will allow ensuring the release of competitive global products as soon as possible. High-quality manufacturing products in the Russian Federation are able to fully replace imported analogues. In September 2019, 21 projects were implemented under the import substitution program, and since June 2015, there were already more than 1325 projects.

After about 5 years of the import substitution program, Russia almost completely solved the problem of replacing imported Ukrainian helicopter engines. Instead of TV3-117VM, the VK-2500 (Russian Joint Stock Company (JSC) “Klimov”) engine was created and manufactured. Also in Russia the production of the AI-222-25 engine for Yak-130 combat training aircraft limited the distribution. In 2018, according to Rostec Corporation, the Ufa Public Joint-Stock Company (PJSC) "Ufa Engine-Building Production Association” supplied 180 motor kits of these engines.

Before the sanctions in trade relations between Russia and Ukraine, a contract was signed between the Russian JSC “Russian Helicopters” and the Ukrainian JSC “Motor Sich” for a total amount of 1.2 billion dollars for the supply of 1.300 helicopter engines (250-270 engines per year).

In the aircraft industry, there is successfully carried out work in the direction of both manned aviation and unmanned, which is directly related to digitalization. The first flight of the Russian military transport aircraft IL-11213 was on March 30, 2019, it will replace the obsolete An-26 and it is a direct competitor of the product of “Antonov” State Enterprise, the Ukrainian An-14OT aircraft, which Russia planned to purchase for transportation purposes. Also, in Russia, the Sukhoi S-70 “Okhotnik” heavy strike reconnaissance drone was launched, flying on August 3, 2019.

Also we should not forget about information technology (IT) solutions of many problems of the aviation industry that arose due to the sanctions (for example, innovative approaches to aircraft design
or the use of simulation and 3D engineering analysis). Thus, it is important to note the high potential for the development of the aviation industry in Russia. The necessary conditions for the successful functioning of enterprises inside it are the following:

- development of the regulatory framework and regulatory technical documentation;
- activities to introduce more digital technologies;
- use of existing experience in high-tech industries of other countries;
- testing and identifying exclusive applications of existing methods;
- state support of young professionals and the creation of conditions for the realization of their potential.

By the way, since the end of 2016, 374.4 billion rubles have been allocated for the development of projects of import substitution, with one fifth of the funds from the federal budget. And the chairman of the intergovernmental council of the UNESCO “Information for All Programme” (IFAP), Dorothy Gordon, and deputy general director of communications and information sector Moez Chakchuk said that the level and speed of digitalization in Russia is high.

This is proved by the national above mentioned project “Digital Economy of the Russian Federation”. For a period up to 2024, it is one of 12 projects developed in pursuance of the May decree of the President of the Russian Federation in 2018 [2]. It includes six federal projects: normative regulation of the digital environment, information infrastructure, personnel for the digital economy, information security, digital technologies, and digital government. The total funding of the national project for the next 6 years is over 1.5 trillion rubles. All planned costs for the digital economy and the average annual budgets of federal targeted programs are shown in the figure 1.

Figure 1. Financing the digital economy in Russia [3].

Due to the technical and organizational complexity of the formation of these ecosystems and high risks of their development and successful implementation, the state should play an important role in industrial digitalization. It is confirmed by both domestic and foreign experience. In this regard, measures to digitalize industry should be included in state industrial policy [4]. This will allow to solve the urgent tasks of modern Russia to accelerate industrial growth, create import-substituting industries, increase labor productivity in industry, etc. through digitalization.
The basis of Russia’s exports is fuel and energy products, metals, and metal products. If the country needs faster growth, then import of today's machines and equipment is not necessary, it is better to buy them abroad, which will allow to competitively increasing labor productivity. Import substitution needs the staff which will be in demand in the future (for example, artificial intelligence (AI)). So, it is necessary to connect all resources to the creation of innovative, unique technologies that are ahead of Western ones. Then it will be possible to speak about import preemption and the current policy of it will not suffer technological lag and prolonged stagnation [5].

If we pay attention to the current process of digitalization of the European community, then the measures to support the mechanisms of digitalization of the economy, taken by the European Union, are quite adequate and relevant. They take into account the peculiarities of the manifestation of scientific and technical progress, based on a systematic approach, and serious methodological and analytical developments.

European community measures include regular and comprehensive support and evaluation. However, the exchange of experience with Western countries can now be extremely difficult, in view of the sanctions that are still in force.

Perhaps, instead of the “Western view,” we should head east, for example, consider cooperation with China. Today, China's digital economy is growing rapidly. Chinese companies account for about 70% of the global valuation of companies, and China's share in the global export of IT products is 32% and 6% in the export of IT services. The Chinese do not disclose far-reaching plans, but predict that the country's AI industry will generate about 150 billion dollars annually, while the ecosystem and related industries are 10 times larger (1.5 trillion dollars).

An excellent base for import substitution in the digitalization in Russia, as in China, is the rapid development of electronic commerce in the Russian Federation (Yandex rise). According to Growth from Knowledge (GfK) analysts, there are more than 90 million Internet users in Russia by February 2019 (the highest rate in Europe). 75.4% of Russian people have access to the Internet, and 59% use smartphones to surf it. At the same time, there are more smartphones than people in Russia. However, the IT industry not only has online trading, and we need to pay special attention to this fact. For example, Yandex develops unmanned vehicles, smart speakers, car multimedia systems, voice assistant, car sharing service, etc.

Digitalization may be a trend of effective development only if the digital transformation of information meets the following requirements:

- it will cover everything: business, science, social sphere, and ordinary life of citizens;
- it will be accompanied by the effective use of the results;
- its results will be available to users of this information;
- not only specialists, but also ordinary citizens, and users of digital information will have the skills to work with it [6].

At the moment, digitalization is the way that other developed countries have already passed or they are completing it. Russia lingered a bit on this way; it was reflected even in the names of the state programs related with it. Thus, we can outline the difficulties of the digitalization process in Russia:

- socio-economic (low wages, low living standards, and undeveloped consumer market);
- legal (sovereignty, bureaucratization, national security, and legislation);
- psychological (threat of degradation of skills, dependence on technology, and smart gadgets);
- political (mismatch of interests of business, population, and state);
- national features (subjectivity in decision making).

3. Possible positive effects of digitalization
The uniqueness of the digitalization process is that it changes not only the world around us, but also it changes us, makes new principles of communication, ethics, and value systems. Digital transformation
leads to the transformation of the professional side of human life, however, the creation and development of the digital environment also carries a wide variety of positive aspects that facilitate not only the everyday life, but also create a new level of material production [7].

The high speed of digitalization of all aspects of life is due, first of all, to its possible positive manifestations and consequences at all levels. At the level of the whole society there are the following ones:

- economic and social effects of digital technologies for business and society;
- improving the quality of life, primarily by the satisfaction of specific already known and new needs of people;
- productivity growth of all social labor due to its increase at the level of individual industries and companies;
- emergence of new business models and new forms of business to improve profitability and competitiveness;
- increasing the transparency of economic operations and ensuring the possibility of their monitoring;
- ensuring accessibility and promotion of goods and services, both state and commercial, up to the global scale [8].

At the company and manufacturing level, the overall benefits of digitalization can be the following:

- exclusion of intermediaries (digitalization allows manufacturers to arrange on their websites the sale of the goods or services they produce and reach potential customers, and consumers get the opportunity to independently choose them on company servers);
- expenses for the promotion of goods and services, costs for the conclusion and negotiation, etc.;
- acceleration of all business processes, including by reducing communication time;
- reducing the reaction time to market changes, reducing the time for developing products and services and putting them on the market;
- better understanding of their customers and improving the quality of products and services;
- creating new products and services, increasing the flexibility of the offered products and their high adaptability to new expectations or consumer needs [9].

In this case, there is special attitude of the state and companies investing in high-tech products and Research and Development (R&D) as an advantage. A good example of the interaction between the company and the state in improving digital processes is the “Diasoft” company, which presented to the public sector 3 approaches to import substitution in the digitalization.

“Diasoft” has been investing significant resources in the creation and development of a digital platform for more than 10 years, in the promotion of ideas and technologies of digital transformation. Over the past 5 years, the company has developed and tested 3 approaches to import substitution in the new realities. They presented their latest development projects at the “Army-2019” forum.

The company offers fast development of applied software products using the "Diasoft Framework", it is a platform of the class of "business application constructor". Some Russian and foreign manufacturers of software products are developing their IT-solutions based on this platform. These solutions are used to automate the work of public authorities, banking, insurance, trade, medicine, etc.

For the automated transfer of the logic of software products of foreign stack technologies into Russian “Diasoft” it is proposed to use the “Diasoft Legacy Renovation” technology. At the same time, the interface of the software application remains unchanged, which allows not to retrain staff. The “Diasoft Database Adapter”, in turn, will allow adapting applications created on the basis of Oracle
and/or MS SQL database management systems to the PostgreSQL database management system without changing their source code [10].

These solutions can be deployed on the Russian import-independent software and hardware stack in any organization.

4. Conclusions
An analysis of the current state of digitalization of the Russian economy and society has identified pain points that require the attention and confirmed that in order to obtain positive results from the impact of the global digitalization trend in Russia it is necessary to have the following:

1) management of all aspects of economic and social life that would ensure the fulfillment of the requirements of digitalization as a global trend for the effective development of the economy and society (only in this case, digitalization will lead to the expected positive results);
2) state assistance from support of federal executive bodies and government organizations;
3) making new and implementing ongoing digitalization benefits management programs;
4) identification of challenges, threats, problems, possible negative consequences of digitalization, and development and implementation of risk management programs and in order to increase the impact of digitalization as a trend in the development of the global economy and society.

As for import substitution in the digitalization in the industrial sector of the economy, there are the following recommendations:

1) to optimize costs, providing, first of all, cost reduction for information retrieval, identification and measurement of transaction costs due to the introduction of digital technologies in the industry;
2) to systematically allocate funds for IT development, tendering, and support for startups that implement ideas related to improving the processes of industrial production, which will help to identify new competitive advantages of the industry;
3) to conclude partnership agreements with Chinese companies in order to exchange experience, improve the quality of goods and services, and progressive outlook on production.

In the context of accelerating the innovation cycle, standards and activities for their development become an instrument for solving complex problems, especially in high-tech sectors of industrial production.

Thus, the large-scale tasks of the high-tech industry in the development of production of not only military but also civilian products contribute to unlocking the potential of domestic enterprises to produce competitive import-substituting goods and services, their application in the Russian economy and the possibility of promotion on the international market.

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